



AccessCoVE: European Centre of Vocational Excellence in Accessibility

Deliverable 2.1	Review of accessibility indicators, standards and needs of individuals with disabilities and User requirements specification

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About AccessCOVE

The AccessCoVE project aims to structure excellence in Vocational Education and Training in the field of Accessibility. Twenty-five partners from four different countries (Greece, Sweden, Spain, and Italy) joined their forces to establish a European multi-level innovative and constantly growing Centre of Vocational Excellence - the AccessCoVE - in the field of accessibility for individuals with disabilities (i.e. individuals with impairments and elders). Through the development of the most up-to-date, valid and worth trusting source for accessibility issues, AccessCoVE will constitute a key contributor to policy making regarding inclusion in society and accessible digitalization. In essence, accessibility will be approached holistically starting from researching the end- users' requirements and continuing to the research of stakeholders' needs and priorities concerning accessibility issues. The data collected will form the VET programs and curricula that will lead to the training frame and the certification of two new specialties - the Accessibility Certifier and the Accessibility Consultant. Additionally, AccessCoVE's activities target the up- skilling and reskilling of specific groups, as well as of students in secondary and tertiary education.

AccessCoVE focus thoroughly on excellence which arises from a) innovative VET programs with respective teaching and learning activities and tools, b) new specialties that will open new job opportunities while covering the needs that already put pressure on the business sector, c) constant horizontal and vertical cooperation between the VET providers, companies, chambers, federations, HEIs, and regional authorities from the very first moment of the project, d) radical dissemination activities that feed e) a robust sustainability multi-faceted system, which in combination with f) meticulously designed long-term governance and funding plans, will gradually transform AccessCoVE into a transnational platform of CoVE.

The main objectives of this proposal are:

- The establishment of a European multi-level innovative and constantly growing CoVE - the AccessCoVE - in the field of accessibility for individuals with disabilities.
- The holistic approach of accessibility by propagating accessibility in every possible aspect of social and economic life.

- The development of the most up-to-date, valid and worth trusting source for accessibility issues, which will constitute a key contributor to policy making regarding inclusion in society and accessible digitalization.
- The foundation of two (2) new professional specialties. AccessCoVE will not just re-skill and up-skill professionals who need to update and enrich their knowledge and skills.
- The elaboration of a robust network of partners that unify their expertise in VET delivery, accessibility research or entrepreneurship, combine their interests to contribute to regional development, and support the growth of the AccessCoVE after the completion of the project.

Specific objectives of the project including:

- The development and refinement of Accessibility Standards and Indicators after the profound study of existing sources (legislation, official guidelines and studies on accessibility needs) and the end-users' requirements specification.
- The research on end-users' requirements to collect qualitative and quantitative data so that their specific needs are well detected and clearly understood before proceeding further with the accessibility guidelines and indicators' specification.
- The development of Accessibility Guidelines based on the respective standards with an additional categorization of conformance levels.
- The development of Accessibility Indicators that could be used to assess the qualitative and quantitative attributes (indicators) of a product/service/environment for each area of expertise according to the accessibility guidelines.
- The development of an Assessment Guide and the Accessibility assessment tools for three (3) distinct levels of assessment (basic, extensive, intensive).

PART A: Review of Accessibility Indicators, Standards and Needs of individuals with disabilities

1. Literature review process

This report focuses on the examination of the state of the art regarding accessibility standards and practices based on the existing literature. Four different types of documents, that is 1) Scientific articles, 2) Guidelines, 3) Legislation/Regulations/Standards, 4) Study and project reports, were examined. Moreover, the documents were separated into seven distinct areas. The areas with their specifications are presented below:

- **Core Accessibility:** Involves the sub-areas of expertise of Design for all, Accessibility in the built environment (physical accessibility) and transportation, Digital Accessibility, Accessibility in Services, Web Accessibility. This area of expertise is more general and has overlaps with other areas.
- **Digital accessible transformation:** Consists of digital transformation in compliance with accessibility standards and principles of design for all, Accessible digital customer communication, Accessibility in digital libraries, Accessibility in digital marketing (e.g., social media), Digital Entrepreneurship and Accessibility, Accessible digital accounting, Accessible e-commerce, Accessible technology and tools testing.
- **Educational Accessibility:** Focuses on Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary), Accessibility in educational materials (for each group of people with disabilities separately), Accessibility in services provided by the educational units, Accessibility in courses, Accessibility in distance education.
- **Employment Accessibility:** Provides Spatial Accessibility in the working environment, Accessibility Services, Assistive Technology in the Workplace.
- **Cultural Heritage Accessibility:** Involves Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites), Accessibility in museum exhibits and works of art.
- **Tourism (including recreation and sports) Accessibility:** Contains Accessibility in Tourism Services, Accessibility in accommodation (hotel units, camps, camping), Accessibility in transportation, Accessibility in Religious Tourism, Accessibility in Conference Tourism, Accessibility in Sports & Recreational Facilities, Accessibility at Beaches, Accessible digital film industry.

- **Accessibility in Security and Evacuation Situations:** Involves Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc., will be designed taking into account the needs of people with disabilities), Accessibility in Evacuation Planning (e.g. accessible evacuation plan).

2. Scientific articles

To provide accurate, valid, and reproducible outcomes, we adopted the PRISMA statement. Specifically, the PRISMA approach was used to identify relevant documents from highly regarded and impactful sources. We opted to use Scopus and Web of Science (WoS) as our two databases due to the high relevancy of the indexed documents to the topic. We identified six main categories, that is 1) education, 2) employment, 3) culture, 4) tourism, 5) recreation, and 6) sport, and searched for relevant topics using specialized for each case search queries. Based on the nature of the topic, we identified keywords, such as accessibility, access, disability, impairments, universal design, etc., which would characterize a document as relevant. Therefore, we created the following base for our query which was kept the same when searching for relevant documents in all six categories to ensure a higher level of cohesiveness: (((("accessibility" OR "access") AND ("disabilit*" OR "impairment*")) OR ("universal design for learning" OR "universal design" OR "udl"))). Logical operators and wildcards were also used to ensure that the vast majority of relevant documents will be identified. The search query was used to search the title of the documents. After that, six tailored to each case search queries were created and a separate PRISMA flowchart was used to identify and process the documents of each category. It is worth noting that we also looked for related documents using the base query and the keywords "digital transform*" and "evacuation*" but no documents were identified. Across all six categories, a total of 745 related scientific articles were identified from the two databases. Furthermore, the inclusion criterion was purposefully selected to be simple and generic to ensure that all related studies will be examined. Therefore, the inclusion criterion set for a document to be regarded as relevant was for it to strictly involve accessibility, access, disability, impairments, or universal design and explore their use in areas contain within each specific category. Therefore, after processing the documents through the PRISMA flowchart, a total of 261 from all categories were examined. Using snowballing and manually searching in other registers and databases, some additional related documents were identified in each category. It is worth noting that based on the categories specified, some of the documents could belong to more than one category;

hence, the reference number of some documents can be repeated and counts as an additional distinct article in the respective categories.

2.1. Education

The search query used to identify relevant to the category of education documents was: (((("accessibility" OR "access") AND ("disabilit*" OR "impairment*")) OR ("universal design for learning" OR "universal design" OR "udl")) AND ("educat*" OR "school*" OR "universit*" OR "college*")). As it is presented in Figure XX, a total of 527 related documents (Scopus: 296 and WoS: 231) were identified. After removing the duplicate documents (185), 342 documents were screened. Of the studies screened based on their abstract, 139 documents were removed as they did not meet the set inclusion criterion. As a result, 203 documents remained and were sought for retrieval. However, when searching to find the published document of each entry, we could not find or we did not have access to 9 documents. Hence, the total number of documents assessed for eligibility was 194. In total, 14 documents were removed as they did not meet the inclusion criterion. After processing the documents, 180 documents were regarded as eligible and were included in this part of the analysis.

2.2. Employment

To search for documents relevant to the topic of employment, the following search query was utilized: (((("accessibility" OR "access") AND ("disabilit*" OR "impairment*")) OR ("universal design for learning" OR "universal design" OR "udl")) AND ("employment" OR "work" OR "workplace")). Using the specific query, 53 documents from Scopus and 34 documents from WoS were identified. From the total of 87 documents, 27 were duplicates and were removed. As a result, 60 scientific articles were screened based on their abstract. Due to their not meeting the inclusion criterion, 29 documents were removed. Of the 31 documents that remained and were sought for retrieval, we did not have access only to one of them. Additionally, all 30 documents that were assessed for eligibility meet the set inclusion criterion. Therefore, a total of 30 documents were included in this analysis. The detailed PRISMA flowchart is depicted in Figure 2.

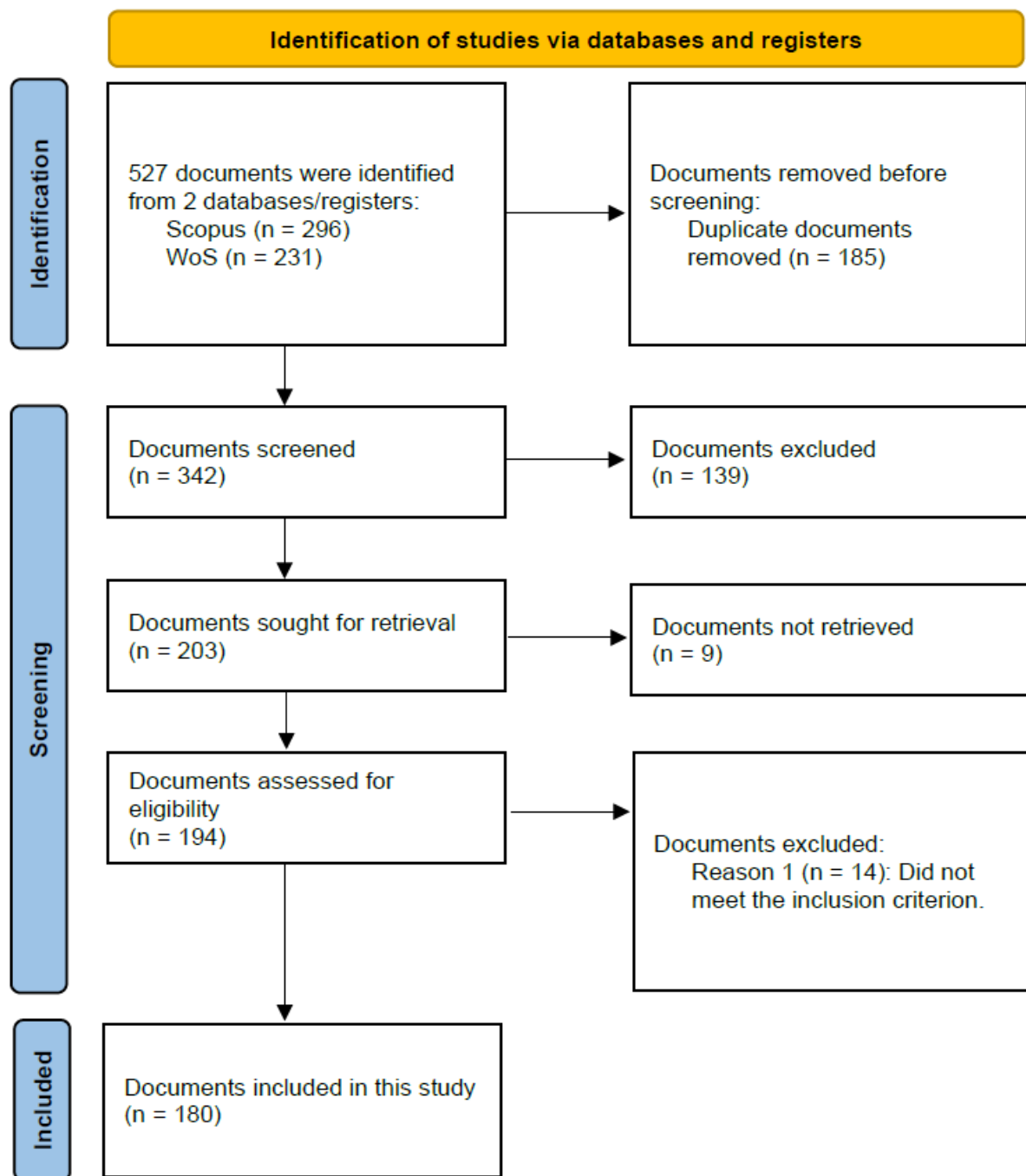


Figure 1. Education documents – PRISMA flowchart

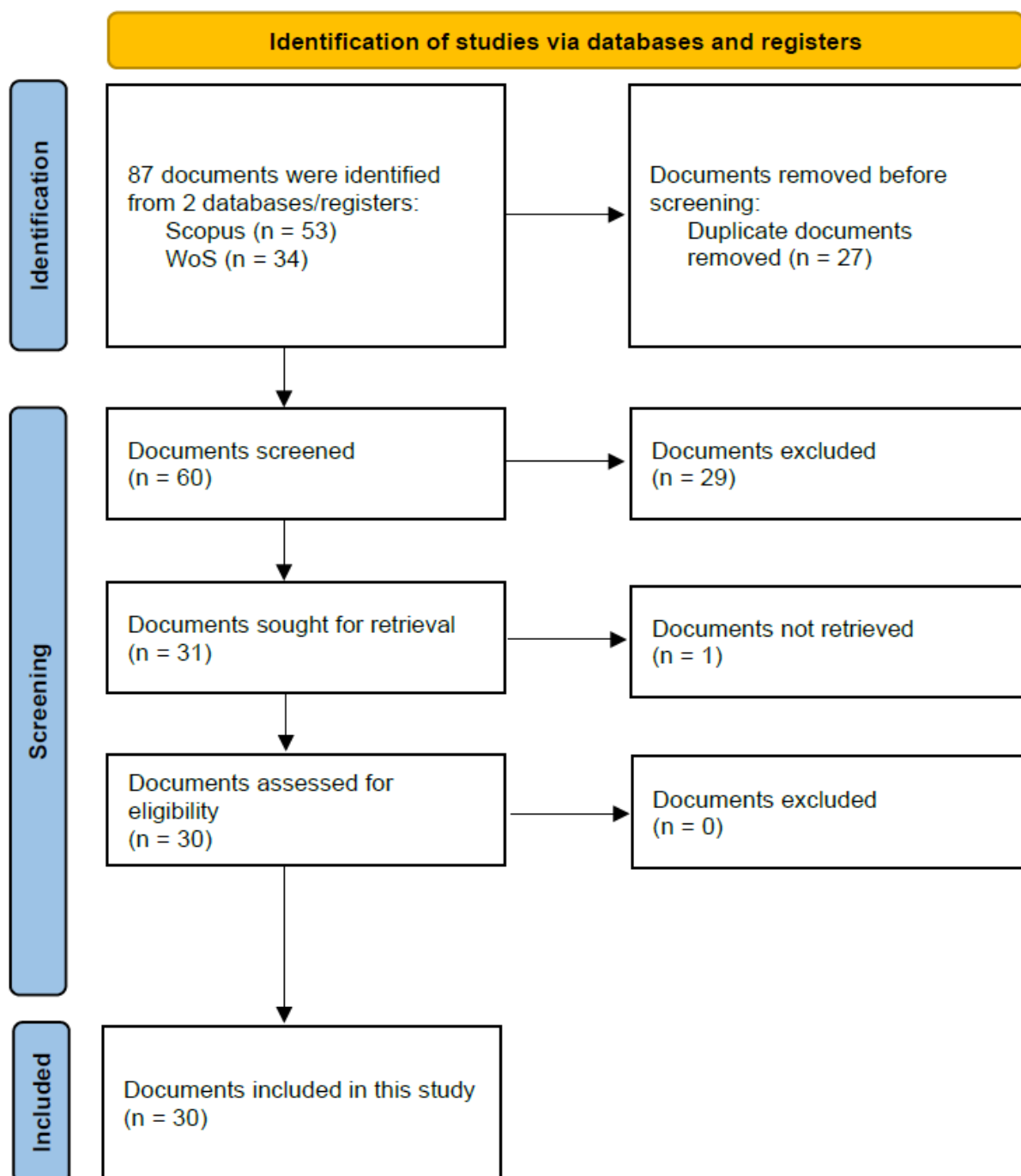


Figure 2. Employment documents – PRISMA flowchart

2.3. Culture

To identify related to culture documents, the following search query was used: (((("accessibility" OR "access") AND ("disabilit*" OR "impairment*")) OR ("universal design for learning" OR "universal design" OR "udl")) AND ("cultur*" OR "heritage" OR "museum*" OR "art" OR "arts" OR "galler*" OR "archaeological" OR "archeological" OR "monument*" OR "religion" OR "sight*")). As it can be seen in Figure XX, in total, 82 documents were identified (Scopus: 49

and WoS:33) from which 28 were duplicated and were, thus, removed. As a result, 54 documents were screened based on their abstract and 23 were removed as they did not meet the inclusion criterion. Of the 31 documents that remained and were sought for retrieval, only one was not found. Therefore, 30 documents were included in this analysis as all remaining documents met the inclusion criterion.

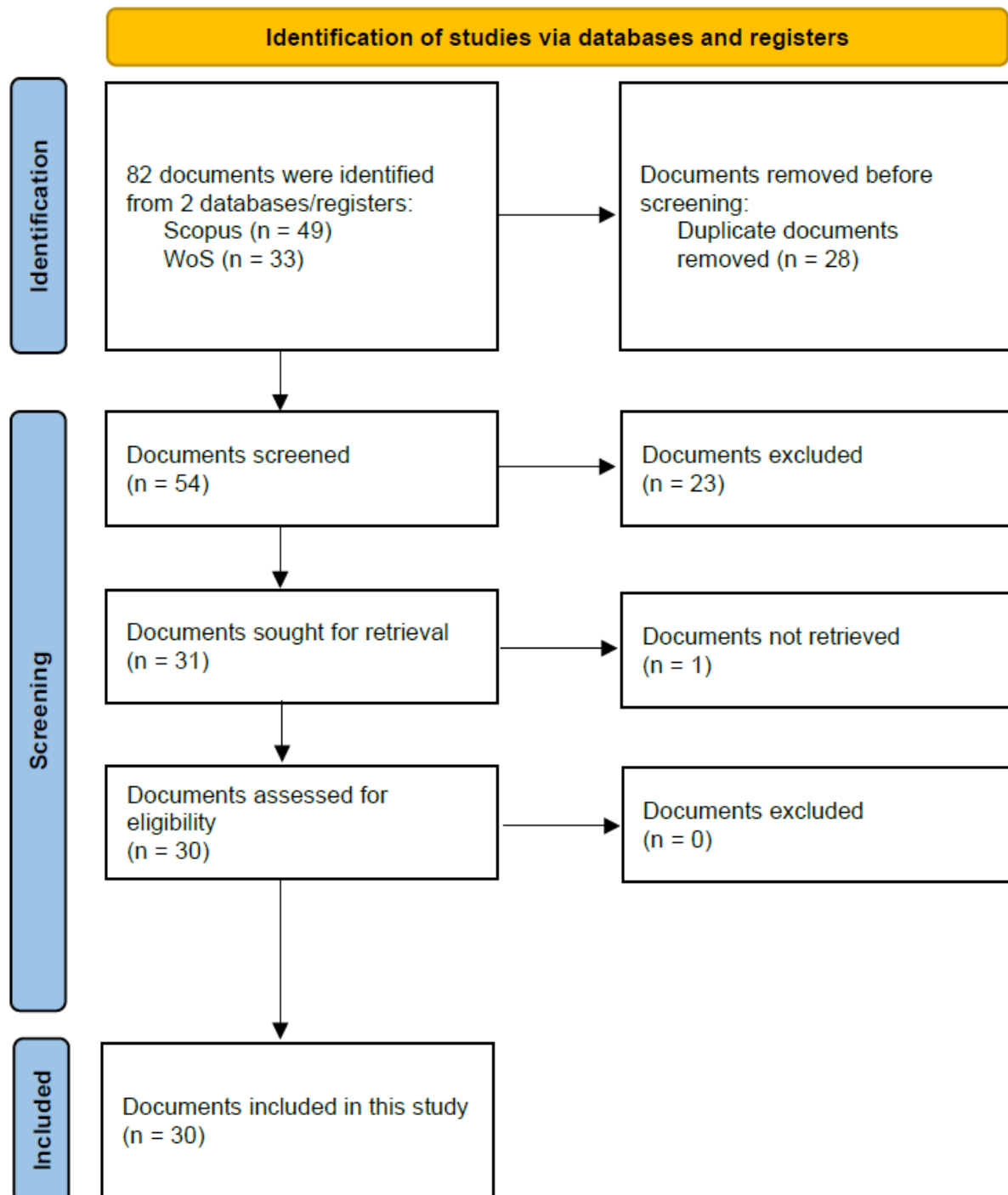


Figure 3. Culture documents – PRISMA flowchart

2.4. Tourism

To search for documents relevant to the topic of tourism, the following search query was utilized: (((("accessibility" OR "access") AND ("disabilit*" OR "impairment*")) OR ("universal design for learning" OR "universal design" OR "udl")) AND ("tourism" OR "hotel*" OR "hostel*" OR "camping" OR "exhibition*" OR "point of interest" OR "points of interest" OR "sight*")). Based on the query, 15 documents from Scopus and 11 documents from WoS were identified. Of the total of 26 documents, 8 were duplicates and were, thus, removed. Therefore, 18 scientific articles were screened based on their abstract. A total of 8 documents were removed due to their not meeting the inclusion criterion. Of the 10 documents that remained and were sought for retrieval, we did not have access only to one of them. All 9 remaining documents were assessed as eligible to be included in the analysis as they met the set inclusion criterion. Therefore, a total of 9 documents were included in this analysis. The detailed document identification and processing procedures are displayed in Figure 4.

2.5. Recreation

The search query used to identify documents that are relevant to the category of recreation was: (((("accessibility" OR "access") AND ("disabilit*" OR "impairment*")) OR ("universal design for learning" OR "universal design" OR "udl")) AND ("recreation*")). As it is shown in Figure XX, a total of 10 related documents (Scopus: 6 and WoS: 4) were identified. After removing the duplicate documents (4), 6 documents were screened based on their abstract. All 6 documents were assessed as eligible as they met the inclusion criterion and all of them were retrieved. As a result, the recreation related documents that were examined were 6.

2.6. Sports

To identify related to the topic of sport documents, the following search query was utilized: (((("accessibility" OR "access") AND ("disabilit*" OR "impairment*")) OR ("universal design for learning" OR "universal design" OR "udl")) AND ("sport*")). In total, 13 documents (Scopus: 7 and WoS: 6) were identified out of which 6 were duplicated. Therefore, 7 documents were screened based on their abstract and all of them were regarded as eligible due to their meeting the inclusion criterion. However, one of the documents was not accessible. As a result, 6 documents were included in this analysis. The detailed PRISMA flowchart is depicted in Figure 6.

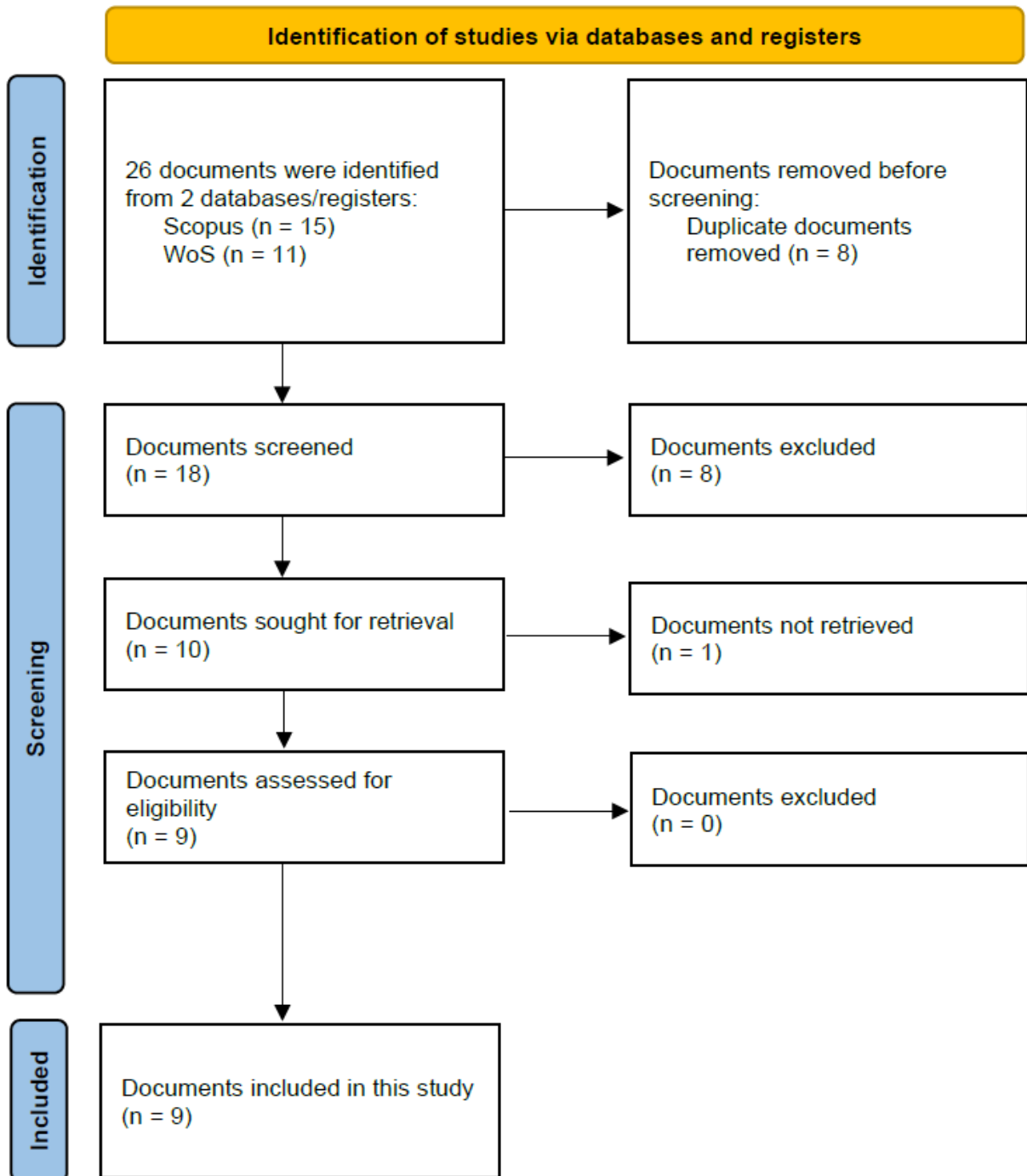


Figure 4. Tourism documents – PRISMA flowchart

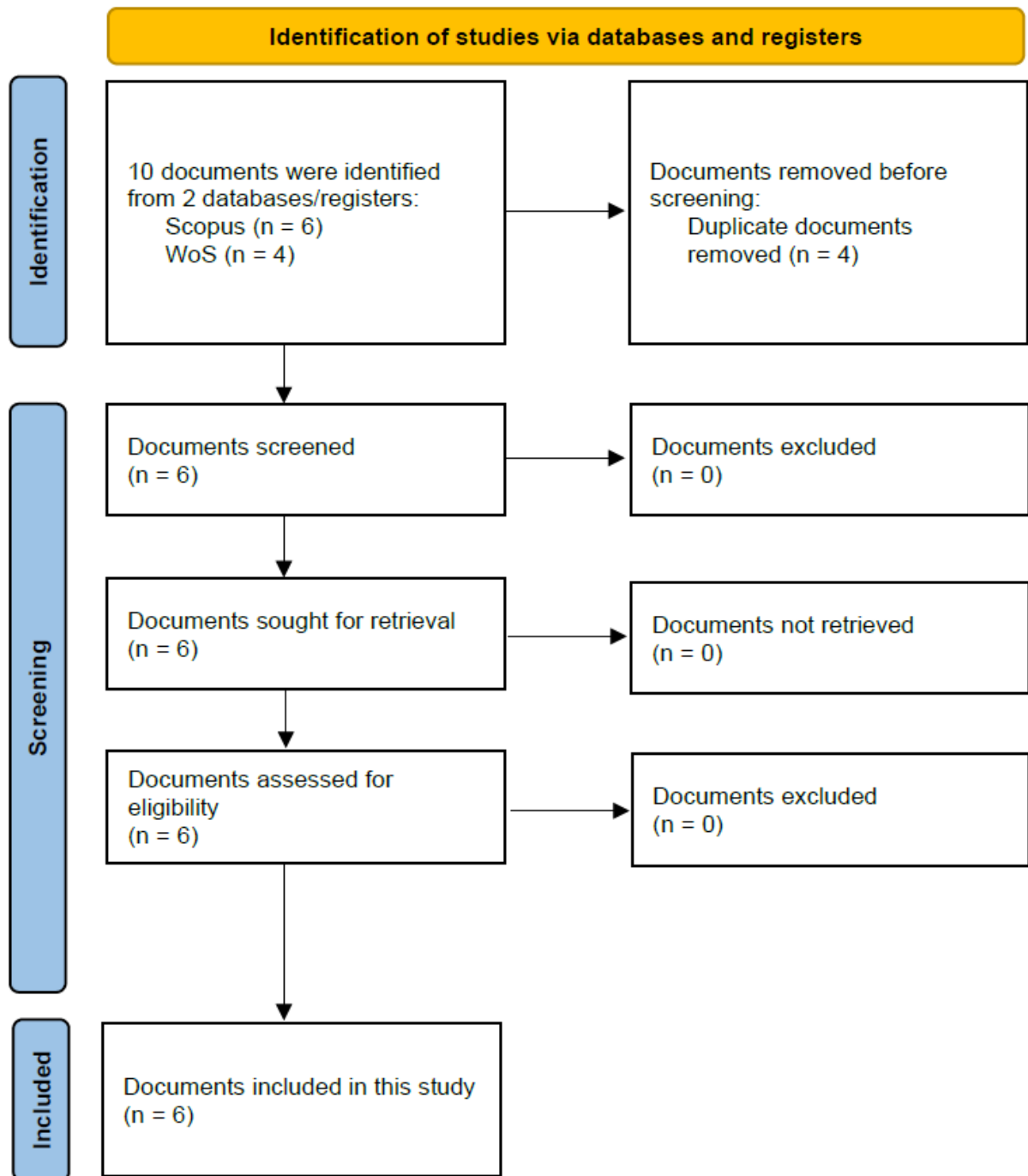


Figure 5. Recreation documents – PRISMA flowchart

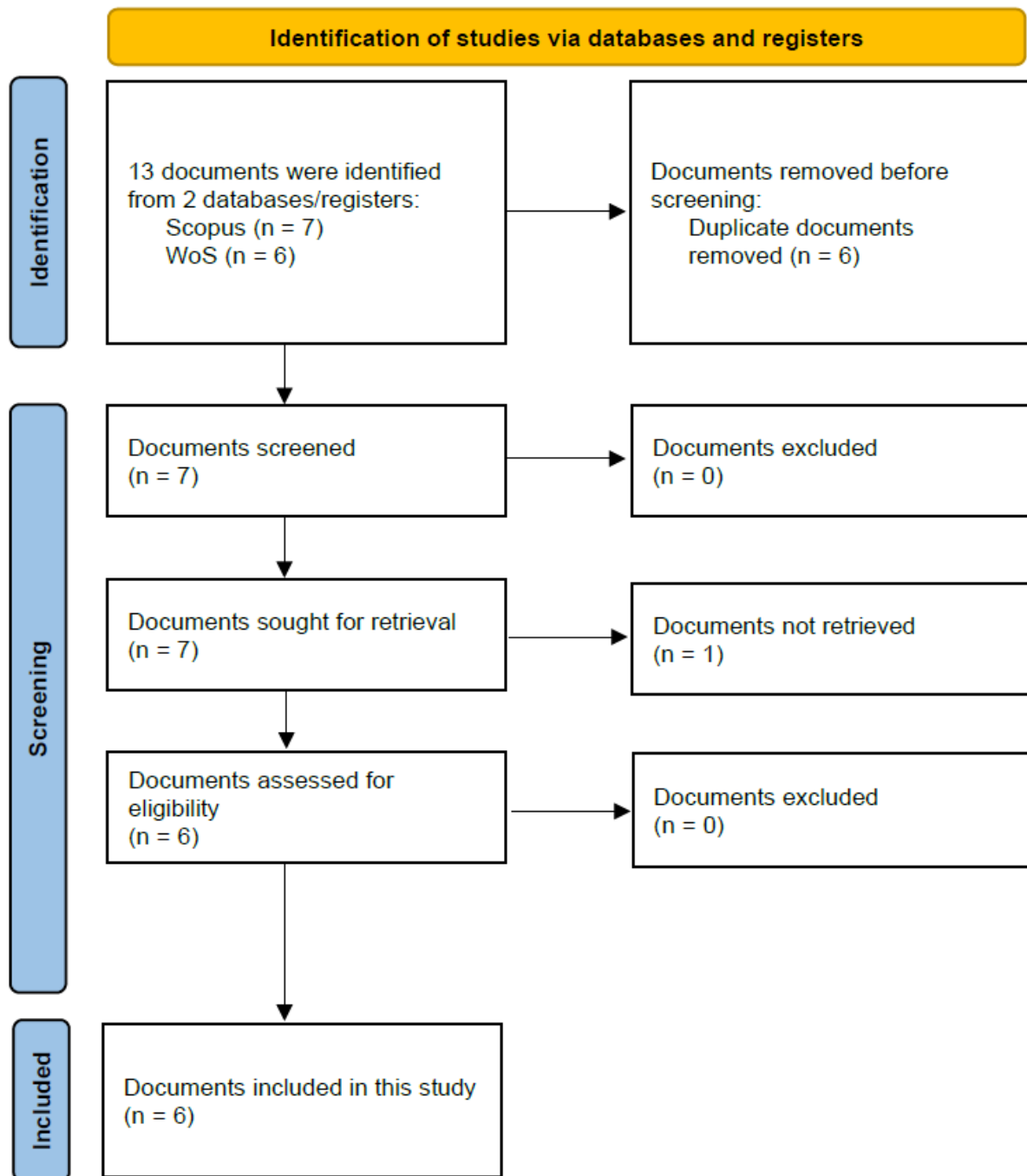


Figure 6. Sports documents – PRISMA flowchart

3. Guidelines

The identification of suitable and relevant guidelines was carried out using online search engines (e.g., google) and various sets of keywords. As a systematic search for guidelines and in turn an extensive search of related material was not applicable, identified guidelines that were published by established and renown organizations

were selected to be included. Specifically, 11 guidelines of the “Tourism (including recreation and sports) Accessibility” area, 9 guidelines of the “Core Accessibility” and the “Cultural Heritage Accessibility” areas, 5 guidelines of the “Digital Accessible Transformation” area, 4 guidelines of the “Accessibility in Security and Evacuation Situations” area, and 2 guidelines of the “Educational Accessibility” were analyzed and included in this report.

4. Legislation/regulations/standards

To identify relevant legislation, regulations, and standards documents, online search engines were initially used to find credible and impactful organizations which create and publish such documents. Given the scope of the project and this report in general, ISO, CEN, CENELEC, and ETSI were selected as suitable sources. Hence, using relevant keywords and filtering the documents to ensure that they refer to accessibility, relevant to the topic documents were identified. It is worth noting that for documents describing similar cases and settings were further explored and the most representative and informative ones were selected to be used. Documents which presented only theoretical and not practical aspects were excluded. Additionally, other publicly available documents were also identified and after careful consideration were also included in this report. In total, 158 legislation, regulations, and standards documents are included in this report. Specifically, 64 documents of the “Core Accessibility” area and 52 of the “Digital Accessible Transformation” area were identified and examined. Additionally, 22 documents of the “Educational Accessibility” area and 14 of the “Tourism (including recreation and sports) Accessibility” area were also analyzed. Finally, 2 relevant documents were identified in each of the following areas “Employment Accessibility”, “Cultural Heritage Accessibility”, and “Accessibility in Security and Evacuation Situations”.

5. Study and project reports

To get a better understanding of the state of the art regarding accessibility standards and practices, we also examined completed projects which were funded as part of Erasmus+ actions or sources. Specifically, by using “access*” as the main keyword, a total of 3,931 relevant and completed research projects were identified. To get the most accurate to our topic data, we filtered the results based on the inclusion of the keyword

“access*” as part of the project title. By doing so, a total of 248 research projects from 2014 to 2023 remained and were further screened based on their description. The screening process resulted in 196 not meeting the scope of our study and as a result, they were removed. Thereafter, we examined the outcomes and deliverables of the 52 remaining research projects. Although we could not find another research project which directly focused on identifying or creating accessibility standards, we identified 9 research projects in which some of the deliverables referred to the use of accessibility standards.

6. Document area analysis

Following the document identification, retrieval, and processing processes, the documents were divided into seven areas, that is: 1) Core Accessibility, 2) Digital accessible transformation, 3) Educational Accessibility, 4) Employment Accessibility, 5) Cultural Heritage Accessibility, 6) Tourism (including recreation and sports) Accessibility, and 7) Accessibility in Security and Evacuation Situations. As previously mentioned, a document can belong to more than one category. Therefore, the reference number of some documents can be repeated and counts as an additional distinct article in the respective categories. Based on this fact, the majority of documents were categorized into “Educational Accessibility” (42.72%), followed by “Digital Accessible Transformation” (24.11%), and “Core Accessibility” (22.98%). Additionally, 12.46% of the documents were grouped into “Tourism (including recreation and sports) Accessibility” and 11.33% into “Cultural Heritage Accessibility”. Finally, fewer documents were categorized into “Employment Accessibility” (6.96%) and “Accessibility in Security and Evacuation Situations” (1.94%). Based on the aforementioned, it becomes evident that the domain of education is the one that most documents focus on.

The document distribution in the seven areas is presented in detail in Figure XX. Furthermore, as the documents of each area were divided into the following four categories: i) Scientific articles, ii) Guidelines, iii) Legislation/Regulations/Standards, and iv) Study and project reports, their distribution is presented in Figure XX. Specifically, of the 142 documents of the “Core Accessibility” area, 45.1% of the documents are legislation/regulations/standards, 40.8% are scientific articles, 7.7% are study and project reports, and 6.3% are guidelines. Of the 149 documents of the

“Digital Accessible Transformation” area, 57.7% of the documents are scientific articles, 34.9% are legislation/regulations/standards, 4.0% are study and project reports, and 3.4% are guidelines. Of the 264 documents of the “Educational Accessibility” area, 86.7% of the documents are scientific articles, 8.3% are legislation/regulations/standards, 4.2% are study and project reports, and 0.8% are guidelines. Of the 43 documents of the “Employment Accessibility” area, 88.4% of the documents are scientific articles, 7.0% are legislation/regulations/standards, and 4.7% are study and project reports. Of the 70 documents of the “Cultural Heritage Accessibility” area, 75.7% of the documents are scientific articles, 12.9% are guidelines, 8.6% are study and project reports, and 2.9% are legislation/regulations/standards. Of the 77 documents of the “Tourism (including recreation and sports) Accessibility” area, 51.9% of the documents are scientific articles, 18.2% are legislation/regulations/standards, 15.6% are study and project reports, and 14.3% are guidelines. Of the 12 documents of the “Accessibility in Security and Evacuation Situations” area, 33.3% of the documents are scientific articles, 33.3% are guidelines, 16.7% are legislation/regulations/standards, and 16.7% are study and project reports.

In each area, the number of related documents and their reference number is reported. The complete table with all the details and with the summary of the documents is presented in Appendix 1.

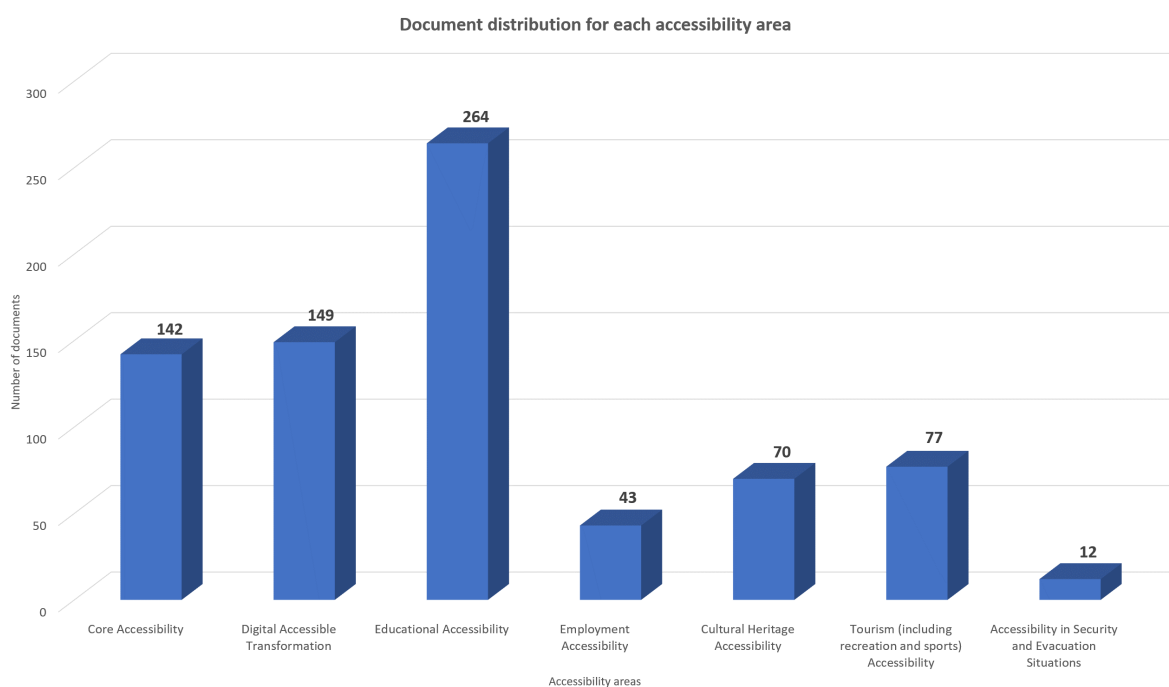


Figure 7. Document distribution for each accessibility area

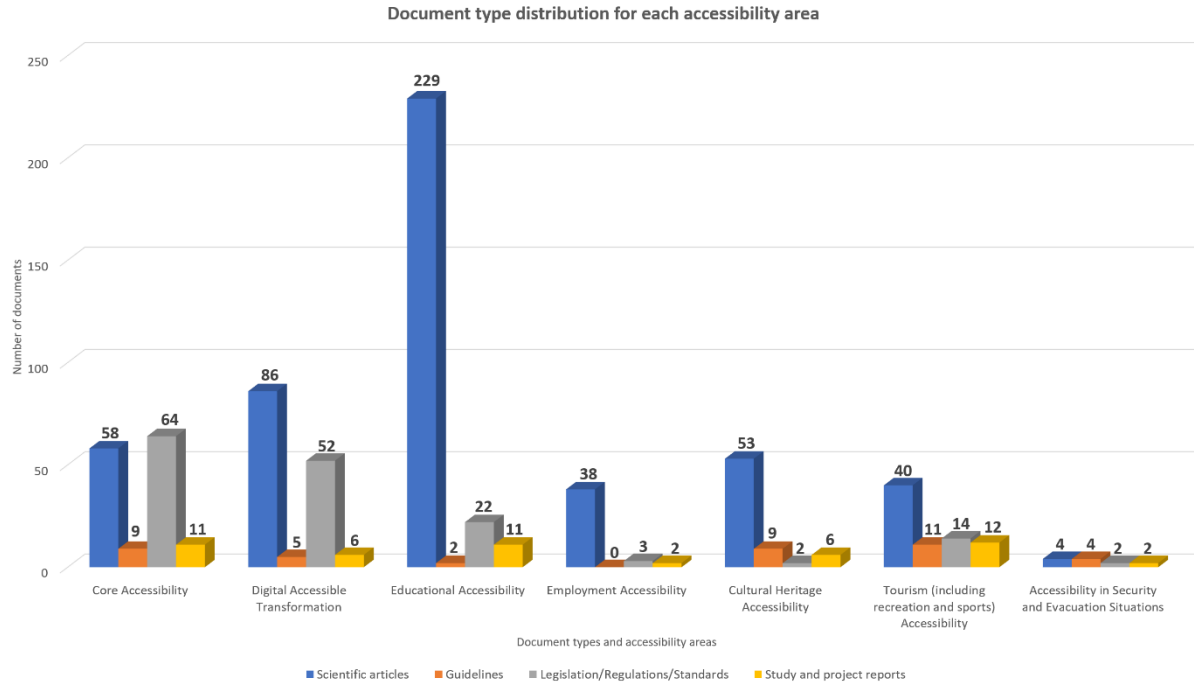


Figure 8. Document type distribution for each accessibility area

6.1. Core Accessibility

Table 1 presents the distribution of documents of the Core Accessibility area. Of the documents examined, 142 were categorized into this area. Specifically, the scientific articles identified were 58, the guideline documents were 9, the legislation/regulations/standards documents were 64, and the study and project reports were 11.

Table 1: Distribution of documents of the Core Accessibility area

Document type	Related references
Scientific articles: 58	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 67, 70, 75, 76, 79, 80, 85, 86, 87, 88, 101, 103, 104, 106, 107, 109, 140, 174, 176, 184, 185, 199, 218, 284, 291, 297,

	299, 455, 456, 457, 458, 459, 461, 462, 463, 464, 465, 466, 468, 469, 471, 472, 473, 474, 475, 481, 483, 493
Guidelines: 9	27, 50, 54, 55, 59, 62, 69, 208, 421
Legislation/Regulations/Standards: 64	2, 110, 139, 148, 152, 166, 209, 210, 498, 499, 500, 501, 502, 504, 505, 514, 515, 516, 517, 518, 519, 520, 521, 523, 524, 525, 532, 535, 536, 537, 538, 539, 540, 541, 542, 543, 561, 562, 564, 565, 570, 571, 572, 573, 581, 588, 590, 596, 597, 599, 600, 601, 602, 603, 604, 608, 609, 610, 611, 614, 615, 616, 617, 618
Study and project reports: 11	142, 440, 441, 445, 446, 447, 454, 467, 487, 488, 492

6.2. Digital Accessible Transformation

The distribution of documents of the Digital accessible transformation area are displayed in Table 2. Of the documents examined, 149 were categorized into this area. Particularly, the scientific articles identified were 86, the guideline documents were 5, the legislation/regulations/standards documents were 52, and the study and project reports were 6.

Table 2: Distribution of documents of the Digital accessible transformation area

Document type	Related references
Scientific articles: 86	11, 12, 17, 61, 67, 68, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 100, 102, 103, 104, 105, 106, 107, 109, 115, 116, 117, 118, 125, 146, 174, 175, 186, 187, 188, 189, 192, 201, 222, 223, 224, 229, 230, 231, 232, 240, 249, 314, 321, 349, 387, 388, 395, 455, 456, 460, 462, 463, 468,

	469, 470, 472, 473, 474, 476, 477, 478, 479, 480, 481, 482, 483, 484
Guidelines: 5	420, 528, 529, 530, 531
Legislation/Regulations/Standards: 52	110, 148, 152, 210, 211, 212, 213, 214, 225, 226, 227, 501, 502, 504, 526, 527, 533, 534, 546, 567, 568, 571, 572, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 603, 605, 606, 607, 612, 613
Study and project reports: 6	454, 488, 489, 490, 491, 492

6.3. Educational Accessibility

Table 3 presents the distribution of documents of the Educational Accessibility area. Of the documents examined, 264 were categorized into this area. Specifically, the scientific articles identified were 229, the guideline documents were 2, the legislation/regulations/standards documents were 22, and the study and project reports were 11.

Table 3: Distribution of documents of the Educational Accessibility area

Document type	Related references
Scientific articles: 229	15, 16, 18, 19, 20, 21, 31, 32, 33, 64, 65, 66, 71, 72, 73, 74, 76, 77, 78, 81, 82, 83, 84, 92, 93, 94, 95, 96, 97, 98, 107, 115, 143, 144, 145, 150, 151, 153, 155, 156, 170, 171, 179, 180, 193, 200, 204, 205, 217, 218, 219, 220, 221, 228, 229, 231, 232, 233, 234, 235, 239, 240, 242, 247, 250, 255, 256, 258, 264, 265, 267, 271, 272, 277, 278, 279, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325,

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Guidelines: 2	158, 402
Legislation/Regulations/Standards: 22	25, 210, 211, 212, 213, 225, 501, 503, 506, 507, 508, 509, 510, 511, 512, 513, 544, 547, 548, 568, 613, 615
Study and project reports: 11	442, 443, 444, 450, 451, 467, 486, 494, 495, 558, 559

6.4. Employment Accessibility

The distribution of documents of the Employment Accessibility area are displayed in Table 4. Of the documents examined, 43 were categorized into this area. Particularly, the scientific articles identified were 38, the legislation/regulations/standards document were 3, and the study and project reports were 2.

Table 4: Distribution of documents of the Employment Accessibility area

Document type	Related references
Scientific articles: 38	13, 14, 157, 193, 206, 207, 215, 216, 218, 228, 231, 242, 247, 250, 251, 252, 253, 254, 257, 259, 260, 261, 262, 263, 265, 266, 268, 269, 270, 273, 274, 275, 276, 280, 281, 282, 283, 468

Guidelines: 0	n/a
Legislation/Regulations/Standards: 3	149, 544, 567
Study and project reports: 2	448, 449

6.5. Cultural Heritage Accessibility

Table 5 presents the distribution of documents of the Educational Accessibility area. Of the documents examined, 70 were categorized into this area. Specifically, the scientific articles identified were 53, the guideline documents were 9, the legislation/regulations/standards document were 2, and the study and project reports were 6.

Table 5: Distribution of documents of the Cultural Heritage Accessibility area

Document type	Related references
Scientific articles: 53	1, 22, 34, 36, 37, 38, 41, 44, 45, 48, 51, 56, 57, 116, 117, 118, 124, 134, 143, 144, 145, 146, 147, 161, 162, 163, 167, 168, 169, 175, 177, 182, 183, 185, 187, 188, 189, 191, 192, 196, 200, 201, 202, 203, 204, 205, 238, 239, 243, 244, 245, 248, 249
Guidelines: 9	23, 40, 42, 49, 53, 60, 160, 165, 194
Legislation/Regulations/Standards: 2	543, 569
Study and project reports: 6	35, 39, 58, 452, 453, 485

6.6. Tourism (including recreation and sports) Accessibility

The distribution of documents of the Employment Accessibility area are displayed in Table 6. Of the documents examined, 77 were categorized into this area. Particularly, the scientific articles identified were 40, the guideline documents were 11, the legislation/regulations/standards documents were 14, and the study and project reports were 12.

Table 6: Distribution of documents of the Tourism (including recreation and sports) Accessibility area

Document type	Related references
Scientific articles: 40	3, 9, 99, 100, 108, 111, 112, 113, 114, 119, 120, 121, 122, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 140, 141, 154, 157, 159, 161, 162, 172, 173, 177, 178, 181, 190, 195, 197, 198, 246
Guidelines: 11	24, 43, 46, 47, 52, 63, 160, 165, 194, 422, 560
Legislation/Regulations/Standards: 14	28, 29, 30, 520, 521, 522, 523, 524, 541, 542, 563, 566, 574, 611
Study and project reports: 12	26, 164, 492, 496, 497, 549, 550, 553, 554, 555, 556, 557

6.7. Accessibility in Security and Evacuation Situations

Table 7 presents the distribution of documents of the Educational Accessibility area. Of the documents examined 12 were categorized into this area. Specifically, the scientific articles identified were 4, the guideline documents were 4, the legislation/regulations/standards documents were 2, and the study and project reports were 2.

Table 7: Distribution of documents of the Accessibility in Security and Evacuation Situations area

Document type	Related references
Scientific articles: 4	123, 236, 237, 241
Guidelines: 4	135, 136, 137, 419
Legislation/Regulations/Standards: 2	28, 138
Study and project reports: 2	551, 552

7. References

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8. Appendix I

REF /N.	Type	Area	Description	Accessibility topics and/or indicators, and/or standards	Link
1	1	5	Supporting People with Visual Impairments in Cultural Heritage: Survey and Future Research Directions. This literature review explores research dedicated to enhancing the engagement of blind and visually impaired (VI) individuals with cultural heritage. The study aims to delineate the challenges faced by those with visual impairments, proposing solutions and strategies for improvement. It extensively examines literature, with a specific focus on advancements that enhance the multi-sensory experience through tactile and audio exploration. The review addresses the role of Information and Communication Technologies (ICT) in aiding self-guided navigation, particularly in cultural venues like museums. A systematic literature review is conducted, emphasizing touch-based graphics for improved accessibility in cultural sites.	Accessibility to the cultural heritage, multisensory experience through tactile and audio exploration.	https://doi.org/10.1080/10447318.2022.2098930

			Findings suggest that a combined approach utilizing both audio and tactile methods proves to be the most beneficial for individuals with visual impairment.		
2	3	1	The European Commission: Union of Equality- Strategy for the Rights of Persons with Disabilities 2021-2030. The European Commission accessibility standards are pivotal for achieving a Universal Design, ensuring public building accessibility, and addressing legislative and renovation needs. The adoption of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD or Convention) provides practical guidance, focusing on education, employment, and user-friendly digital public services governed by the Web Accessibility Directive. With an emphasis on political rights, efforts to make European elections accessible aim at fostering inclusion between 2021 and 2030, particularly for underrepresented citizens with disabilities. The Commission, amidst the Renovation Wave and Recovery and Resilience Plans, prioritizes the Technical Support Instrument and the European Quality Framework for Social Services. Efforts also address transitioning from institutional care to community	Accessibility standards on education, employment and public services	https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8376&furtherPublications=yes

			support and securing financing for disability-inclusive social housing.		
3	1	1,6	Analyzing fair access to urban green areas using multimodal accessibility measures and spatial prioritization Developing green areas and ensuring equal access to them are major concerns for planning sustainable cities. Although several studies use metrics, such as population around green areas, to assess the accessibility of the area, these metrics do not ensure equitable access. However, systematically using spatial prioritization could aid in the planning of easily accessible green areas in urban settings. Additionally, using spatial prioritization and taking into account aspects such as the recreational potential and accessibility within recreational green areas can assist in applying travel-time-based accessibility measures. Finally, spatial prioritization and other prioritization types, e.g., biodiversity distribution, threats, costs, ecosystem services, etc., can help systematically identify and assess the green areas that are significant to ensure equitable accessibility.	Spatial accessibility – Urban accessibility, Spatial and other prioritization types	https://doi.org/10.1016/j.apgeog.2020.102320

4	1	1	Access to urban parks: Comparing spatial accessibility measures using three GIS-based approaches Urban parks are essential elements of residents' daily lives and the urban ecosystem in general. Geographic information systems (GIS)-based approaches that take distance thresholds, destination choices, transport modes, and network complexity into account can assist in effectively planning and developing accessible urban areas. Among the various metrics which use GIS-based approaches, transport modes and distance thresholds are more directly correlated to the measurement of accessibility than destination choices. Additionally, entrance-based and network-based methods provide more realistic and accurate measurements to accessibility when transport mode and distance threshold are kept constant.	Spatial accessibility – Urban accessibility GIS-based approaches and tools	https://doi.org/10.1016/j.compenv.urbsys.2021.101713
5	1	1	Perceived accessibility: What it is and why it differs from calculated accessibility measures based on spatial data Spatial data is most commonly used to evaluate accessibility. However, perceived accessibility, which takes into account various factors, such as temporal, transport, and land-use, is also important and cannot always be calculated through spatial	Spatial accessibility – Urban accessibility Perceived accessibility	https://doi.org/10.1016/j.jtrangeo.2021.103090

			data measures. Since accessibility can be affected by individuals' perceptions, accessibility metrics should also focus on how accessibility is viewed and used by individuals. As accessibility indicators are prone to have mismatches with perceived accessibility, it is vital to put emphasis not only on how accessibility can be measured but also on how it is perceived.		
6	1	1	Measures of geographic accessibility to health care in the Ashanti Region of Ghana Access to healthcare is of great importance but unfortunately, accessibility to healthcare remains poor in rural areas and regions. To minimize inequalities in healthcare, there is a great need to ensure geographic accessibility to health facilities. This is particularly true in developing countries. Geographic information systems (GIS) tools and dasymetric mapping geospatial techniques can be used as key components to evaluate the accessibility to healthcare.	Spatial accessibility – Healthcare Transportation GIS-based approaches and tools Mapping geospatial techniques	https://doi.org/10.1016/j.sciaf.2020.e00453
7	1	1	How to improve the inclusion of drivers with disabilities? Measures to enhance accessibility, mobility and road safety Easy access to transportation is essential for people	Spatial accessibility – Transportation Training programs Key measures to	https://doi.org/10.1061/JTEPBS.0000729

			with disabilities. In countries that are characterized by lower inclusion rate of persons with disabilities it is essential to take actions to improve mobility and road safety, increase accessibility to transportation, and encourage new drivers with disabilities. Additionally, training programs and travel planning that focus on people with disabilities should be developed. Key measures to improve transportation, mobility, and road safety for drivers with disabilities are the periodic adjustment of hand controls, development and use of training simulators, promotion of advanced and/or autonomous vehicles, the creation of applications to improve travel planning, support for specific groups, and provision of education regarding dangerous road behaviors.	improve transportation, mobility, and road safety for drivers with disabilities are the periodic adjustment of hand controls, development and use of training simulators, promotion of advanced and/or autonomous vehicles, the creation of applications to improve travel planning, support for specific groups, and provision of education regarding dangerous road behaviors.	
8	1	1	Accessibility measures for robustness of the transport system In the context of transport and land use, accessibility is a core aspect. Hence, ensuring a robust and accessible transport system is a must. Nonetheless, there is currently a lack of infrastructure-based accessibility measures which	Spatial accessibility – Transportation	https://doi.org/10.1007/s11116-016-9701-y

			effectively assess the accessibility of the transport system. Indicators such as comparisons between different geographical areas to evaluate the robustness of a transport system, comparisons of the robustness of an area over time, and analyzing the impact of policy measures in terms of robustness can be used by policy makers to further enhance accessibility for transport systems.		
9	1	1,6	Social benefits of urban green space A conceptual framework of valuation and accessibility measurements Urban green spaces can yield several social benefits and recreational opportunities, improve social ties, and enhance physical health and psychological well-being. However, accessibility and valuation measurements are not always easy to apply. This is particularly true when using single measurements as they are only capable of assessing specific aspects. Measures such as accessibility analysis based on the citizens' viewpoints and valuation according to the providers' views can be used both quantitatively and qualitatively to better evaluate urban green areas. More specifically, qualitative measurements can be further categorized into spatial separation measurement, gravity-based, individual-based, or	Spatial accessibility – Urban accessibility Perceived accessibility More specifically, qualitative measurements can be further categorized into spatial separation measurement, gravity-based, individual-based, or opportunity-based models.	https://doi.org/10.1108/14777831211204921

			opportunity-based models. In terms of accessibility analysis both the views of all citizens as well as of specific groups should be taken into consideration.		
10	1	1	Comparing Transit Accessibility Measures: A Case Study of Access to Healthcare Facilities Ensuring equal access to health facilities is vital. Therefore, different accessibility models and measures have been developed to evaluate accessibility to healthcare. Utility-based, cumulative-based, and gravity-based models are the most widely used categories of accessibility evaluation models. When using spatial accessibility distributions to quantitatively assess the outcomes of these models, each model results in a different and unique accessibility interpretation. However, measurements of the same category most commonly yield interchangeable and comparable results as they define accessibility in a similar manner. Hence, it is vital for policy makers to explicitly identify and select the most appropriate models and measurements. It should also be taken into account that in order to attain even and consistent results for accessibility, accessibility models	Spatial accessibility – Healthcare Utility-based, cumulative-based, and gravity-based models	https://www.cae.utexas.edu/profile/Bhat/ABSTRACTS/Comparing Accessibility.pdf

			that focus closely on true access to activity opportunities and individuals' perspectives should be selected.		
11	1	1,2	Large-scale study of web accessibility metrics Web accessibility metrics abide by specific sets of guidelines or stands. Metrics should be objective, cost-effective, precisely defined, easy to understand, and provide information that leads to meaningful and detailed interpretations. However, it is difficult to identify and use the most proper accessibility metrics due to the sheer number of them, such as Failure-rate (FR), Unified web evaluation methodology (UWEM), A3, Web accessibility barriers (WAB), Overall accessibility metric (OAM), Page measure (PM), SAMBA, Web accessibility evaluation metric (WAEM), Reliability aware web accessibility experience metric (RA-WAEM), Barrier impact factor (BIF), Web accessibility quantitative metric (WAQM), Navigability and listenability, Web interaction environments (WIE), Conservative, strict and optimistic, eXaminator, Web accessibility barrier severity (WABS). Despite their differences these metrics can be grouped into different categories based	Web accessibility Digital content accessibility	https://doi.org/10.1007/s10209-022-00956-x

			on the similarity of their behavior. When taking into account website metrics that regard a website as a web page, the metrics can be grouped into: i) A3, WAEM, and WIE, ii) Conservative, Strict, and Optimistic, iii) FR, iv) UWEM and WAQM, and v) WAB-H and WAB-PZ. When considering the average scores of the web pages', the metrics that behave similarly can be grouped into: i) A3, UWEM and WAQM ii), Conservative, Strict, and Optimistic iii), FR iv), WAEM v) WAB-H and WAB-PZ, and vi) WIE. Knowing which metrics result in similar outcomes can facilitate the selection process by enabling policy makers to select the less resource intensive metrics or the ones that it is easier to collect inputs and data for.		
12	1	1,2	Automatic web accessibility metrics: Where we are and where we can go The number of web accessibility metrics can be attributed to the lack of a coherent assessment framework. When taking factors such as adequacy, complexity, reliability, and sensitivity into account, metrics, such as Web Accessibility Quantitative Metric (WAQM), Page Measure (PM), and Web Accessibility Barriers (WAB), achieve higher quality in terms of accessibility assessment in comparison to A3, Failure Rate	Web accessibility Digital content accessibility	https://doi.org/10.1016/j.intcom.2011.01.001

			(FR), Unified Web Evaluation Methodology (UWEM), and Web Interaction Environments (WIE). However, aspects such as validity, sensitivity, and reliability should also be taken into account and further examined.		
13	1	4	Does competition matter in measures of job accessibility? Explaining employment in Los Angeles The cumulative opportunity measure is widely used to evaluate job and employment accessibility. However, it does not take into account the ever-increasing competition for jobs. Hence, it cannot fully assess workers' access to job opportunities. To better understand employment accessibility both competitive and non-competitive accessibility measures can be used to analyze spatial employment patterns. In densely populated areas, competitive accessibility measures have consistently been associated with employment status as well as with employment-to-population ratios for lower educated populations. In contrast, non-competitive measures are not consistently associated with these aspects. Hence, competitive accessibility measures should be preferred to more accurately evaluate the accessibility and availability of employment	Employment accessibility Competitive and non-competitive accessibility measures	https://doi.org/10.1016/j.jtrangeo.2017.08.009

			opportunities and this is particularly true for disadvantaged populations.		
14	1	4	Measuring the effects of job competition and matching on employment accessibility Several aspects should be taken into account when evaluating employment accessibility. In the context of multi-modal transportation systems, job competition, job proximity, and job matching are some of the aspects that should be considered despite their being less widely used due to the lack of related data. These metrics can provide crucial information about and differences between drive-to-transit and walk-to-transit job seekers. Having household automobile ownership has proven to be beneficial to both auto drivers and transit riders and even more so to less educated or poor job seekers. In the context of large metropolitan areas with limited public transit services, policy makers and planners can capitalize on multi-modal transit systems since they can offer more benefits than the transit systems.	Employment accessibility Multi-modal transportation systems, job competition, job proximity, and job matching Automobile ownership	https://doi.org/10.1016/j.trd.2020.102535

15	1	3	Spatial and social inequities for educational services accessibility - A case study for schools in Greater Mumbai The lack of adequate access to educational services can significantly influence one's overall wellbeing. Simultaneously, the lack of equal opportunities to education can reinforce and increase social inequalities. Hence, evaluating educational accessibility is a vital aspect of modern society. Several factors can be used to evaluate educational accessibility including accessibility ratio, accessibility value via private mode, and accessibility value via public transportation which can be utilized to evaluate measures to address inequalities in access to educational services by public and private modes of transportation. When using continuous and dummy-weighted impedance function in combination with Gini index to quantify spatial inequity and evaluate the educational accessibility distribution and with mode-wise accessibility ratio to quantify educational services, it was revealed that accessibility to educational services by public transport had a higher spatial inequality than by private mode.	Educational accessibility Transportation Accessibility ratio, accessibility value via private mode, and accessibility value via public transportation	https://doi.org/10.1016/j.cities.2021.103543

16	1	3	An Improved Accessibility-Based Model to Evaluate Educational Equity: A Case Study in the City of Wuhan Despite its importance, educational equity has not been widely studied from the spatial accessibility perspective. Methods such as multi-mode Huff two-step floating catchment area (MMH2SFCA) that take into account school attractiveness and multiple travel modes can calculate educational equity, educational quality, and educational accessibility differences. This method extends the existing 2SFCA method as it takes educational quality into account and it does not presuppose that facilities are consistent and that residents travel using a single mode. Additionally, it can more accurately measure the accessibility of educational resources. It was shown that communities within urban centers or areas close to schools are characterized by high accessibility to educational services and most commonly also by higher quality education in contrast to other areas. Therefore, it is suggested that communities that are characterized as having high accessibility to educational services do not always have high educational quality.	Educational accessibility Accessibility of educational resources Transportation	https://doi.org/10.3390/ijgi10070458

17	1	2	Mandate M 376: New Software Accessibility Requirements The European standard (EN 301 549) was created, based on the European Mandate M 376, and focuses on specifying the requirements that ICT tools, services, and products must meet to ensure software accessibility among all groups. There are several accessibility requirements specified within EN 301 549 which, in the case of software, lead to the creation of specific features whose integration can characterize software as accessible. Based on EN 301 549, any software program should non-exclusively have close functionality, provide a user interface, offer two-way voice communication, provide two-way video and voice communication, and offer video playback. Hence, a more accessible software would have to conform to all of the applicable requirements. Although there are several overlapping requirements between EN 301 549 and other standards (e.g., ES 202 975, ISO/IEC 13066-1, ISO 9241-171, etc.), EN 301 549 offers additional requirements that do not appear in other international standards. Some of these new requirements involve subject areas such as biometrics, accessibility features, toggle or locking controls, information conversion, communication services, two-way voice and video	EN 301 549, digital accessibility	https://doi.org/10.1016/j.procs.2014.02.030

			communication, and meaningful representation of content. However, to ensure high accessibility in any software product, accessibility should be integrated throughout the standard development process.		
18	1	3	Rethinking the accessibility of online higher education: A historical review Online education is becoming more prominent. Hence, it is essential to ensure high accessibility to quality online education by integrating sophisticated approaches and particular pedagogical components. However, increasing accessibility of online higher education constitutes a multidimensional and complicated social issue. The approaches to be developed should not be characterized by single pedagogy-focused views nor be entirely determined by new technologies. Instead, it should take into account the potential issues, limitations, and challenges that the adoption and integration of new technologies could bring. Using such approaches would enable the evaluation of the accessibility of online education regarding its effectiveness to serve the underserved and whether the practices adopted coped with the	Educational accessibility - Digital accessibility Online learning accessibility	https://doi.org/10.1016/j.iheduc.2017.01.001

			requirements of service-oriented distance students while simultaneously catering for the needs of the underserved.		
19	1	3	Design and Development of Accessible Educational and Teaching Material for Deaf Students in Greece To develop accessible educational material, it is important to also take sign language as the main access mode into account when teaching nursery and primary education deaf students. Hence, it is essential to adapt current textbooks using digital technologies to be fully accessible by all students following standards, such as Web Content Accessibility Guidelines (WCAG) 2.0. Following best practices to create appropriate material, such as natural variations in signs and teacher education, sign selections and associations, choosing signers, in-service professional development, and filming strategies, could further enhance accessibility. Using multimedia to teach can increase students' interest and enjoyment in the learning material and improve their mental imagery. However, it is equally important to provide efficient training to teachers on how to introduce new tools in their classrooms, use different	Educational accessibility - Digital accessibility Natural variations in signs and teacher education Sign selections and associations Choosing signers In-service professional development Filming strategies	https://doi.org/10.1007/978-3-642-39194-1_20

			communication means and modes, utilize appropriate educational material and techniques, and how to effectively use digital tools.		
20	1	3	The Unexpected Pedagogical Benefits of Making Higher Education Accessible Although increasing flexibility and affordability can be a means through which accessibility can be improved, pedagogy can be negatively affected. However, there are features that can yield favorable outcomes for both pedagogy and accessibility. Programs that focus on addressing key barriers by providing schedule and geographic flexibility, economic affordability, and increased inclusivity can result in enhanced accessibility. Additionally, programs that put emphasis on adopting student-initiated, parallel, extended, and self-documented discussions, providing expert-level peer feedback and reliable teaching assistants, and promoting organic student-to-student and student- instructor interactions and help-seeking can bring about various pedagogical benefits. Programs that adopt the aforementioned practices and methods can achieve a mutualistically positive relationship between accessibility and pedagogy.	Educational accessibility flexibility and affordability Programs that focus on addressing key barriers by providing schedule and geographic flexibility, economic affordability, and increased inclusivity can result in enhanced accessibility. Additionally, programs that put emphasis on adopting student-initiated, parallel, extended, and self-documented discussions, providing expert-level peer feedback and reliable teaching assistants, and	https://doi.org/10.1145/2876034.2893383

				promoting organic student-to-student and student-instructor interactions and help-seeking can bring about various pedagogical benefits. Programs that adopt the aforementioned practices and methods can achieve a mutualistically positive relationship between accessibility and pedagogy.	
21	1	3	Developing inclusive educators: enhancing the accessibility of teaching and learning in higher education There are several factors that must be taken into account to enhance accessibility and inclusivity of teaching and learning in higher education. Teachers play a vital role in the educational process. Hence, it is important to establish effective development initiatives that will improve educators' pedagogical skills, assist them in anticipating and handling accessibility concerns and in designing educational material	Educational accessibility - Digital accessibility Training-development initiatives that focus on discipline-specific and cross-campus training opportunities and provide discipline-specific and interdisciplinary inclusivity	https://doi.org/10.1080/1360144X.2016.1181071

			and activities which will proactively minimize the barriers. These initiatives should focus on providing professional development emphasizing accessibility training and inclusive teaching methods as well as increasing the awareness of universal instructional design and of existing training programs, such as the one created by the Accessibility for Ontarians with Disabilities Act (AODA). To transform and enrich the existing inaccessible teaching practices, design strategies that focus on co-designing with students approaches and open discussions are encouraged. Moreover, these initiatives should offer both discipline-specific and cross-campus training opportunities and provide discipline-specific and interdisciplinary inclusivity and accessibility training.	and accessibility training. co-designing with students	
22	1	5	Approaches in museums towards disability in the United Kingdom and the United States. The enactment of the UK Disability Discrimination Act (DDA) in 1995, along with subsequent amendments, signaled the incorporation of disability and access considerations in the museum sector. It has been demonstrated that attitudes toward disability and social inclusion, both before and after the implementation of accessibility legislation in the UK and USA in 2001 and 2003,	UK accessibility legislation, accessible exhibitions in museums	https://doi.org/10.1080/09647770.902731759

			continue to be ambivalent. Numerous museums had to reevaluate the scope of their accessibility for individuals with disabilities, considering various approaches such as the social change approach, the pragmatic approach, the target group approach, the expert approach, and the curatorial approach. The study indicates that exhibitions in museums extensively adapted for individuals with visual impairment and deafness are exceedingly scarce and lack specific guidance.		
23	2	5	Universal Design Guidelines for Public Programs in Science Museums NISE Network programs provide several guidelines regarding the universal design and the inclusivity in Science Museums. Appendix is a web-based platform that aims to evaluate the level of accessibility in museums and the websites. The museums aim to engage as many individuals as possible through diverse engagement methods, ensuring inclusive physical and sensory access to all aspects of a program, including the use of visual equipment, tactile images, and repetition of main ideas, etc. By following the appropriate guidelines, exhibitions can be more specific and tailored to accommodate individuals with disabilities. It is advisable to	Physical and sensory access in Science Museums, Inclusivity and Universal Design	https://www.nise.net.org/sites/default/files/UniversalDesignGuidelinesPrograms_Guide_May10.pdf

			utilize checklists designed to assist museum experts in enhancing the accessibility of exhibitions.		
24	2	6	Tourism Access and Inclusion: Best Practice Guidelines for Tourism MSMEs in APEC The document records the outputs of a webinar series organized by the APEC Tourism Working Group in cooperation with the Australian Department of Foreign Affairs and Trade in 2021. The main topic of the webinar is accessible tourism which is the application of universal design principles by the tourism professionals. Tourism experts are recognizing more and more that inclusive tourism is the new economic opportunity. Key elements for creating accessible businesses are access guides, accurate and accessible information, staff training and adherence to universal standards. The report provides numerous links and resources of inclusive tourism industry.	Physical accessibility in Transportation, Accommodation, Tourism Sites.	https://www.accessibletourism.org/resources/11_best_practices_tourism_apec_en.pdf
25	3	3	Harmonisation of certain aspects of copyright and related rights in the information society. Directive 2001/29/EC addresses the harmonization of copyright and related rights within the information society, aiming to ensure that the legal	Accessibility of copyrighted materials	https://eur-lex.europa.eu/legal-content/EN/TXT/

			framework keeps pace with technological advancements. A significant focus of the directive is to enhance the accessibility of copyrighted materials for persons with disabilities. Specifically, the directive permits Member States to introduce exceptions or limitations to copyright laws to facilitate access for persons with disabilities. Article 5(3)(b) of the directive explicitly allows for such exceptions when they are directly related to the disability and are non-commercial in nature, ensuring that these adaptations are adequately tailored to the needs of disabled persons.		PDF/?uri=CELEX:32001L0029&qid=1716968970290
26	4	6	Voyage of discovery. Working towards inclusive and accessible travel for all The study presents four key elements to make travel more accessible: effective communication, well trained customer's service staff, internationally recognised standards for accessible travel and tourism and a tailored travel experience for any tourist category. The travel sector should include accessibility as the basic requirement from the inception of the product lifecycle. Companies are prioritizing more and more accessible travel due to the added value, raised quality, and the potential for differentiation.	Accessibility in air travel, trains, accommodation	https://amadeus.com/en/insights/research-report/voyage-of-discovery-working-towards-inclusive-and-accessible-travel-for-all

27	2	1	ADA Checklists for existing facilities Regarding to ADA (Americans with Disabilities Act), accessibility criteria this study endeavors to offer valuable insights by furnishing a meticulously crafted checklist designed to facilitate the assessment of physical accessibility in public buildings such as banks, markets, fitness centers, etc., and self- services like Aligned with universal standards and measurements, the checklist underscores the imperative for all public buildings to be easily accessible to individuals with or without disabilities, ensuring the availability of accessible entrances, commendable services, and adherence to safety standards. The checklist encompasses crucial aspects such as physical infrastructure, safety measures (accessible controls, signs, etc.), navigation (accessible routes), parking facilities, ramps, and accessibility features for approach, entrance, goods and services, public toilet rooms, as well as amenities like water fountains.	Physical accessibility in Public buildings, navigation, accessible facilities, safety measures	https://www.humancentereddesign.org/ https://www.adata.org/
28	3	6,7	DIRECTIVE 2009/45/EC on safety rules and standards for passenger ships The purpose of the Directive is to introduce a uniform level of safety on passenger ships and define	safety requirements in passenger ships for people with disabilities	https://eur-lex.europa.eu/legal-

			procedures with the aim of harmonisation of the international rules. In article 8 the safety requirements for persons with reduced mobility (including persons with sensory and learning disabilities) are described. It is stated that any measure taken should be based on the guidelines in Annex III that require safe access and accessible signs, communication messages and alarm systems. In applying the guidelines of this Annex, Member States shall follow the IMO circular MSC/735 of 24 June 1996.		content/EN/TXT/PDF/?uri=CELEX:32009L0045&qid=1704221499691
29	3	6	Regulation (EU) No 1177/2010 concerning the rights of passengers when travelling by sea and inland waterway and amending Regulation (EC) No 2006/2004. Disabled persons should be accepted for carriage and not refused transport. Concerning the design of new ports, particular consideration to 'design for all' principles should be taken into account. Regarding offering assistance to persons with disabilities the carriers should take into account the provisions of the International Convention and Code on Standards of Training, Certification and Watchkeeping for Seafarers and the Recommendation of the International Maritime Organisation (IMO) on the design of passenger ships to respond to their	accessible information in ports and ships, staff training	https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R1177&qid=1704319789070

			needs. All the information should be provided in formats accessible to disabled persons. The rights of disabled persons are addressed in chapter II.		
30	3	6	Regulation(EC) No 1107/2006. The rights of disabled persons and persons with reduced mobility when travelling by air. Disabled people should always be accepted onboard and not refused transport unless there are safety reasons that are prescribed by law. Assistance should be provided at the airport and on board aircraft, by the necessary staff and equipment without additional charge (document 30 of the European Civil Aviation Conference (ECAC), Part I, Section 5 and its associated annexes and in particular the Code of Good Conduct in Ground Handling for Persons with Reduced Mobility of Annex J should taken into account). All the necessary information for air passengers should be also provided in alternative formats accessible to disabled persons.	accessible information in airtravel, staff training	https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32006R1107&qid=1704319946977

31	1	3	Inclusion, access, and accessibility of educational resources in higher education institutions: exploring the Ethiopian context Anti-discrimination laws are set to ensure equal access to education and educational resources for everyone. However, there still remain open issues that must be considered and addressed. Specifically, to improve educational accessibility, learners' diverse background, access to information and communication technologies (ICT), ICT literacy, as well as budgetary and structural issues should be taken into account. Moreover, accessibility problems, such as the lack of educational content in alternative formats, the lack of appropriate educational resources, and issues in information architecture and interface designs, further hinder educational accessibility. Institutional problems should also be recognized as there is a clear lack of proper institutional guidelines, procedures, and policies, of ICT training facilities, and of sensitive to accessibility and the needs of students with disabilities faculty and assistants. By further extending the universal design principles and taking both technical and non-technical elements into account, the gap between laws and their implementation can be bridged. Additionally, the	Accessible educational resources	https://doi.org/10.1080/13603116.2020.1817580

			realization of civic organizations that focus on people with disabilities and the transformation of libraries into learning and information commons could further improve educational accessibility.		
32	1	3	Increasing faculty's competence in digital accessibility for inclusive education: a systematic literature review Despite the several merits that the use of information and communication technologies (ICT) has brought about in the educational sector, it has also created new challenges and barriers for students with disabilities that are mostly associated with the inaccessibility of learning material and digital tools. Additionally, there is a clear lack of widely accepted evaluation instruments and objective data to effectively assess educational accessibility. However, there are some general recommendations and factors that could lead to improved accessibility in education. Providing faculty with adequate training to offer inclusive and accessibility learning environments, activities, and material is one of the main factors that should be considered when evaluating accessibility in educational settings. Additionally, offering tailor-made and	Digital accessibility, digital content accessibility, information and communications technology (ICT), higher education, faculty training, and accessibility skill gap	https://doi.org/10.1080/13603116.2021.1937344

			motivating training programs that focus on the universal design for learning (UDL), on accessibility guidelines and standards (e.g., web content accessibility guidelines (WCAG)) as well as on relevant regulations and legislation could further increase institutional competence. Hands-on experiences and practice with assistive technology (AT), participants' background, needs, and knowledge levels, students with disabilities (SWDs) active involvement, use of commonly accepted instruments (e.g., Inclusive Teaching Strategies Inventory (ITSI) questionnaire), and following the appropriate privacy and ethical guidelines are some additional factors to be taken into consideration.		
33	1	3	Towards accessible open educational resources: Overview and challenges Open educational resources (OER) can improve accessibility in education when properly integrated into educational settings. However, there are several challenges of OER accessibility. Specifically, current OER guidelines are, in many cases, too complex to adopt and implement, hinder innovation and creativity, and do not involve people with disabilities when educational material is developed. Additionally, when adopting the existing OER	Accessible educational resources, Digital content accessibility	https://doi.org/10.1109/ICTA.2017.8336068

		guidelines according to accessibility guidelines (e.g., Web Content Accessibility Guidelines (WCAG) 2.0), there still remain issues, such as dealing people with disabilities as a homogenous group, transforming educational material can be time and resource consuming, and avoiding using specific or emerging technologies. Practices such as raising awareness, using open licenses and formats, specifying learning needs, supporting keyboard control and flexible styling, offering text and audio descriptions and text captions, and adhering to international standards of interoperability, can help address OER accessibility issues. The development of accessible and inclusive OER can be facilitated by ensuring that the educational material meets the needs of the learners and the subject, by offering OER in various accessible formats that are accessible through different means and learning environments, by improving network infrastructures, by ensuring that the principles of inclusiveness and equality are present throughout the global OER community. Finally, OER systems should focus on metadata standards, personalization, and ensure accessibility based on widely accepted standards.		

34	1	5	3D printing for cultural heritage: Preservation, accessibility, research and education. Multi-sensorial cultural experiences such as tactile reproductions of the exhibits in a museum benefit accessibility for various groups, including those with learning difficulties, children, the elderly, and blind or visually impaired visitors. 3D Printing is undergoing rapid technological changes, offering the potential to scan, print and manipulate objects in any shape and size. In addition, tactile photography is another method that aims to convey visual information through the sense of touch and it can be applied to a wide range of subjects in museums including statues and digital images of the exhibits. Currently, there are no established standards for converting objects into multi-sensory 3D models that ensure optimal information transfer. However, in the future it is very important to develop some general guidelines for 3D printed tactile models based on the Design for All approach.	Multisensory access in museums, 3D printing and digital images	https://doi.org/10.1007/978-3-662-44630-0_9
35	4	5	Assessment method of accessibility conditions: how to make public buildings accessible?. The study utilized a method known as guided walks, developed by Dischinger, to	Accessibility in Public buildings for people with visual impairments	https://doi.org/10.3233/WOR-2012-0675-3774

		identify challenges related to spatial orientation, communication, movement, and the use of equipment/furniture in historical structures, particularly for people with disabilities. This method was employed to understand the specific difficulties faced by disabled individuals when visiting and navigating museums independently. Participants in the study included people with various disabilities, such as those who are deaf, blind, or wheelchair users. Their task involved visiting all exhibit rooms and restrooms, and interacting with staff to aid their independent navigation. The findings revealed that all participants encountered difficulties with spatial orientation and navigating through different areas. Those with visual impairments faced additional challenges due to the lack of tactile and audio information. Most visitors were unable to navigate independently because of insufficient signage, leading to difficulties in locating exits. The study highlighted that, unquestionably, many museums and exhibitions remain inaccessible, posing significant challenges for visitors with disabilities.		

36	1	5	Proposal of a tangible user interface to enhance accessibility in geological exhibitions and the experience of museum visitors. The paper examines the design and visitor engagement with an accessible Tangible User Interface (TUI) at the MM Gerdau exhibition. The focus is on enhancing the visitor experience through the presentation of four geological samples: fossilized wood, aquamarine, muscovite, and flint. A Tangible User Interface integrates physical objects and their manipulation to interact with digital information. Visitors interacted directly with these geological samples to obtain related information. The interactive system's design draws from recognized theories and principles in interaction design. This approach ensures that the system's digital components effectively respond to user interactions, making the product both easy and enjoyable to use. Participants, including those with visual impairments, reported having a positive experience with the interface.	Accessibility in geological exhibitions, accessible interaction with digital information	- https://doi.org/10.1016/j.procs.2016.09.232
37	1	5	Telerobotic haptic exploration in art galleries and museums for individuals with visual impairments. The paper presents a haptic telepresence system specifically	Multi-sensory access in art exhibitions and museums	https://doi.org/10.1109/TOh.2015.2460253

			designed for users with visual impairments. This proposed system allows real-time haptic exploration of distant 3D environments, such as art galleries and museums, incorporating a telepresence robot, RGB-D sensor (color and depth camera), and a haptic interface. The study explores two scenarios: mobile navigation and object exploration in a remote setting, involving both visually impaired and sighted participants. In the experiments, three sets of 3D objects (3-4 objects per set) were presented to users through haptic experience in 10 scenes chosen for three experiment sets: Museum 1, Museum 2, and Gallery. The suggested approach involves employing telerobotics with a haptic display to enhance telepresence for individuals with visual impairments (VIs).		
38	1	5	Don't touch! Hands off! Art, blindness and the conservation of expertise. The study focuses on the significance of sensory and interactive engagement in museums, highlighting its role in enhancing access to exhibitions for both disabled and non-disabled visitors. It particularly addresses the challenges faced by blind individuals in appreciating cultural heritage due to limited access.	Tactile and sensory access in museums for individuals with visual impairments	https://doi.org/10.1177/1357034X04041761

			Emphasizing the importance of haptic experiences, the research advocates for learning opportunities in museums tailored for visitors with visual impairments. However, concerns are raised about the potential damage to delicate artifacts, such as sandstone, which can be easily stained, and other fragile exhibits. This makes providing sensory access challenging. To address this, some museums have implemented permanent exhibitions and guided tours featuring replicas of certain exhibits for tactile exploration. Additionally, recommendations suggest the use of gloves or alternative methods to enable visitors to interact with the exhibits safely, thus preserving the integrity of the artifacts while promoting inclusivity.		
39	4	5	The haptic museum. Haptic devices, such as the Phantom and the CyberGrasp, significantly enhance the exploration of art objects in museums, enabling both staff and remote visitors or students to collaboratively examine artworks. These devices address the limitations of vision in capturing certain aspects of exhibits, like texture and weight. The Phantom, a desktop device, offers force feedback to the user's fingertip, allowing for the detailed exploration of virtual object surfaces. In contrast,	Haptic devices for sensory exploration, virtual objects	https://www.academia.edu/download/87357196/eva2000.pdf

			the CyberGrasp provides a whole-hand force-feedback experience with a network of “tendons” that transmit grasp forces to the user’s fingers and palm, facilitating the handling of virtual objects. This technology allows users to not only see but also feel the shape and texture of virtual representations of items like pottery or art glass models. Both devices empower remote museum visitors to interact with art object models via the Internet or other networks, providing a more immersive and comprehensive understanding of the art.		
40	2	5	Building Access: A good practice guide for arts and cultural organizations. According to the Arts Council of England there are some key points as guidance based on the Equality Act (2010) that aim to support planning and implementing an access strategy in buildings and cultural exhibitions. An access audit is a crucial step in ensuring a building is accommodating to the needs of D/deaf and disabled individuals, including both visitors and staff. It helps identify any barriers that need addressing in a construction or renovation project. To effectively integrate these considerations into the design process, it's recommended to appoint an access consultant early on. This consultant should be involved in all	Accessibility plans and policies in public buildings and museums	- https://www.arts-council.org.uk/sites/default/files/download-file/Building_access_guide_260319_0.pdf

			stages of the accessibility design process, collaborating closely with architects, cost consultants, and conservation consultants, especially for heritage properties. Their responsibilities include conducting access design reviews and preparing access statements, as well as overseeing post-planning design changes, and providing staff training in disability awareness and equality. During construction, the consultant should perform site inspections to ensure continued compliance with access requirements. Additionally, updating access policies and management strategies to reflect any changes in the building is essential. To enhance accessibility, consider adding virtual tours and visual maps for pre-visit familiarization, along with British Sign Language and audio descriptions. Regular meetings with the Access Advisory Group and ongoing training in mental health and enhanced disability awareness are crucial to support the team and maintain an inclusive environment.		
41	1	5	Blind MuseumTourer: A system for self-guided tours in museums and blind indoor navigation. The "Blind Museum Tourer" project marks a significant advancement in aiding the blind and visually impaired (BVI) community, focusing on developing an indoor interactive autonomous navigation	Accessible navigation in museums high-tech applications, self-guided museums tours for	https://doi.org/10.3390/technologies6010004

			system tailored for self-guided museum tours. This innovative system, currently under pilot evaluation at the Tactual Museum in partnership with the Lighthouse for the Blind of Greece, integrates a range of technologies to ensure BVI accessibility. It features an Android application, named Blind IndoorGuide, which utilizes advanced indoor positioning systems including Bluetooth Low Energy (BLE) beacons and inertial dead-reckoning. These technologies not only enhance the application's functionality through precise location determination but also include features like WLAN connectivity and tactile route guidance. The underlying concepts, particularly map matching for indoor navigation, hold potential for broader applications in various complex indoor environments, such as hospitals, shopping malls, airports, and train stations, promising a more accessible world for the BVI community.	individuals with visual impairments	
42	2	5	Exhibitions for All A practical guide to designing inclusive exhibitions. This guide is crafted with a focus on accommodating disabled individuals, adhering to the legal standards set by the Building Regulations and the Disability Discrimination Act (1995). It also embraces the principles of	Universal Design for Physical accessibility in museums, guidelines for accessibility to the exhibitions and services of	https://www.scribd.com/document/339456915/E

		Inclusive or Universal Design. The guide covers a comprehensive range of design aspects including entrances and doors, ramps, stairs, lifts, signage, orientation, and exhibition planning. Key considerations extend to exits, escape routes, seating, rest areas, and the design of showcases and object displays. It also delves into interactive displays, with a detailed focus on exhibition graphics and labels – encompassing text writing, word counts, positioning, layout, and the use of pictorial information. The guide emphasizes the importance of alternative label formats and explores typography and layout principles, such as type style, weight, effects, color, and background contrast. It addresses the technicalities of printing on various textures, including reversed text, leading, letter, and word spacing, line lengths, columns, justification, hyphenation, and text orientation. Illustrations, text, audio-visuals, and subtitles are also considered, along with the production and appearance of subtitles and strategies for presentations without them. Finally, it provides guidelines on lighting for entrances and main routes, specifying light levels and the quality/color of light.	the museums including multi-sensory exploration	xhibitions-for-All-NMScotland

43	2	6	Inclusive and accessible travel guidelines. These guidelines are based on perspectives from private sector leaders, travel professionals and disability experts and also research from intergovernmental organizations. They are scalable and can be adapted in small or bigger travel businesses. It is crucial for tourism businesses to develop a high level inclusive system and to make this happen an accessibility expert would be extremely beneficial. They should also try conducting research with tourists with disabilities to avoid making assumptions about their disability, have like-minded accessibility values and standards with the businesses that they would cooperate with, make their marketing inclusive and engage with industry bodies and local governments to share visitor feedback.	Accessible services for tourism businesses	https://wttc.org/Portals/0/Documents/Reports/2021/Inclusive%20Accessible%20Travel.pdf?ver=2021-05-04-115923-407
44	1	5	Everyone's Welcome: The Americans with Disabilities Act and Museums. This manual is a comprehensive guide to help museums become accessible to everyone, including individuals with disabilities, in line with the Americans with Disabilities Act 1990 (ADA). It begins with an introduction discussing museum attendance, accessibility, universal	Legislation of the accessibility in museums, accessible facilities and exhibits	https://eric.ed.gov/?id=ED437754

			design, and various disabilities. The first chapter, "ADA Basics for Museums," covers the essentials of the ADA and specifies the legal obligations of museums under this law. The second chapter, "A Strategy for Accessibility," proposes a nine-step approach to achieve ADA compliance, including steps like creating an accessibility statement, appointing an accessibility coordinator, forming an advisory council, staff training, evaluating current facilities and programs, planning for accessibility, promoting accessibility, establishing grievance procedures, and continuously reviewing access efforts. The third chapter, "Accessible Facilities and Exhibits," provides detailed, practical advice on designing accessible exhibits and programs. The final chapter, "Content Communication," explores alternative methods for museums to effectively convey information about their collections to all visitors.		
45	1	5	Arts Accessibility for the Deaf. The booklet suggests various measures to enhance arts accessibility for the deaf, such as staff awareness training, building a deaf audience, and program design considerations like visual cues, lighting, emergency warnings, acoustics, and hearing amplification. It provides guidance on design resources, how to connect with	Accessible facilities and exhibits for people with hearing difficulties, accessibility in art and entertainment	https://eric.ed.gov/?id=ED213235

			the deaf community, find deaf artists, and engage deaf audiences. This manual is a significant resource for cultural organizations and institutions aiming to make the arts more accessible to the deaf community. It highlights the presence and role of deaf individuals in American history and the arts, highlighting the silent film era as a significant period. The booklet includes 36 theaters dedicated to the deaf and 18 mainstream theaters that are accessible to the deaf. It also covers the representation of deaf characters in television shows, entertainment and news programs tailored for the deaf, educational television, closed captioning, and videodisks. Furthermore, it explores resources related to deaf dance, music, and visual arts, including museums that offer interpreted tours or special programs for the deaf.		
46	2	6	Accessible events. A guide for meeting and event organisers. This is a comprehensive guide for professionals of event planning and catering sector and it emphasizes the importance of accessibility in every event and also the accessibility in the information about the events. It suggests that the planning should take into account the Disability Discrimination Act (1992) and the local (Australian)	Physical accessibility in event venues, parking, drop-off points, lifts. accessible web site written, visual, audio information staff training	https://www.meetingevents.com.au/sites/default/files/uploaded-content/website-content/accessib

			state/territory anti-discrimination laws. The guide focuses on various aspects of accessibility, including venue access, parking, ramps, drop-off points, and lifts. It suggests using resources like Google Maps for accurate accessibility directions and information. It highlights how important early planning is, how beneficial it would be to involve people with disabilities, booking services such as sign language interpreters in advance, and having the contribution of an access expert for larger events. Additionally, it emphasizes the need for venues to communicate their accessibility standards and provide information on accessibility features.		le_events_guide.pdf
47	2	6	Travel guide for people with disabilities. The guidebook is created by Herkes İçin Turizm Derneği (Association of Tourism for All) with the support of the EU Sivil Düşün Programme. In order to collect traveller's experiences they held various meetings with a range of disability groups. The guidebook includes information about the association, the travelling experiences of people with different disabilities, the rights of travelers and complaint mechanisms in Turkey and supporting organisations. It also provides practical information for tourists	Accuracy in the information regarding the accessibility of the accommodation and travel destinations	https://www.accessibletourism.org/resources/accessible-tourim-guide-2021-english-ingilizce--engelli-seyahat-kilavuzu.pdf

			with disabilities that would visit their country. In the end of the document a list of accessible beaches is provided.		
48	1	5	The dubious inheritance of touch: Art history and museum access. The study emphasizes the significance of Touch the Exhibits in a museum which aims to provide accessibility and inclusivity. Museums are becoming more adaptable to their policies than used to be, creating many replicas of the exhibits to cater to a broader audience. According to Candlin, 2006, the combination of tactile interaction, Braille labels, audio- guides, and large prints can enable visitors to access and appreciate cultural heritage more effectively. It is submitted that the visual understanding of objects relies on tactile exploration. This is attributed to the wealth of information, such as weight, texture, temperature, and depth, that vision alone cannot capture. Additionally, some individuals comprehend information better through "bodily-kinesthetic" intelligence, making tactile exploration crucial for their understanding.	Multisensory access to the exhibitions through touch and audio	https://doi.org/10.1177/1470412906066906
49	2	5	VOCALYES Museum Access Information Guidelines (2016). VOCALYES, a UK initiative, is dedicated to enhancing accessibility standards for individuals with visual	Accessibility standards for people with visual impairments in the cultural	https://vocaleyes.co.uk/wp-content/uploads/

		impairments at museums, galleries, and heritage sites. The State of Museum Access 2016, aligned with the Equality Act 2010, offers valuable insights into accommodating people with visual impairments and diverse disabilities. According to this guidance, the website should apply to the accessibilities standards which are to provide text-to-speech functionality, screen magnification software, and to ensure. Additionally, all museums should have available an accurate Accessibility Policy Statement that gives valuable information about the accessibility provision. The initiative advocates for access to exhibits through clear or tactile images and audio-described tours, as well as the provision of videos and downloadable documents with large print options and sufficient contrast for readability. Ensuring constant support for accessibility requirements, the initiative emphasizes accessible entrances and exits with visualized information and support through tactile maps. Recognizing the presence of guide dogs, it underscores the importance of suitable facilities such as water bowls. Utilizing social media, the initiative encourages museums to publicize comprehensive accessibility information on their websites to encourage people with disabilities to make	heritage, physical accessibility and access to the information	2016/12/Museum-access-information-guidelines-2016-VocalEyes.pdf

			a visit. Finally, museums should actively solicit feedback from visitors with disabilities to enhance their facilities.		
50	2	1	2015 Facility Accessibility Design Standards, City of Mississauga The City of Mississauga has developed and compiled a handbook detailing the accessibility standards required for the city to become more accessible and inclusive. This handbook, titled 'Facility Accessibility Design Standards, 2015,' draws upon Universal Design principles and guidelines, the Ontario Building Code (OBC), the Accessibility for Ontarians with Disabilities Act (AODA), and the CSA Standard B651 - Accessible Design for the Built Environment. The guidelines encompass a wide range of accessibility aspects, with a significant focus on mobility, including access to buildings, stairs, ramps, lifts, and corridors. Additionally, the handbook addresses risk assessment and safety considerations. It also includes specific requirements for various facilities such as libraries, swimming pools, and police stations. Guidance on accessible controls and systems, including lighting, visual alarms, assistive technology, and signage, is provided. The guidelines are detailed and feature precise measurements, making this handbook a valuable	Accessible Design for the Built Environment	https://www.mississauga.ca/file/COM/City_Of_Mississauga_Facility_Accessibility_Design_Standards.pdf

			resource for understanding and implementing accessibility requirements.		
51	1	5	Improving the museum experiences of children with autism spectrum disorders and their families: An exploratory examination of their motivations and needs and using Web-based resources to meet them. The study focuses on two primary research questions: firstly, whether museums motivate families with children on the Autism Spectrum Disorder (ASD) spectrum to visit, and secondly, the extent to which web-based museum resources can enhance accessibility for these families. The methodology employed involved initial questionnaires followed by in-depth interviews. A significant contribution to this study was the use of museum websites that provided accessible materials for children with ASD. These materials included printable booklets featuring numerous visuals, which helped prepare the children for what to expect from each museum's exhibits. Participants who had visited museums reported that these experiences were highly valuable for their children, allowing them to engage with and appreciate cultural heritage. Museums that offer inclusive environments were particularly noted for enhancing the	Accessible museums for children on the Autism Spectrum Disorder (ASD) spectrum, Inclusive environments in the cultural heritage	https://doi.org/10.1111/cura.12031

			enjoyment of these children. Additionally, families reported that museum visits were quality time spent together, as the children were able to learn, interact, and draw inspiration from the exploration of various exhibits.		
52	2	6	Access to Hotels for People with Hearing Loss. This guide is about inclusive hospitality for guests with hearing loss, which can be mild, average or profound loss. Additionally, it can be accompanied by other disabilities. The guide emphasizes a form of design mainly adaptive, effective communication methods, and assistance dogs. Key elements presented are: accessible lighting, acoustics, signage, accessible systems for online booking, text relay services and visual emergency alerts. Training the staff in clear communication and awareness of assistive technology plays a crucial role in developing an inclusive environment. Some of the recommended items in this guide are marked as '(AD M)'. These are requirements of Approved Document M (Access to and use of Buildings) Volume 2 - Buildings other than dwellings.	Hotel rooms design, lighting, acoustics, signage, visual emergency alerts. Staff training in communication and assistive technology	https://caeorg.b-cdn.net/wp-content/uploads/2015/06/161111-lhN-Access-to-hotels-for-People-with-hearing-Loss.pdf
53	2	5	Easy Access to Historic Buildings. This guide examines inclusive access to historic buildings. The main goal is	Floors, entrances, doors, ramps, thresholds, stairs,	https://historicengland.org.uk/ima

			removing barriers and preserving cultural heritage at the same time. The Equality Act mandates adjustments for accessibility that are in alignment with the principles of the science of conservation. All the processes should combine inclusion and preservation of the historic past. Every change should be reversible and justified and therefore consultation with experts would be beneficial. The document provides practical advice for balancing conservation and accessibility. Additionally, lists of primary legislation and policy documents are provided on the last pages.	handrails, lifts in historic buildings lighting, signs staff training access information in advance	ges- books/publicatio ns/easy-access- to-historic- buildings/heag0 10-easy-access- to-historic- buildings/
54	2	1	Volume 2 of the Building Regulations 2010 in the United Kingdom "Access to and use of buildings - buildings other than dwellings." Building Regulations 2010 in the United Kingdom consists of several parts that cover various aspects of building construction and safety. Volume 2 of the Building Regulations 2010 provides guidelines and requirements related to accessibility and usability of the buildings. It aims to ensure that buildings, other than dwellings (such as commercial, industrial, and public buildings), are designed and constructed to be accessible to all individuals, including those with disabilities. The regulations set out standards for features	Physical accessibility in buildings, standards and guidelines	https://assets.publishing.service.gov.uk/media/60b0ea89d3bf7f43560e324a/Approved Document M vol 2.pdf

			such as ramps, stairs, doors, corridors, and facilities within the building to ensure that they are easily and safely accessible for everyone. These regulations are in place to promote inclusivity and to ensure that buildings are designed with the needs of a diverse range of users in mind. Compliance with these regulations is typically mandatory for new construction or significant alterations to existing non-residential buildings in the UK.		
55	2	1	Building Regulations 2010 in the United Kingdom, 'Protection from falling, collision and impact.' Building Regulations 2010 in the United Kingdom aim to establish safety standards to minimize the risk of accidents related to falling, collisions, and impacts within and around buildings. These regulations are part of the broader Building Regulations, which set out the minimum standards for the design, construction, and alteration of buildings to ensure the health and safety of occupants and others. The specific provisions related to protection from falling, collision, and impact address specific aspects. The first is 'guarding against falling' which includes safety requirements to prevent visitors from falling from internal and external edges of floors, balconies, ramps and stairs.	Health and safety for people with disabilities, Inclusivity, protections from falling, collision and impact.	https://www.gov.uk/government/publications/protection-from-falling-collision-and-impact-approved-document-k

			Secondly is the 'protection from collisions' which involves measures to prevent people from colliding with features in and around the building. For example, regulations may address the need for protective barriers or markings to prevent accidental collisions with glass surfaces or other obstacles. Last but not least the 'impact resistance,' represents the rules that certain parts of a building need to be strong enough to handle hits without causing harm. This could mean using specific materials in some places or adding extra protection in busy areas.		
56	1	5	Accessibility of European museums to visitors with visual impairments. The primary aim of the study is to assess and analyze the strategies that museums use to provide accessibility to people with visual impairments. The study included four European cities London, Paris, Madrid and Lisbon and the data were collected through observations and semi- structured interviews. The museums that had been selected for the study were the ones with the highest number of visitors in each city, and there were 28 museums in total. The aim was for each museum to adopt strategies to improve the accessibility physically at the sites and mentally, giving access to the information of the exhibits such as audio guiding,	Physical accessibility and access to information in museums in the European countries for individuals with visual impairments	https://doi.org/10.1080/09687599.2016.1167671

			the indoor design and lighting etc. The results of this study show that museums in these four European cities have been rated quite highly accessible regarding the accessibility in the sites. However, the accessibility to information for the visitors with visual impairments was very limited. According to the outcomes of the study, European museums should make a big effort to improve and to implement more accessibility standards and strategies across all aspects such as the space and information provision.		
57	1	5	Re-imagining the museum through “touch”: Reflections of individuals with visual disability on their experience of museum-visiting in Greece The study aims to get information about the existing accessibility for visitors with visual impairments into the cultural sites and the exhibits, to get positive and negative feedback and to collect their recommendations to improve accessibility. The study took place in Greece and thirty visitors with visual impairments participated. The data had been collected through face to face semi- structured interviews. Results reveal that most of the visitors appreciate and value the cultural heritage sites a lot, believing that this kind of experience is very unique for each	Multi-sensory access in museums for people with visual impairments through touch and challenges and difficulties of accessibility	https://doi.org/10.1016/j.alter.2014.12.005

			person. However, there are some significant challenges that make the museums inaccessible to people with visual impairments such as the fact that they are not allowed to touch the exhibits. According to the participants another challenge is the inexperience of the staff that are not trained suitable in order to support visitors with sensory needs. Furthermore, most of the buildings are not easily navigated without reference points for people with sensory needs. Finally, participants speak about accessibility through touch to most of the exhibits, training for the staff, special museum programs, museum interior and regular assessments to ensure accessibility.		
58	4	5	Simon James Hayhoe. A practice report of students from a school for the blind leading groups of younger mainstream students in visiting a museum and making multimodal artworks. This article explores the potential achievements of visually impaired students in art education, examining whether they can offer unique insights into perception to sighted students such as the value of accessibility through touch, and how legal advancements for equal access support their learning experiences. In this study visually impaired and sighted students collaborated in group	Inclusive schools and education, inclusive educational practices and environments in art education	https://eprints.lse.ac.uk/id/eprint/50351

			activities, including museum studies and creating art at schools for the blind. The study reveals that through working together, both groups can learn about each other's perceptual experiences and abilities. The article highlights that art is an effective medium for fostering this mutual understanding. A key observation is that visually impaired students possess as much potential in developing art works as their sighted peers, suggesting that visual impairment does not hinder artistic capability. This finding underscores the value of inclusive educational practices and environments in art education.		
59	2	1	Access to and use of buildings: Volume 1- Dwellings. This document is a part of a series that constitute practical guides for meeting the requirements of the Building Regulations 2010 in England. The subject of Part M of the Building Regulations is access to and the use of buildings and particularly Volume 1 focuses on dwellings so that buildings that are used as residences are designed and constructed to be accessible. The document covers various aspects related to accessibility, including: guidelines for accessible routes, doors, recommendations for designing internal spaces to allow easy movement, considerations for designing buildings that can be	internal spaces for easy movement, routes, doors, bathrooms in dwellings adaptability in design to accommodate the changing needs of occupants	https://assets.publishing.service.gov.uk/media/5a7f8a82ed915d74e622b17b/BR_PDF_AD_M1_2015_with_2016_amendments_V3.pdf

			easily adapted to accommodate the changing needs of their residents, guidelines for designing accessible bathrooms and toilet facilities etc.		
60	2	5	Easy access to historic landscapes. The guide is about inclusive access to historic gardens and landscapes that are listed on Historic England's Register of Parks and Gardens. The guide is in alignment with the Equality Act 2010 and suggests solutions for an inclusive approach for a significant experience for every visitor. All the processes should combine inclusion and preservation and every change should be reversible. The document discusses visitor experience and provides legislative support. It promotes consultation with experts, staff training, diverse choices, and regular adjustments. The main purpose is to balance conservation and accessibility and create an inclusive experience for various visitors. The last pages of the document include published sources of information, legislation and official guidance and policy documents.	accessible information Paths, sitting, tables, toilets in landscapes ticket desks, information points and meeting areas	https://historicengland.org.uk/images-books/publications/easy-access-historic-landscapes/heag011-easy-access-to-historic-landscapes/

61	1	2	The evaluation of accessibility, usability, and user experience. The study highlights a spectrum of evaluation methods designed to assist developers in assessing electronic services and environments, making them more accessible and user-friendly for diverse users, including those with disabilities. These evaluations encompass a range of standards and principles of accessibility and usability applicable to eSystems. As delineated in the ISO 9241 standard on Ergonomics of Human-System Interaction, there are crucial characteristics an electronic environment or product should embody to remain accessible and efficient. These include effectiveness, flexibility, learnability, memorability, and safety. Effectiveness pertains to the ability of users to successfully achieve their goals within the eSystem ('User control and freedom'). Flexibility refers to the system's adaptability such as 'Error Prevention' in accommodating a wide range of user preferences and abilities. Learnability is crucial for ensuring that users can quickly acquire the skills needed to use the system efficiently. Memorability deals with the system's design in a way that users can easily remember how to use it, reducing the learning curve for infrequent users such as to enable users to use shortcuts.	Accessibility to electronic services and environments, accessibility standards and principles applicable to eSystems	http://doi.org/10.1201/9781420064995-c20

62	2	1	Information for all. European Standards for making information easy to read and understand Accessibility of information is crucial for individuals with disabilities. This study sets out to establish clear guidelines to ensure that communication materials are easily comprehensible for people with intellectual disabilities. Initially, the author outlines basic guidelines focusing on sentence structure, vocabulary level, and information sequencing. Subsequently, the study introduces four kinds of information formats: written materials (such as leaflets and reports), electronic media (including websites), and audio content (like videos and music). For each of these formats, numerous standards are proposed. These standards encompass aspects like color use, background contrast, and font style in written, electronic, and audio materials to enhance accessibility. Moreover, the document provides detailed guidelines on the formatting of text, the use of images, and the presentation of diagrams. This comprehensive approach ensures that all forms of information are not only accessible but also user-friendly for those with intellectual disabilities, thereby promoting inclusive communication.	Accessible information, paths, sitting, tables, toilets in landscapes, ticket desks, information points and meeting areas	https://easy-to-read.eu/wp-content/uploads/2023/01/EN_Information_for_all.pdf

63	2	6	Access for All: Opening Doors. This guide addresses to individuals involved in sports club management. The main subject is creating an accessible and inclusive environment in the field of sports. It discusses the benefits of sports participation for people with disabilities with reference to the Equality Act 2010. The guide covers physical access areas, practices for ongoing attention, and focuses on the diverse needs of disabled individuals. It also includes practical advice on parking, external pathways, ramps, steps, handrails, seating, and viewing areas, signage, doors, lifts, toilets. The guide suggests that an accessible club would acquire significant reputation and consequently potential grant funding. It concludes with further useful resources.	Parking, external pathways, ramps, steps, handrails, seating, and viewing areas, signage, doors, lifts, toilets in sports facilities	https://www.activityalliance.org.uk/assets/000/000/045/Access_for_all_November_2015_original.pdf?1457371169
64	1	3	Factors Associated With Online Learning Self-Efficacy Among Students With Disabilities In Higher Education There are several factors that can affect the effectiveness of online learning for students with disabilities. Online learning self-efficacy is a significant aspect that must be taken into account when designing and evaluating online learning environments that focus on inclusiveness and accessibility.	Online learning accessibility	- https://doi.org/10.1080/08923647.2021.1979344

			Online learning self-efficacy is closely related to an individual's lesson delivery preferences and digital competences. Students with medical disabilities most often display higher levels of online learning self-efficacy than students with learning and/or psychological disabilities. Enhancing the accessibility of online learning can in turn yield better results for all students.		
65	1	3	The Use of Distance Learning and E-learning in Students with Learning Disabilities: A Review on the Effects and some Hint of Analysis on the Use during COVID-19 Outbreak Distance learning and e-learning in general are becoming more widely used. Hence, it is essential to ensure equal access to and higher quality of online learning for all students. To achieve this, virtual learning environments that take into account the difficulties that students with learning difficulties face should be created. Software, devices, and tools that focus on promoting the inclusion and active participation of students with learning difficulties as well as the use of appropriate assistive technologies should be encouraged. Besides ensuring that the most suitable technological devices and approaches are used, it is also imperative to emphasize	Online learning and e-learning accessibility	https://doi.org/10.2174%2F1745017902117010092

			meeting students' individual needs and requirements and facilitating access to information, resources, and tools.		
66	1	3	Distance Education for children with a disability and/or from vulnerable families Students with disabilities or coming from vulnerable families may experience several hindrances regarding their access to education in both face-to-face and online learning. Online learning can be beneficial for all students. However, in order for online learning to be more effective, it is necessary to apply changes to the traditional educational systems to account for underprivileged students or students with disabilities and to understand their requirements and needs when it comes to online learning. Therefore, effective educational strategies should be adopted to enhance the overall accessibility and quality of online learning. Teachers should focus on promoting companionship and friendship among their students, designing appropriate interactive learning activities, creating an inclusive class atmosphere within virtual classrooms, and examining the socio-cultural variables that affect students' learning.	Online learning and e-learning accessibility	https://doi.org/10.1007/s10639-022-11347-3

67	1	1,2	Universal design, inclusive design, accessible design, design for all: different concepts—one goal? On the concept of accessibility—historical, methodological and philosophical aspects Accessibility and equal opportunities for all in the digital age have become increasingly important over the last decade. In one form or another, the concept of accessibility is being considered to a greater or smaller extent in most projects that develop interactive systems. However, the concept varies among different professions, cultures and interest groups. Design for all, universal access and inclusive design are all different names of approaches that largely focus on increasing the accessibility of the interactive system for the widest possible range of use. But, in what way do all these concepts differ and what is the underlying philosophy in all of these concepts? This paper aims at investigating the various concepts used for accessibility, its methodological and historical development and some philosophical aspects of the concept. It can be concluded that there is little or no consensus regarding the definition and use of the concept, and consequently, there is a risk of bringing less accessibility to the target audience. Particularly in international standardization	Terminology, Universal design, Core accessibility, educational accessibility, Cognitive accessibility,	https://doi.org/10.1007/s10209-014-0358-z

			the lack of consensus is striking. Based on this discussion, the authors argue for a much more thorough definition of the concept and discuss what effects it may have on measurability, conformance with standards and the overall usability for the widest possible range of target users.		
68	1	2	Mapping The European Digital Accessibility Field: The IMPACT Project This study discusses how Europe is trying to improve digital accessibility, which means making digital content accessible to access and use for everyone, including people with disabilities. The article reviews current laws and efforts in Europe. It introduces the IMPACT project, which aims to analyze digital accessibility and improve training for professionals in this field. The project started by reviewing existing training programs and defining the skills needed for digital accessibility professionals. An online survey was conducted to gather feedback on these competencies and understand how digital accessibility is currently implemented across Europe. The results will help design a new educational program that teaches the necessary skills to improve digital access. The article highlights the ongoing efforts to make digital content in Europe more accessible to everyone,	Digital Accessibility Laws and Regulations in Europe, Impact of Digital Accessibility on the European Digital Economy, Professional Training and Development in Digital Accessibility, Technological Innovations in Digital Accessibility, User-Centric Design and Accessibility, Assessment of Current Digital Accessibility Practices, Development of New Educational Programs for	https://doi.org/10.1145/3439231.3440608

			including people with disabilities. It discusses a project aimed at improving education and training in digital accessibility.	Accessibility, Stakeholder Engagement in Accessibility Initiatives, Evaluation and Improvement of Existing Accessibility Training Programs, Policy Recommendations for Enhancing Digital Accessibility	
69	2	1	Directive (EU) 2023/958 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC as regards aviation's contribution to the Union's economy-wide emission reduction target and the appropriate implementation of a global market-based measure (Text with EEA relevance) This study introduces a specialized session on the broad and evolving topic of digital accessibility. It reflects on how the field has shifted from a primary focus on website accessibility to include a wide range of digital devices and situations. The session covers the ongoing challenges and progress in making digital platforms	Evolution of Digital Accessibility, Challenges in Digital Accessibility, Innovations in Website Accessibility, Broadening the Scope of Digital Accessibility	https://data.europa.eu/eli/dir/2023/958/oj

			usable for everyone, including those with disabilities. Two papers within this session specifically examine newer methods for enhancing website accessibility, discussing the effectiveness of overlay tools and the impact of page layout on accessibility. Overall, the session aims to broaden the understanding of digital accessibility beyond traditional websites to encompass various digital systems and user needs.		
70	1	1	Digital accessibility: Challenges and opportunities The study addresses the importance of making digital platforms usable for everyone, including people with disabilities. It emphasizes that digital accessibility benefits not only those with disabilities but everyone, as it can lead to more inclusive and universally usable technologies. The discussion includes the current standards and guidelines for digital accessibility, such as the Web Content Accessibility Guidelines (WCAG), which are used worldwide. It highlights barriers to digital accessibility, including institutional and technological challenges. For instance, despite laws and policies to promote accessibility, actual implementation can be inconsistent. On the technology side, there's often a lag in developing	Universal Benefits of Digital Accessibility, Standards and Guidelines for Digital Accessibility (WCAG), Barriers to Digital Accessibility, Digital Accessibility in India, Round Table Discussion on Best Practices, Advocacy for Inclusive Design, Strategies for	https://doi.org/10.1016/j.iimb.2018.05.009

		accessible technologies, especially for new or rapidly changing technologies. The article also covers the situation in India, noting steps taken by the government towards improving digital accessibility but acknowledging that much progress is still needed. It mentions specific initiatives like the National Policy on Universal Electronic Accessibility and the Accessible India Campaign, which aim to make digital resources more accessible. The round table discussion within the article explores best practices in digital accessibility. It discusses how diverse stakeholders, including businesses, government, and disabled persons' organizations, can work together to enhance accessibility. The participants advocated for integrating accessibility considerations from the design phase of products and emphasized that accessible design benefits everyone, not just people with disabilities. Overall, the article calls for a collective effort to understand and implement digital accessibility more effectively, using policy-driven approaches and innovative technological solutions to ensure digital resources are accessible to all.	Enhancing Digital Accessibility	

71	1	2,3	Enhance affective expression and social reciprocity for children with autism spectrum disorder: using virtual reality headsets at schools. The study investigated whether a Virtual Reality-enabled training program could improve affective expression and social reciprocity in children with ASD attending mainstream schools. It involved 48 students in the intervention group and 59 in the control group across 16 schools in Hong Kong. Participants underwent a pre-assessment before starting the intervention, followed by post-intervention assessments to evaluate its impact. The VR program's equipment included headsets and controllers. The VR scenarios were designed to closely represent a typical school environment, providing a space for children to develop and practice emotional and social skills in line with Kolb's experiential learning model. The VR interventions focused on different areas: a) familiarizing students with the VR system and its use, b) improving executive functioning and daily life skills, c) cultivating emotional skills like self-regulation, d) enhancing social understanding, and e) applying these skills in realistic scenarios, such as navigating social conflicts. The results confirmed the efficacy of VR in training effective and	Accessible Education through Virtual Reality for children with ASD, intervention programmes	https://doi.org/10.1080/10494820.2022.2107681

			social skills for children with ASD. Notable improvements in affective expression and social reciprocity were noted among the children who received the intervention. This study is distinguished as possibly the first extensive empirical research to assess the impact of affective-social skills training using VR headsets in a school setting. The encouraging findings imply that VR-enabled training could be highly beneficial in inclusive education.		
72	1	2,3	Virtual reality enhances the social skills of children with autism spectrum disorder: a review. Virtual Reality has been approved as very valuable and effective through interventions for children with ASD. The interventions of this study aim to use VR and to focus on specific areas of improvement such as a) social interaction, including skills related to pedestrian crossing and greeting behavior, b) social-emotional reciprocity, incorporating aspects like emotional adjustment and expression and c) social cognition, encompassing understanding social rules and expressing positive self-identity. Three types of Virtual Reality devices had been used: the CAVE, HMD and the Desktop. Desktop has been approved as the most attractive device for children with ASD. The	Virtual Reality and inclusivity in the education field, Developing social skills and social-emotional reciprocity for children with ASD through Virtual reality interventions	https://doi.org/10.1080/10494820.2022.2146139

			participants were 209 children with ASD who had the opportunity to practice social skills and interaction during sessions in virtual environments and to be assessed in real environments (like schools, offices). The results revealed a significant impact of VR interventions to the social- emotional expression and interaction of the children with ASD. Furthermore, the level of the attention has been increased and the children were able to generalize their skills from the virtual environments to the natural ones. However, there were some crucial factors that should be held to sustain the intervention's effects such as the specific duration of the sessions, the maintenance and generalization of the concepts of the learning.		
73	1	2,3	A systematic review: the application of virtual reality on the skill-specific performance in people with ASD. Virtual Reality has a significant impact to people with ASD and can apply to education and to clinical settings as a treatment. This study aims to reveal how VR is an effective treatment for people with ASD in skill-specific performance (such as job interviewing, driving and other ADLs) and how VR can be employed by Occupational therapists for their treatments. 213	Virtual Reality and interactive learning environments, accessible education for individuals with ASD using Virtual Reality	https://doi.org/10.1080/10494820.2020.1811733

			people with ASD participated in this study and the majority was male. The results revealed that VR interventions were very effective to all the domains above. The interviewing skills and self- confidence had increased significantly. Furthermore, the driving and functioning performance had been improved, reducing anxiety and improving navigation skills. The categories on the last domain, motor, communicational, cognitive and social/emotional skills had been changed progressively. This study also revealed that VR can be used for OT treatment as it has been approved that VR has a positive impact on people's motor and cognitive skills. Nevertheless, additional evidence in this area should be sought, as numerous indicators require adaptation and support for individuals with ASD during the utilization of VR interventions for therapy.		
74	1	2,3	A case study of gesture-based games in enhancing the fine motor skills and recognition of children with autism. Children with ASD revealed poor fine motor skills such as grasping, inability of using gestures/tools and visual- motor integration. Gaming in education can make the learning process more engaging and attractive to children with ASD.	Developing fine motor skills having access to high-tech based education, accessible technological	https://doi.org/10.1080/10494820.2018.1437048

		During gaming children can also learn faster because of the feedback of the games they receive. The direct feedback of the games can also motivate children with ASD to use and learn through technological gaming. The participants of this study were children with ASD who had some fine motor skills difficulties. The purpose of the interventions was to practice through gesture games their fine motor skills such as accuracy during matching, pinching or placing objects. Two gesture-based matching games were developed to meet the needs of children with ASD and to improve recognition and fine motor skills. The development assessment scale for children with ASD had been used to evaluate the fine motor skills of each participant. The items were mainly on visual-motor integration, reaching, picking up and placing items. Furthermore, the recognition scale used consisted of seven items selected from the instrument developed by the China Federation of Disabled Persons (2009). The scope of the seven items involved recognizing and naming colors and fruits. The scale was used before and after the intervention to assess the participants' recognition levels. At the end both the recognition of the objects and the fine motor skills had been developed significantly.	gaming for children with ASD	

75	1	1,2	Evaluation methods in legal procedures concerning digital accessibility in Brazil: an analysis of cases investigated by the federal public ministry. This paper delves into the accessibility challenges observed in digital interactive applications, both public and private, highlighting the need for a policy-driven strategy beyond technical solutions. It emphasizes the involvement of regulatory bodies, particularly the Federal Public Ministry in Brazil, to establish legislation protecting the rights of individuals with disabilities. The study investigates 46 complaints across 26 legal cases involving public and private interactive systems. Surprisingly, 16 cases were closed without accessibility evaluations, while in the remaining 11 cases, only one involved manual inspection by specialists. The majority relied on automated tools, signaling a gap in understanding the nuances of accessibility evaluation during legal proceedings. The findings underscore the importance of refining evaluation methods to enhance digital application accessibility for people with disabilities.	Digital accessibility, Policy-based approach, Legal procedures, Accessibility evaluation methods, Automated accessibility tool, manual accessibility inspections, specialists, user evaluation	https://doi.org/10.1145/3554364.3559130
76	1	1,2,3	Researching Pedagogy in Digital Accessibility Education. This 5-year study explores the pedagogy of digital accessibility	Digital accessibility, Accessibility skill gap,	https://doi.org/10

			in light of evolving digital disability rights legislation and the accelerated digital transformation propelled by COVID-19. Uncovering gaps in workforce accessibility capabilities and graduate education programs, the research focuses on how accessibility is currently taught across diverse contexts. Collaborating with educators, the study aims to establish an evidence base, enrich pedagogic culture, and address the pressing need for improved accessibility skills in the workforce. The paper provides insights into the study's rationale, methodology, and activities, highlighting the potential of pedagogic research methods to contribute to computing education practices and foster reflexive teaching and learning development.	Education, Workforce capability, Accessible teaching practices, methodology, digital transformation	.1145/3582298.3582300
77	1	2,3	Evaluating Instructor Strategy and Student Learning Through Digital Accessibility Course Enhancements. Graduating university students entering technology design and development fields often lack preparedness for digital accessibility due to inadequate awareness and training. The Teach Access consortium, comprising 10 industry partners, 5 advocacy groups, and 20 university partners, addresses this issue by awarding instructor grants to develop accessibility	Digital accessibility, Accessibility skill gap, Awareness challenge, Technology curricula, Accessibility learning modules, student attitudes, instructional/teaching strategy, Americans with	https://doi.org/10.1145/3308561.3353795

			modules in tech-related courses. The study assesses student attitudes pre- and post-instruction of these modules, alongside instructor strategies. Results indicate increased student confidence in accessibility concepts, notably in defining the Americans with Disabilities Act (ADA) and the Web Content Accessibility Guidelines (WCAG). The work contributes a detailed description of accessibility integration in 18 university courses, effective instructional delivery methods, and insights for resource materials development.	Disabilities Act (ADA), Web Content Accessibility Guidelines (WCAG)	
78	1	2,3	Digital Accessibility Education using Serious Games. This study addresses the persistent skills gap within the technology industry, impeding the creation of genuinely accessible products aligned with Web Content Accessibility Guidelines (WCAG) standards. The lack of accessibility coverage in Computer Science (CS) curricula contributes to limited accessibility skills among software professionals, risking the exclusion of a significant user base. The research aims to fill this gap by developing and evaluating the effectiveness of a serious game for instructing accessibility. Unlike existing literature exploring active-learning pedagogies, this study focuses on the underexplored potential of game-based	Accessibility skill gap, Web Content Accessibility Guidelines (WCAG), Computer Science (CS) curricula, accessibility skills, software professionals, serious game, game-based learning	https://doi.org/10.1145/3617650.3624920

			learning to enhance accessibility skills among both computing students and software professionals.		
79	1	1,2	Persona Co-Design for Improving Digital Accessibility. This paper explores strategies for developing authentic accessibility personas aimed at improving product design for individuals with disabilities. Personas, often considered a controversial empathy-building tool, can have potentially harmful effects on the design of accessible products when not well-made or used appropriately. The study introduces a nested co-design approach, incorporating personas as both products and tools, and involving individuals with disabilities at various stages and functions within the design process. The research focuses on applying these approaches to enhance digital accessibility teaching and learning materials in higher education institutions.	Participatory design, Personas, co-design approach, digital accessibility, teaching, learning materials, higher education institutions	https://doi.org/10.1145/3544549.3585857
80	1	1,2	Tools for Web Accessibility Evaluation. This chapter highlights the challenges of manually verifying accessibility guidelines and emphasizes the importance of computer tools to assist in this activity. Recognizing the difficulties and	Digital accessibility, Web accessibility evaluation, Guidelines, Automatic evaluations, On-site	https://doi.org/10.1007/978-1-4471-7440-0_26

			complexities involved, the study explores various tools, both automatic and user-supported, for evaluating web accessibility. The discussion spans applications for automatic evaluations, tools for on-site and remote user evaluations, and the potential of crowdsourcing-based tools for manual assessments. The chapter underscores the crucial role of these tools in advancing web accessibility and provides insights into their main characteristics. Furthermore, it reflects on the future trajectory of tools in the field of web accessibility evaluation.	evaluations, Remote evaluations, Manual evaluations, Accessibility tools	
81	1	3	“Bangla Braille learning application” in smartphones for visually impaired students in Bangladesh. The study focuses on designing a Braille learning tool specifically for Bangla. Previously the authors proposed a design of mobile application for Braille learning, mBraille, that helps learning both Bangla and English alphabets and only a small number of words in Bangla. Visually impaired students (VIS) in Bangladesh face a lot of challenges and a cost-effective technological solution would be beneficial. The difficulties of learning Braille are that the student has to depend on others while there is absence of tools for self-practice. The Bangla Braille Learning Application (BBLA) provides basic Braille	Mobile learning application for Braille in Bengali	https://doi.org/10.1080/10494820.2019.1619588

			content with instructions in Bangla language and an accessible interface with auditory output and gestural input with vibration feedback. JAVA programming language and Android development kit has been used for the interfaces.		
82	1	3	Computer Model-based audio and its influence on science learning by people who are blind. The goal of the study is the understanding of the learning processes of people who are blind by transforming visual information into sonified information. This is performed with learning interactions with dynamic complex systems. The research examines the use of Listening-to-Complexity (L2C) based on NetLogo, which is an agent-based modeling language for exploration and construction of models of complex systems. L2C is part of a curriculum for helping blind students to learn scientific concepts, systems reasoning and the Kinetic Molecular Theory of gas and gas laws in chemistry. NetLogo contributes in learning and the construction of models of complex systems by programing and running their rules and behaviors. The study is in alignment with the suggestions of the NGSS (2013) learning science through accessible learning materials.	Accessible learning material for Science	https://doi.org/10.1080/10494820.2018.1500378

83	1	3	Educational affordances of a specific web-based assistive technology for students with visual impairment. In this study, a web-based English vocabulary drill program was designed and tested for visually impaired middle school students. The main focus was the program's educational affordances, examining its impact on English spelling and also semantics knowledge. Participants of the study were students and experts, and the data collected through interviews and tests. Jaws for Windows screen reader program with Turkish language feature was used for accessing different sections of the program. Moreover, the program also provided in-built auditory feedback and guidance for some important parts. The voice of a native English speaker utilized for the spelling. Qualitative analysis showed educational affordances: the program was accessible and consuming little time. Furthermore the students do not have the need of the instructors guidance and help and can track their own progress. Quantitative findings show remarkable progress in vocabulary tests. The benefits of the web-based assistive technology for visually impaired students are overall notable with a long term benefit in vocabulary knowledge.	web-based assistive technology for VI students for English as a foreign language	https://doi.org/10.1080/10494820.2019.1619587

84	1	3	Voice-assisted online exam management and system usability analysis with visually impaired students, Interactive Learning Environments The aim of the study is to evaluate the Online Voice-Assisted Exam System (OVAES) which is mainly based on the principles of Universal Design (UDM). Findings show that the system has a beneficial contribution to content comprehension with audio support, keyboard functionality, and screen reading. The findings of the study supports the hypothesis that participants can take part in online exams without the help of another person and only using biometric data on customizable pages. It is extremely important that OVAES offers features that are compatible with standard hardware and there is no need for special equipment. In addition, a high level of exam security through voice recognitionis ensured. The study underlines the significant role of Universal Design in creating on-line assessments and exams.	accessibility in online assessment and evaluation activities for VI students	https://doi.org/10.1080/10494820.2021.2010219

85	1	1	Co-Designing with Extreme Users: A Framework for User Participation in Design Processes The study discusses improving the inclusion of people with disabilities in design processes. It aims to create a structured way (framework) to ensure these individuals are actively involved and can influence the designs that affect their lives. This framework focuses on three main areas: 1) It's important to treat participants as equals, recognize their unique experiences as valuable, and involve them from the start of the project. Also, compensating participants for their time is seen as a sign of respect and equality. 2) The framework encourages following principles that ensure fairness and respect for all participants. This includes designing outcomes that are accessible and useful to a diverse range of users. And 3) The framework advises making every part of the design process accessible, including communication methods and materials, to accommodate all participants' needs. Overall, the framework aims to make design processes more transparent, equitable, and inclusive, ensuring that products and services meet the needs of the broadest possible audience, including those with disabilities.	Inclusive Design Principles, Participant Compensation, Design Framework for Accessibility, Accessible Design Processes, Transparency and Equity in Design	https://doi: 10.16993/sjdr.952

86	1	1,2	Development and Evaluation of eHealth Services Regarding Accessibility: Scoping Literature Review. This study discuss how digital health services (eHealth) are accessible to people with disabilities. The researchers review existing research to understand how eHealth services are designed and evaluated to be accessible to people with various disabilities. They looked at numerous studies to gather data on this topic, following a specific review structure to ensure their findings were thorough and accurate. This study highlights tree main points: 1) Definitions of Accessibility: Some studies clearly defined what they meant by “accessibility,” but many did not. This makes it hard to measure how accessible services are. And 2) Use of Guidelines: A few studies used well-known guidelines like the Web Content Accessibility Guidelines (WCAG) to design or evaluate eHealth services. However, most did not, which suggests that many eHealth services might not be fully accessible to people with disabilities. And 3) Evaluation Methods: Studies varied in how they assessed accessibility. Some used formal guidelines, while others relied on user feedback or other informal methods. This study’s conclusion shows a need for more explicit guidelines and	Definitions of Accessibility in eHealth, Application of Accessibility Guidelines (WCAG), Methods for Evaluating Accessibility, Need for Standardized Accessibility Guidelines, Inclusion of Accessibility in Design Process	https://doi.org/10.2196/45118

			consistent processes to ensure eHealth services are accessible. This means designing services that everyone can use effectively regardless of their abilities. The study highlights the importance of including accessibility from the start of the design process. It suggests that more detailed and standardized approaches might help improve how accessible eHealth services are to all users.		
87	1	1,2	Disability digital divide: survey of accessibility of eHealth services as perceived by people with and without impairment. This study explores the differences in how people with and without disabilities use and perceive eHealth services in Sweden. The study aimed to compare eHealth services' usage and perceived difficulties between people with various types of impairments and those without. The research involved a nationwide survey in Sweden, targeting individuals based on their disability status. Key Findings of this study are 1) Usage Differences: People with disabilities reported using eHealth services less frequently than those without disabilities. This was especially true for people with communication, language, calculation, and intellectual impairments. 2) Perceived Difficulties: Those with disabilities found eHealth services more	Usage Differences of eHealth Services, Perceived Difficulties by Disability Type, Specific Challenges in eHealth Accessibility, Digital Divide in eHealth Accessibility, Need for Inclusive eHealth Service Design	https://doi.org/10.1186/s12889-023-15094-z

		challenging. The difficulties varied depending on the type of impairment, with significant challenges noted for those with communication and intellectual impairments. 3) Specific Challenges: Booking healthcare appointments online and using digital identification were particularly problematic for individuals with severe impairments. The study highlights a significant "digital divide" in eHealth accessibility, showing that people with disabilities face more barriers and challenges in using digital health services. It suggests the need for improved design and implementation of eHealth services to be truly inclusive and accessible to all, particularly for those with severe impairments. The study also emphasizes the importance of designing eHealth services that are easy for everyone to ensure no one is left behind in the digital transformation of healthcare.		

88	1	1,2	How have public healthcare providers in Sweden conformed to the European Union's Web Accessibility Directive regarding accessibility statements on their websites? The article explores how public healthcare providers in Sweden meet the requirements of the European Union's Web Accessibility Directive (WAD), which mandates that public sector websites and mobile applications are accessible to all, including people with disabilities. The focus is on the accessibility statements that these websites must publish, detailing their compliance with accessibility standards. The study points to four essential points: 1) Compliance with the WAD: Most Swedish healthcare providers have published an accessibility statement on their websites, as required by the WAD. However, none of the providers fully meet the requirements outlined in these statements. 2) Content of Accessibility Statements: The statements should include whether the website complies with accessibility standards, any inaccessible content, and plans for improvements. The study found that no providers fully complied with the law's intention to provide accessible eHealth services to all citizens. 3) Progress and Enforcement: The study notes minimal progress	Compliance with the Web Accessibility Directive (WAD), Content of Accessibility Statements, Progress and Enforcement Challenges, Suggestions for Enhancing Compliance, Gap in Accessibility Goals vs. Actual Compliance	https://doi.org/10.1007/s10209-023-01063-1

			in improving accessibility between the initial and latest statements. The lack of strict enforcement and the possibility for providers to claim a 'disproportionate burden' (arguing that making the required changes is too costly or difficult) contributes to slow progress. 4) Suggestions for Improvement: The article suggests that guidelines for accessibility statements should be more comprehensive and understandable. There should be stricter enforcement of compliance to ensure real improvements in accessibility. Overall, the article highlights a significant gap between the goals of accessibility laws and the current state of compliance among Swedish public healthcare providers, suggesting a need for more stringent enforcement and more precise guidelines to improve the accessibility of digital health services.		
89	1	2	Promoting Healthy Behaviors Among Adolescents and Young Adults With Intellectual Disability: Protocol for Developing a Digital Intervention With Co-Design Workshops. This research describes a project to develop a digital tool to promote healthy behaviours, like more physical activity and a more nutritious diet, among adolescents and young adults with intellectual disabilities. This project is unique	Co-Design Approach, Workshops for Tool Development, Outcome Expectations, Inclusive Design Practices	https://doi.org/10.2196/47877

		because it involves these individuals directly in the design process through co-design workshops. This approach ensures the digital tool will be user-friendly and effective for its intended audience. It points to three critical project elements: 1) Co-Design Approach: Young adults with intellectual disabilities, healthcare professionals, educators, and family members participate in workshops to design the digital tool. This method ensures the tool is accessible and meets the specific needs of its users. 2) Workshops: These workshops serve multiple purposes. They gather data, generate ideas, and directly involve participants in creating the tool. Each session is adapted to be accessible and engaging for participants with intellectual disabilities. 3) Outcome Expectations: The research aims to produce a digital tool that these young adults will find motivating and easy to use, which could significantly improve their physical health and diet. The project highlights the importance of involving end users in developing digital interventions, particularly for communities with specific needs and challenges. It's expected to create a practical tool and provide a model for inclusive design practices that could be applied in other areas.		

90	1	2	Digital inclusion and participation of people with intellectual disabilities during COVID-19: A rapid review and international bricolage. This study discusses how the COVID-19 pandemic has affected digital access for people with intellectual disabilities (ID). The pandemic pushed many activities online, but the transition highlighted a significant digital divide. People with ID faced challenges accessing technologies and services, which impacted their ability to obtain important COVID-19 information and maintain social connections. The research involved two main methods: a rapid review of recent studies and a qualitative analysis from different countries (bricolage) to understand the global situation. It focused on the accessibility of information, the use of digital technologies, and the impact of digital inclusion or exclusion on the lives of people with ID. This study points to three key findings: 1) Accessibility Issues: Information about COVID-19 was often inaccessible to people with ID, causing misinformation or lack of information. 2) Increased Isolation: Digital tools like videoconferencing helped reduce feelings of isolation by keeping people connected with family and services. However, the effectiveness varied, and many still	Impact of COVID-19 on Digital Access, Rapid Review and Bricolage (do-it-yourself), Accessibility issues leading to misinformation, Varied effectiveness of digital tools, Barriers to digital inclusion, Strategies for Improving Digital Inclusion, Digital Inclusion as a Human Right	https://doi.org/10.1111/jppi.12410

			faced loneliness. 3) Barriers to Digital Inclusion: The study identified several barriers, including lack of digital skills, inadequate caregiver support, and infrastructural issues like poor internet connectivity. This study suggests that more effective strategies and policies are needed to improve digital inclusion for people with ID. This includes better training in digital skills, more accessible information, and supportive government policies to ensure that people with ID are not left behind in the digital shift. Overall, this study emphasizes the importance of digital inclusion as a facet of human rights and calls for collective efforts to bridge the digital divide experienced by people with intellectual disabilities during the pandemic.		
91	1	2	Disability digital divide: the use of the internet, smartphones, computers and tablets among people with disabilities in Sweden. The study explores how different disability groups in Sweden use digital devices and the Internet. It highlights the varying levels of digital inclusion among these groups and examines the challenges they face compared to the general population. The study aimed to understand the use and difficulties encountered by people with	Digital Divide Among Disability Groups, Internet Usage Patterns, Internet Use Challenges, Digital Exclusion, Gender Differences in Internet Usage, Influences on Digital Access and Usage,	https://doi.org/10.1007/s10209-020-00714-x

		disabilities when using the internet. It involved a survey of 771 individuals with different disabilities, examining their access to and use of various digital devices. The study points to four key findings: 1) Digital Divide: People with disabilities generally have less access to digital devices and the internet than the general population. This divide varies significantly between different disability groups. 2) Usage: Individuals with autism, ADHD, and bipolar disorder reported higher usage of the internet compared to other disability groups. 3) Challenges: People with disabilities related to language and understanding reported the most difficulties using the internet. And 4) Inclusion: A more significant portion of the respondents felt digitally excluded compared to the general population, especially women with aphasia and other severe impairments. The study shows that women with disabilities generally use the internet more frequently and effectively than men with disabilities, which is a reversal of the typical gender gap seen in the general population. The study also found that digital access and usage levels were influenced by factors like the type of education received and living arrangements, with those in specially arranged accommodations or institutions facing	Advocacy for Targeted Interventions	

			more significant challenges. In conclusion, the study advocates for more targeted interventions to address the specific needs of different disability groups and bridge the digital divide effectively. Overall, the study underscores the complexity of the digital divide among people with disabilities in Sweden and calls for nuanced solutions that consider the diverse needs of these individuals.		
92	1	2,3	Design and development of VR learning environments for children with ASD. This study introduces a novel Virtual Reality (VR) based approach to aid children with Autism Spectrum Disorder (ASD) in enhancing their social understanding and expressive skills, including language and body language, at an age-appropriate level. Utilizing VR, a virtual environment is created where these children can safely practice and improve their social skills. This immersive approach, exemplified by tools like the 'Pink Dolphin immersive environment', facilitates learning through interactive activities such as role-playing. These activities, encompassing a range of educational aspects like word and shape learning, are integrated into the curriculum at AWWA School, a special needs institution in Singapore catering to children with ASD	Virtual Reality learning environments	https://doi.org/10.1080/10494820.2017.1282877

			and other disabilities. The VR technology, incorporating elements like VR visualization, modeling, and interaction, begins with an introduction to VR and 3D glasses, gradually leading to independent interaction within this virtual space. Over the years, the development of both high-end and low-end VR solutions has significantly enhanced the learning and communication capabilities of children with ASD, providing a safer and more realistic educational environment in special schools.		
93	1	2,3	The influence of internal and external cues on the joint attention of children with autism spectrum disorder. Interactive Learning Environments, 1-14. The study explores the potential that people with ASD have to develop eye contact ability in order to improve their social interactions. The purpose is to present strategies/interventions that can develop and improve eye contact for children with ASD. The technology that had been used is a tool that reflects the actual person's face to a virtual character on the computer screen and an Eye tracking device to record the gaze behavior of the participants when they watched the stimuli material and collected the eye movement information. People with Autism	Virtual reality technology applications to develop the joint attention of children with ASD	https://doi.org/10.1080/10494820.2022.2086580

			often have self- awareness and the capability of self- recognition so they are very capable to recognize themselves into a virtual reflection. The high-tech tool gives the opportunity to people with ASD to interact and explore their facial characteristics and reactions to a virtual image which stimulates their interest in order to sustain their attention by giving eye contact. Using that kind of technology children with ASD start to interact with their virtual figure increasing the amount of minutes they keep eye contact which helps them to develop basic skills of social interaction. The results revealed that internal and external cues have the potential to significantly increase the joint behavior of children with ASD.		
94	1	2,3	Applied the augmented reality technology combined with social stories strategies and computational thinking games to improve the social skills of children with ASD. The study investigates whether the implementation of AR technology, social stories, and CT games facilitates behavioral changes and improved social abilities in children with ASD, as evidenced by their participation in social activities and engagement in games. The participants were children with ASD with a variety of social needs and difficulties. For the	Augmentative Reality technology combined with social stories strategies- develop the social thinking	- https://doi.org/10.1080/10494820.2023.2258942

		measurements the Social Responsiveness Scale (SRS) and the Social Story Tests (SSTs) were used to observe and verify the usefulness of the social story games for the children with ASD in understanding different social situations and corresponding reciprocal social behaviors. There were three phases that were included to the intervention program a) the Baseline, b) the Intervention Phase, c) the Maintenance phase. During the first one, the therapist started teaching social skills using the traditional method of social stories engaging the participants into real life scenarios using role- play. Later during the Intervention phase, the therapist included social stories combined with CT games using both board and physical field games. Last but not least during the maintenance phase the therapist turned back to the baseline activities to observe the social reactions and changes to behavior of the children with ASD who had received the intervention training. The results revealed that the intervention could really benefits children with ASD and it can develop and maintain their social skills and understanding.		

95	1	2,3	Autistic Innovative Assistant (AIA): an Android application for Arabic autism children. The Autistic Innovative Assistant (AIA) is an application that aims to support Arabic children with ASD to develop the essential linguistic, mathematical and social skills through and interactive learning environment. The AIA environment performs five main categories of activities such as “Numbers”, “Letters”, “Vocabularies”, “Social skills” and “Relaxation and anger management”. Each activity includes a series of colorful pictures with a written sentence and an audio message to describe the meaning of each, thereby attracting the child’s attention and making learning a fun activity. The evaluation of the impact that these activities have to Arabic children with ASD had been counted using quizzes for children/teachers and parents, face-face interviews and observations. The results revealed that children with ASD had been improved on to their social development. The feedback from parents and teachers were positive as they mentioned that the present app is a useful tool which teaches social interactions to children with ASD and also counts and records the progress of their children. Furthermore, they mentioned that the design of the AIA app had been approved	Learning applications for learning purposes for autistic children	https://doi.org/10.1080/10494820.2019.1681468

			as very attractive for these children and some of them learnt to use it independently.		
96	1	2,3	Evaluation of a spherical video-based virtual reality intervention designed to teach adaptive skills for adults with autism: A preliminary report. Interactive Learning Environments, 29(3), 345-364. This document details the creation and preliminary evaluation of a mobile application for adults with autism, featuring spherical video-based virtual reality (SVVR). The app, notable for its low cost, user-friendliness, and ease of integration into educational interventions, was developed through research methods focused on formative evaluation, assessing aspects like user experience, feasibility, relevance, and usability for adults with ASD. The evaluation process comprised two phases: expert review and usage testing. A key focus of the application was facilitating the use of public transportation, specifically enabling individuals with ASD to safely and independently use the university shuttle. Feedback from participants indicated that	Teaching adaptive skills using Virtual reality	- https://doi.org/10.1080/10494820.2019.1579236

			the SVVR app was cognitively accessible and met the needs of individuals with neurodiverse challenges. The study also acknowledges limitations, including the challenge of translating VR intervention teachings and results into real-life scenarios and conditions.		
97	1	2,3	Factors influencing the adoption of virtual reality (VR) technology among parents of individuals with ASD. The study explores the factors influencing parents of children with autism in adopting Virtual Reality (VR) technology, examining both positive and negative aspects. The findings suggest that while parents are generally open to integrating VR into their daily routines, they also identified specific requirements for more effective use. Key recommendations include providing training for teachers to adapt VR technology to the unique needs of their children and enhancing the general understanding and exposure to VR applications at both home and school. Data was gathered through face-to-face interviews with parents, focus groups, and observations, centering on a task where children with ASD practiced a bus route from their homes to their university. A significant barrier identified by parents was a lack of awareness about VR's educational	Virtual Reality for learning purposes at school and home	https://doi.org/10.1080/10494820.2022.2120017

			benefits, hindering its adoption in daily life. Many parents expressed a desire to learn more and receive training on using VR technologies to help their children navigate daily challenges. In addition, parents suggested that schools can promote the use of VR more significantly using VR technologies for learning purposes.		
98	1	2,3	Towards a computer-assisted comprehensive evaluation of visual motor integration for children with autism spectrum disorder: a pilot study. The purpose of the study is to find out how children with Autism (ASD) differ from their age matched Typically Developing (TD) peers in Visual Motor Integration (VMI). The children that participated were 60 in total, 30 of them with ASD and 30 TD. Several indicators had been proposed to measure each child's VMI such as a) visual perception indicators, b) Eye hand coordination indicators and c) fine motor skills indicators. The participants participated in a variety of games on the computer which were interesting for them and they could sustain attention for the assessments. Eye movement and touch data were collected using the Beery-Buktenica Developmental Test of Visual-Motor Integration and the Eye tracking. The results revealed statistically significant	Assistive technology to evaluate Visual Motor Integration (VMI)	https://doi.org/10.1080/10494820.2021.1952273

			differences between the two groups as the TD children completed all of the games in comparison to the ASD peers which performed lower level of efficiency while playing the same games. For example, the ASD group has a lower correlation coefficient in both the horizontal and vertical directions. Additionally, the study's findings highlight a significant performance difference in visual perception, eye-hand coordination, and fine motor skills among individuals with Autism Spectrum Disorder (ASD). Ultimately, it is anticipated that the introduced tool will serve as a valuable resource for tailored and accurate interventions, offering a comprehensive depiction of a child's VMI capacity.		
99	1	6	Accessibility and Participation of Persons with Disabilities in Tourism: Perspective of Tourism Workers in the Ashanti region of Ghana. The study aims to document the nature of access and the participation of persons with disabilities in tourism, from the perspective of the tourism workers in the Ashanti region of Ghana. Findings revealed that there is a lack of participation from people with disabilities due to inaccessible tourism structures, bad transportation, and communication barriers. Recommendations for improvement included	Transportation in tourist sites, accessibility of forest routes	https://doi.org/10.5463/dcid.v26i3.431

			provisions such as canopy walks, accessible banquets, vehicles, and sign language interpreters. The study is exclusively focused on professionals, therefore suggests the need for future research involving persons with disabilities.		
100	1	2,6	Compliance of accessibility in tourism websites: a pledge towards disability. The accessibility of information can be challenging for individuals with disabilities (PwDs), impacting various stages of tourism. This paper examines the adherence of official tourism information websites of US states and territories to Web Content Accessibility Guidelines (WCAG) and Section 508 guidelines. WCAG is developed by W3C (World Wide Web Consortium) in consultation with individuals, organizations, and governments and constitutes a comprehensive standard for web content accessibility. Beyond WCAG, various countries have formulated their accessibility guidelines, such as Section 508 in the USA, BIVT in the German Government, RGAA in the French Government, JIS in Japan, and MAAG 1.0 in Korea. The study highlights some significant accessibility issues, including concerns related to	web content for tourism in accordance with WCAG. Compatibility, navigability, adaptability.	https://doi.org/10.1108/jhti-05-2020-0092

			compatibility, navigability, text alternatives, distinguishability, and adaptability.		
101	1	1	Accessible Digital Musical Instruments: A Review of Musical Interfaces in Inclusive Music Practice. This study reviews how technology has evolved to help include everyone in musical activities, especially those with disabilities. It highlights several key points: 1) Traditional musical instruments often require physical abilities that some people may not have due to disabilities. With advancements in technology, new types of musical instruments called Accessible Digital Musical Instruments (ADMIs) have been developed to help everyone make music. 2) The study categorizes ADMIs into various types based on their control. These include tangible controllers (like keyboards that can be touched), touchless controllers (like motion sensors), wearable devices, and even brain-computer interfaces that respond to neural signals. 3) Importance of Feedback: Not many ADMIs use vibrotactile feedback (which involves touch and vibrations), although it could be very helpful for specific users. Most ADMIs	Evolution of Digital Musical Instruments (ADMIs) into Accessible, Types of ADMIs Based on Control Mechanisms, Importance of Feedback in ADMIs, User Participation and Customization in ADMIs, Therapeutic Uses of ADMIs, Challenges and Future Directions for ADMIs, Overall Progress and Potential for Improvement	https://doi.org/10.3390/mti3030057

		rely mainly on audio feedback. 4) User Participation and Customization: One key to successful ADMIs is allowing users to customize them to fit their needs. This involves the users in the design process to ensure the instrument can be used as required. 5) Use in Therapy: ADMIs are not just for fun; they're also used in therapeutic settings to help users improve their physical and cognitive abilities through music. 6) Challenges and Future Directions: The study points out that more research is needed to explore the full potential of ADMIs, particularly in providing more sensory feedback types and better customization options. The review concludes that while there has been significant progress in making music accessible through digital instruments, there's still much room for improvement, especially in making these tools more sensory-rich and customizable.		

102	1	2	Planering för ny tillgänglighet : Resultat från litteratur- och intervjustudie. The report summarises a literature and interview study that addresses new aspects of accessibility, namely digital accessibility. The report consists of a section dealing with so-called grey literature, which includes reports, investigations, and policy documents from various stakeholders related to digital accessibility. This literature is also partly linked to scientific literature to provide a deeper analysis of the multiple documents. The other major part of the report consists of a summary of interviews conducted to illuminate how different stakeholders and experts in the field view the development, needs, and opportunities of new digital accessibility. This literature and interview study aims to create an overview of the field of new or digital accessibility in a Swedish context. The basis for this study includes public records, plans, documents, etc., and interviews with key figures in the subject to analyze how the public sector in Sweden handles the issue of new accessibility and the challenges it faces in improving this new form of accessibility. The study reveals the complexity of implementing digital solutions to promote new forms of accessibility. Various agencies,	Analysis of Grey Literature on Digital Accessibility, Summary of Stakeholder and Expert Interviews, Focus on New Forms of Digital Accessibility, Challenges in Implementing Digital Solutions, Development of Mobility-as-a-Service (MaaS) and Other Digital Services, Concerns Over Sustainability and Fairness, Lack of Coordinating Actors for Digital Accessibility, Need for Improved Coordination and Support, Inclusion and Democratic Ideals in Development	https://doi.org/10.13140/RG.2.2.22256.64009

		departments, and organizations at different geographical levels in Sweden are actively working to develop digital accessibility and establish multiple services, such as Mobility-as-a-service (MaaS), to increase citizens' accessibility. Nonetheless, critical voices urge caution regarding digital development and the development of services such as bike-sharing systems due to their possible negative contributions to sustainability and fairness. However, the literature showed that many opportunities and tools exist to create good conditions for developing digital and new accessibility. One problem identified, especially in the interview study, is that there is currently no coordinating actor that municipalities, among others, can use for questions and support regarding the development of digital accessibility. The cities do not necessarily have digital competence, especially in smaller rural municipalities. It is also precisely the rural areas that should be the focus at present, as the focus has too often been on urban areas in developing intelligent mobility solutions and digitalization. The complexity makes it difficult for municipalities to implement new forms of accessibility. The study also shows a lack of coordinating entity actors can turn to for help. To truly		

			succeed in developing digital accessibility and intelligent mobility, it is essential to coordinate knowledge and tools that can assist the actors in their work. Furthermore, development must start with democratic ideals and equality to create systems that are genuinely accessible to all and not just certain groups.		
103	1	1,2	Rethinking Universal Accessibility: a broader approach considering the digital gap. This paper highlights a limitation in the traditional formulation of universal accessibility concepts, which tends to overlook socioeconomic and sociopolitical contexts. The critique suggests that the current approach impacts only a small fraction of the global population with disabilities. The need for a more comprehensive approach is emphasized, one that considers factors such as literacy, technology availability, digital literacy, and the use of minority languages. This paper calls for a broader understanding of	Digital accessibility, Universal accessibility, Socioeconomic context, Societal digital divide, ICTs, Digital exclusion, Digital inclusion, Language barriers, Access to technological infrastructure, Digital literacy barriers, Accessibility guidelines,	https://doi.org/10.1007/s10209-015-0416-1

			accessibility to address a wider range of challenges faced by individuals with disabilities.	Web Accessibility Initiative (WAI/W3C), Affordable technology	
104	1	1,2	Web Accessibility Challenges. The WCAG 2.0 is not adequate to guarantee website accessibility, is not appropriate for inexperienced web developers in order to understand the guidelines and is characterized by ambiguity. Despite the growing importance of web accessibility, a significant portion of websites remains inaccessible to certain population sectors. This paper explores the root causes of this issue, attributing it to factors like web developers' limited experience in accessibility and a lack of accurate information on efficient Accessibility Evaluation Methods (AEMs). The survey delves into accessibility literature, offering an overview of primary challenges related to accessibility barriers during website design, development, and evaluation. Critical investigation includes standards and guidelines (WCAG 2.0). The paper concludes with a set of recommendations, including the enforcement of accessibility legislations, to address and overcome these challenges.	Digital accessibility, Accessibility awareness challenge, Digital accessibility skill gap, Accessibility evaluation methods, Web accessibility, Accessibility legislation, Accessibility standards, Accessibility guidelines, WCAG	https://doi.org/10.14569/IJACSA.2016.071023

105	1	2	Digital diversity and an inclusive smart society: a novel methodological search for digital participation and sustainable development in a Swedish suburb. The study focuses on understanding how digital technology impacts different communities within a suburb in Sweden, particularly those often overlooked in surveys and studies. It highlights five key points: 1) Digital Inclusion is necessary for cities to become “smart” and sustainable. Indeed, every citizen must have access to digital services. This means that digital inclusion is critical for achieving local and global goals like the Sustainable Development Goals set by the UN. 2) Challenge of Digital Exclusion – even in Sweden, which is known for its high level of digitalization, there are still a few digital advancements left out. This exclusion can vary within different areas of digital services, where someone might be active in one digital area but still excluded from others, such as digital government services. 3) The study investigates how digital services can be inclusively designed and used in a diverse suburb. It emphasizes that people in “hard to survey” areas, often due to high ethnic diversity and socioeconomic factors, are frequently missed in traditional surveys, which affects the accuracy of	Importance of Digital Inclusion for Smart Cities, Challenges of Digital Exclusion, Inclusive Design of Digital Services, Innovative Survey Methods for Hard-to-Reach Populations, Findings on Digital Diversity and Engagement, Creating Inclusive, Intelligent Cities	https://doi.org/10.1145/3428502.3428636

			data on digital participation. 4) To tackle this, researchers used a unique face-to-face survey method to include a wide range of perspectives from individuals who are usually hard to reach. This method involved translating surveys into several languages and conducting interviews in person in the community, offering a small incentive for participation. 5) Initial findings highlight significant digital diversity at different levels and in different types of engagement with digital technologies among the suburb's residents. Some are well-connected, while others, particularly those from marginalized groups, are less engaged with digital platforms and services. The study underscores the importance of considering all community members' diverse digital needs and competencies to create inclusive, intelligent cities. This approach helps better understand the digital divide and design more inclusive digital services catering to everyone's needs.		
106	1	1,2	Quality Assessment Instrument for web Accessibility Diagnostic Tools. This paper emphasizes the fundamental concept of web accessibility, emphasizing the universal ease for all individuals, irrespective of their condition, to navigate the Internet and utilize web pages seamlessly. It introduces the	Digital accessibility, Web development, Web accessibility, WCAG standards, Accessibility criteria, Automated tools,	https://doi.org/10.1109/CONTIE49246.2019.00049

			WCAG standards as defining guidelines for web accessibility criteria, which can be validated manually or automatically. The paper acknowledges the existence of numerous automated tools and web accessibility diagnostic forms, highlighting the challenge of finding tools that align with specific requirements. In response, Inclutec conducted a study, developing a foundational instrument to assess the quality of web accessibility diagnostic tools. This instrument utilizes predefined criteria based on the ISO 25010 model, with the flexibility for modification and subjective weighting. While the results are currently under review, the paper presents initial findings as a proposal for future exploration and refinement.	ISO 25010 model, Accessibility evaluation instrument	
107	1	1,2,3	Who Teaches Accessibility? A Survey of U.S. Computing Faculty. The demand for accessible software developers prompted a survey of 14,176 U.S. computing faculty. Findings show 50% of institutions have at least one faculty member teaching accessibility, constituting 2.5% of the faculty overall. Those teaching accessibility are often female, experts in HCI and software engineering, and have connections with individuals with disabilities. Barriers include unclear learning objectives and limited faculty knowledge. The study	Digital accessibility, Accessibility in education, Higher education, Teaching barriers, Accessibility learning objectives, Faculty knowledge, HCI, Computing education,	https://doi.org/10.1145/3159450.3159484

			emphasizes the need for tailored accessibility resources in specific computing areas.	Discipline-specific accessibility objectives	
108	1	6	Film language, film emotions and the experience of blind and partially sighted viewers: A reception study. Audio description gives access to film to individuals with visual impairment. Conventionally, audio description has to be strictly objective. The aim of the study was to explore the use of interpretative audio description (AD) compared to conventional AD with respect to emotional reception, film experience and AD evaluation. Three audio description styles for film - conventional, cinematic and narrative-were tested with the help of forty-five participants with visual impairment. Interpretative AD appears to make the emotional aspects of a film more accessible.	cinema film	https://jostrans.s.oap2.ch/issue33/art_bardini.php
109	1	1,2	Perspectives and Practices of Digital Accessibility: A Survey of User Experience Professionals in Nordic Countries. This paper delves into the role of User Experience (UX) professionals as key contributors to digital inclusion in Nordic countries. These professionals play a vital role in aligning web pages and digital services with regulatory	Digital accessibility, User experience (UX) professionals, Accessibility skill gap, Time constraints, Lack of training, Regulatory frameworks,	https://doi.org/10.1145/3419249.3420119

			frameworks and integrating digital accessibility into designs. Despite the importance of accessibility, the study, based on data from 167 UX professionals in Denmark, Finland, Norway, and Sweden, reveals that only a few specialize exclusively in accessibility. The results highlight that while UX professionals acknowledge the significance of digital accessibility, time constraints, limited training, and cost pose challenges in creating accessible systems.	Legislation, Accessibility practices, Accessibility guidelines	
110	3	1,2	Digital Accessibility Rights Evaluation Index (DARE Index) The Digital Accessibility Rights Evaluation (DARE) Index, presented in its second edition (DARE Index 2020) by G3ict, serves as a benchmarking tool for assessing global progress in making Information and Communication Technologies (ICT) accessible, in accordance with Article 9 of the Convention on the Rights of Persons with Disabilities (CRPD). Developed for use by disability advocates, governments, civil society, international organizations, and policymakers, the index comprehensively documents advancements made by 137 countries across eight regions. The data collection process involved collaboration with Disabled People's International (DPI), national assemblies, and various disability organizations	Inclusive ICTs, Digital accessibility, Digital Accessibility Rights Evaluation, Benchmark tool, G3ict, Accessibility progression tool, Convention on the Rights of Persons with Disabilities (CRPD)	https://g3ict.org/digital-accessibility-rights-evaluation-index/

			worldwide, covering 90% of the global population. The index offers a valuable resource for tracking and promoting accessibility on a global scale.		
111	1	6	Investigating the accessibility factors affecting hotel satisfaction of people with physical disabilities. This study investigates the impact of accessibility, disability types, and assistive devices on hotel satisfaction for people with physical disabilities (PwPD). The study was carried out in the USA and reveals that factors such as accessibility of public areas, recreation spaces, and baths strongly influence satisfaction. PwPD, particularly those with acquired physical disabilities and those using powerchairs or wheelchairs, face a lot of challenges in hotels. The study emphasizes the importance of adhering to accessibility standards (ADA Standards for Accessible Design, ISO 21542:2011 Building Construction – Accessibility and Usability of the Built Environment, B651-04 Accessible Design for the Built Environment, Accessible Built Environment Standard, AS 1428.1-2009 Design for Access and Mobility and PAS 88:2008 Guidance on Accessibility of Large Hotel Premises and Hotel Chains) and suggests that	Design of hotel rooms and bathrooms, recreation areas, food and beverage areas (factors of hotel satisfaction)	https://doi.org/10.1016/j.ijhm.2017.06.002

			comprehensive audits and for hotel managers are essential for improving hospitality and accessibility for PwPD.		
112	1	6	Problems of physical accessibility of components of a tourism product for persons with disabilities. The research aimed to assess the alignment of the tourist infrastructure in the Republic of Dagestan with the standards of a barrier-free environment. The accessibility of accommodation facilities, social and cultural facilities and beaches is the main subject. The study included hotels and catering facilities, as key elements of a tourist package, museums as key elements of cultural tourism and beaches as key elements of water tourism. The "Strategy for the development of tourism in the Russian Federation up to 2035" emphasizes that there is a need for numerous measures to create an inclusive infrastructure to contribute to developing a dedicated tourist product. The document includes the legal framework for accessible tourism in Russia that is comprehensive, including codes, federal laws,	tourist package, beaches	https://doi.org/10.47750/jett.2021.12.01.007

			rules, and standards but the business community's awareness of these regulations remains insufficient.		
113	1	6	Accessibility of Hotels for People with Visual Impairments: From Research to Practice. This study aimed to identify barriers in hotels affecting people with visual impairments, focusing on signage, lighting, color, contrast, layout, and key areas like entrances and guest rooms. Participants expressed their dissatisfaction with the lack of enough signage, their quality and also their placement, inadequate lighting, and non-tactile key cards. Some issues in guest rooms are the inconvenient placement of the towels, unclear shampoo bottles, and difficult electronic access. Communication barriers, inadequate staff training, and a lack of recognition of ethical responsibilities by some hotel managers are also identified. The importance of service dog accommodations and the need for individuals with visual impairments to advocate for their needs are emphasized. The study concludes with a checklist to help hotel managers to improve accessibility for visually impaired guests.	Hotel entrance (signage, lighting, color, and contrast, reception desk), Guest rooms (Electronics, Bathroom, Dog relief area, Key cards) Training of housekeeping staff Restaurants and menus, gym, gym, pool, map of recreation areas	https://doi.org/10.1177/0145482x1611000303

114	1	6	Access to Nature for Persons with Disabilities: Perspectives and Practices of Swedish Tourism Providers. This study is about the challenges and opportunities of making nature-based tourism in Sweden more inclusive for individuals with disabilities. There is a great interest for outdoor activities throughout the country but the accessibility for people with disabilities is not well-researched. The research included three different natural settings in Sweden (mountain, sea, lake and forest). The main problems that restrict persons with disabilities are natural obstacles, efforts for conservation of the natural environment and prejudices among tourist agents about disabilities and capabilities of this target group. Moreover, a lot of people with disabilities, as well as the general population, express a preference for natural environments to be preserved in their "original" state as much as possible. The study provides insights into accessible tourism for nature-based businesses, organizations, and governmental bodies engaged in regional development and spatial planning.	Activities in nature based destinations, mountain activities, water activities, fishing	- https://doi.org/10.1080/21568316.2022.2160489

115	1	2,3	Augmented reality for learning in special education: a systematic literature review. This review aimed to examine many researches that had been use Augmentative Reality technology in education. Each study underwent a thorough evaluation, considering rigor, credibility, and relevance. This examination aimed to ensure the overall quality and utility of each study in the broader context. The results revealed that AR is mostly being used in education for children with ASD. AR has been approved that increases the level of independence of children with special education needs, improves their learning performance and motivates them to follow up with their learning opportunities and to make progress. In addition, the review showed the satisfaction of parents, teachers and participants about the friendly AR environment because it gives the opportunity for active learning according to each individual's characteristic needs. Moreover, it has a significant impact on raising a pupil's self esteem as it gives instant feedback in each activity.	Argumentative reality in education for Autistic children	https://doi.org/10.1080/10494820.2021.1976802
116	1	2,5	Promising beginning? Evaluating museum mobile phone apps. The document outlines a conducted survey of mobile	mobile apps for accessibility in museums	https://eprints.gla.ac.uk/104173/

		applications created by art or cultural historical museums and examines the broader implications arising from the results. It delves into various aspects, including the intended purposes of these apps (such as serving as guided tours for permanent collections or temporary exhibitions), the layering of content, and the forms of user interaction and engagement they facilitate. The majority of the museum mobile apps we identified were developed by museums in the U.S.A., and in a European context, by museums in France, the U.K. and the Netherlands. The applications could provide to visitors many opportunities such as a) guided tours and navigation, b) presentations of the exhibits, c) descriptions of the exhibits, d) content creation or manipulation from the artist, e) games based on the exhibits. All the apps that had been evaluated could be used during, before and after the visit to museums. The purpose of the apps was to prepare, engage and support visitors to comprehend the exhibits. A very significant outcome was that many applications were giving more opportunities for social interactions to the visitors through posting pictures on museums 'walls, commenting and communicating with other visitors.	guided tours, audio descriptions	

117	1	2,5	Blind and visually impaired visitors' experiences in museums: increasing accessibility through assistive technologies. Visiting museums is an ongoing challenge for people with visual impairments because of the lack of access to the exhibits. Visitors with vision impairment are feeling very restricted in museums and unable to participate and enjoy the exhibitions. This article seeks to enhance the understanding of accessibility in museums and the needs of individuals who are blind or visually impaired during their museum visits, drawing insights from a literature review. Additionally, it investigates the assistive technologies employed to improve the experiences of visitors with visual impairments in museum exhibitions and spaces. Providing hybrid technological methods, such as haptic devices for exploration, touched replicas digitally augmentative, gesture – based interactive reliefs, assistive navigation for Self- Guided tours, individuals with visual impairment can have real access to the exhibitions through multisensory experiences.	Assistive technologies in museums	https://search.proquest.com/openview/c3953bf01ca6ed70527e378a0b2d559d

118	1	2,5	Accessibility, natural user interfaces and interactions in museums: the IntARSI project. The Museums General Direction of the Italian Ministry of Cultural Heritage funded the IntARSI project, which focuses on planning multimedia, virtual, and mixed reality applications that center around the idea of an "augmented" and multisensory experience. It incorporates innovative tangible user interfaces such as TUI and storytelling techniques. The approach is inclusive, considering the diverse needs, attitudes, ages, cultural interests, skills, and expectations of a broad audience, including those with different cognitive and physical abilities. Comparing ICT methods for accessibility with the more physical ones such as gesture- sign language, haptic replicas of the exhibits, it is proven that these can provide accessibility only temporarily depending on the museum's staff. However, using augmented ICT tools more effective and permanent solutions can be offered making museums even more accessible.	Augmented technologies for accessing cultural heritage	https://doi.org/10.3390/heritage4020034

119	1	6	Inclusion in sport: Disability and participation. This volume opens by highlighting that inclusion in sports requires a different approach than the one typically used in educational contexts. It emphasizes that the Convention on the Rights of Persons with Disabilities (CRPD) establishes a rights-based approach to integrating people with disabilities in sports, offering a range of opportunities from mainstream to disability-specific activities. A central theme is the necessity to tailor sports participation to the personal preferences, desires, and choices of individuals with disabilities. This aligns with UNESCO's International Charter of Physical Education and Sport, which advocates for improved participation in sports as a fundamental right. The CRPD endorses equal participation for persons with disabilities, accommodating a variety of sporting activities, both segregated and integrated. The volume suggests modifying sports activities to be inclusive for everyone, thereby honoring individual choice. For example, the study suggests parallel activities, special/separate activities, open- inclusive activities and modified activities. The structure STEP 'Space', 'Task', 'Equipment' and 'People' had been	Sports, inclusivity, accessible equipment, differentiated activities for individuals with disabilities	https://doi.org/10.1080/17430437.2016.1225882

			created to support sports activities for the individuals with disabilities.		
120	1	6	Beyond accessibility: exploring the representation of people with disabilities in tourism promotional materials...Promotional materials often exclude people with disabilities (PWDs), as they traditionally prefer to include and display White, cisgender, heterosexual, and non-disabled men. This perpetuates that only these groups are part of the tourism experience. This study focuses on how American Southeast tourism promotional materials, specifically tourism brochures represent PWDs and reveals issues like the complacency with accessibility standards, the limited diversity representation, and some neglect that can be spotted compared to pet-friendly initiatives. The findings show that there is a necessity of inclusive tourism, fighting stereotypes, and ensuring meaningful PWD inclusion. The study emphasizes adopting inclusive language, such as Person-First Language, to promote equality and in tourism promotional material. Using	Inclusive promotional material. inclusive language for promotional material	https://doi.org/10.1080/09669582.2020.1755295

			outdated and hurtful terms contributes to maintaining stereotypes, feelings, or attitudes directed towards marginalized groups such as people with disabilities.		
121	1	6	AuDIVA: A tool for embedding audio descriptions to enhance video accessibility for persons with visual impairments. The aim of the paper was to create a tool for audio description that provides the description of a scene before the scene takes place alternatively to the conventional way where the description is given at audio gaps. A pre-study took place where the needs and problems of individuals with visual impairment concerning audio description were explored. Then, the proposed tool was tested with the help of 11 male individuals with visual impairment. The tool seemed to be more suitable for short videos due to the added length.	accessible video / film	https://doi.org/10.1007/s11042-019-7363-4
122	1	6	Dance Is more than meets the eye-How can dance performance be made accessible for a non-sighted audience? The paper presents a literature review. Dance is an integral part of culture and it is traditionally only accessed through vision. The paper explores the way a dance performance can be made accessible. Dance is made	accessible dance performance (live theater performance)	https://doi.org/10.3389/fpsyg.2021.643848

			accessible through verbal (audio description), auditive (added sounds) and haptic (touch tours) means.		
123	1	7	Contribution of accessibility to urban resilience and evacuation planning using spatial analysis. Space syntax serves as a method for analyzing street networks, treating them as spaces of pedestrian movement with the goal of gaining insights into supporting architecture and urban design. This study utilizes space syntax to enhance comprehension of the city's spatial structure, contributing to the development of a model for urban space perception. In addition to space syntax, two additional variables—density and diversity—are deemed crucial for analysis. The space syntax offers a geometrically accessible view through an axis map, which represents visually and physically accessible urban spaces. This analytical model proves valuable for managing urban disaster prevention and understanding evacuation route patterns in the context of urban growth planning. Popular shelter characteristics include proximity to houses, open areas ensuring safety, and a familiar environment. Ultimately, space syntax emerges as a suitable	Evaluating Spatial accessibility using Space Syntax program.	https://doi.org/10.3390/ijerph20042913

			tool for conducting spatial accessibility analyses in urban research.		
124	1	5,6	A method for evaluating the impact of universal design on the attractiveness of military tourism sites. This study evaluates the impact of universal design on public open spaces, using Poland's Wolf's Lair military tourism site. The research develops an evaluation sheet for universal design. Managed, The Wolf's Lair site is managed by the Srokowo Forest District since 2017. Since then a lot of improvements took place: new footpaths, improved safety measures, and a new modern entrance complex. The site now has illuminated paths and a service building with inclusive facilities. With guided tours, a downloadable app, and ongoing renovations, such as improved lighting and multilingual information boards, the Wolf's Lair aims to be more attractive and accessible to diverse visitors. The study also addresses the barriers that disabled tourists face and stresses the need for universal design principles in public spaces, citing the Convention on the Rights of Persons with Disabilities.	Design of open spaces, sightseeing forest routes, open-air museums	https://doi.org/10.31648/aspa.8485

125	1	2,6	The State of Web Accessibility for tourists with disabilities: a comparative study between different tourism supply agents. The objective of the research was to assess the web accessibility of three Portuguese tourism supply agents, namely hotels, travel agents, and museums. This evaluation utilized two automated assessment tools, TAW and AccessMonitor, aligning with the WCAG 2.0 standards. The key issues are poor website navigation, insufficient text alternatives, incompatibility with assistive technologies and poor user assistance. It calls on web developers to address these challenges and ensure that PwD are not being excluded from tourism activities. Enhancing accessibility could boost PwD participation in tourism and have a positive impact on their overall well-being.	web accessibility, web content in compliance with the principles of WCAG 2.0 (perceivable, operable, robust)	https://doi.org/10.1080/17483107.2021.1941313
126	1	6	A new approach to accessibility, disability and sustainability in tourism—multidisciplinary and philosophical dimensions This study focuses on examining the role of sustainability and accessibility in the context of tourism. Traveling and tourism can influence several societal, economic, and environmental aspects. In the context of	Transportation accessibility, web accessibility as well as information, services, and facilities accessibility	https://doi.org/10.30892/gtg.40138-834

			tourism, the concepts of accessibility and sustainability are interdependent and interrelated. Several factors must be taken into account when assessing the accessibility of traveling and tourism including transportation accessibility, web accessibility, equal access to information, services, and facilities.		
127	1	6	Universal Accessibility of “Accessible” Fitness and Recreational Facilities for Persons with Mobility Disabilities It is important to ensure high accessibility to recreational and fitness facilities. However, many of these facilities have either medium or below medium level of accessibility and it is difficult to find a completely accessible one. This is particularly true for individuals with mobility disabilities. Most frequently, recreational facilities present a higher level of accessibility when compared to fitness centers. The Accessibility Instruments Measuring Fitness and Recreation Environments (AIMFREE) subscales, which involve several aspects including policies, equipment, entrance areas, parking lots, locker rooms, bathrooms, support and training, fitness programs, and swimming pools, can be used to assess the universal accessibility of such facilities. There is a drastic need for accessibility guidelines and policies to be	Facilities accessibility and Recreation accessibility	https://doi.org/10.1123/apaq.28.1.1

			adopted (e.g., the Americans with Disabilities Act Accessibility Guidelines) or developed and for monitoring and evaluation systems that assess the accessibility of a facility to be created and integrated.		
128	1	6	A conceptual framework for improving the accessibility of fitness and recreation facilities for people with disabilities Although legislation, policies, and guidelines (e.g., Americans with Disabilities Act) have assisted in the improvement of access to recreation and fitness facilities, there are still several issues that have to be addressed to ensure high accessibility for all individuals. To overcome these barriers, a systematic process that incrementally improves accessibility while taking into account the interests and functional ability of each individual with disability is required. Tools, such as the Accessibility Instruments Measuring Fitness and Recreation Environments (AIMFREE), have been developed to measure accessibility indicators, namely information, environment, professional behavior, equipment, and swimming pools. It is important for such tools and instruments to have both a consumer and a professional version. As new types of recreational activities, fitness programs, and sports become	Facilities accessibility and Recreation accessibility	https://doi.org/10.1123/jpah.5.1.158

			available, it is important to continuously monitor, modify, and enrich accessibility guidelines and policies through accessibility assessment, review, and transition which, in turn, will lead to the development of a globally effective solution database.		
129	1	6	Built environment instruments for walkability, bikeability, and recreation: Disability and universal design relevant? Although there are several instruments that evaluate the influence of the built environment on individuals' physical activity, in most cases such tools do not account for people with disabilities. Most of the tools that take individuals with disabilities into account when evaluating the recreation, bikeability, and walkability of built environments include a few universal design principles, collect data through audit/objective methods, integrate psychometric information, and involve disability-specific items. As a metric Geographic Information System (GIS) methods are used to a lesser extent. It is recommended that future accessibility instruments integrate all universal design principles, focus more on specific domains	Transportation accessibility and Recreation accessibility	https://doi.org/10.1016/j.dhjo.2011.12.002

			and disability populations, emphasize measurement specificity and psychometric quality.		
130	1	6	The accessibility for people with disabilities-new challenge and possibilities for fitness and recreation services development There are several open challenges and barriers regarding accessibility to recreation and fitness facilities for individuals with disabilities which are associated with environmental factors. Tools, such as the Accessibility Instruments Measuring Fitness and Recreational Environments (AIMFREE), policies, and legislation can help increase the accessibility to these facilities. There are several aspects to take into account to effectively evaluate accessibility. However, in the context of recreation and fitness facilities, the appropriate competence level of the staff, the training facilities, and the adaptation of the physical environment are some of the most important factors to consider. It is worth noting that in many cases commercial enterprises that offer fitness and recreation services are not easily accessible for individuals with disabilities. The main	Recreation accessibility	https://www.lituanistika.lt/content/82325

			reasons for that are the high cost of reconstruction, the lack of properly trained staff, and the low demand of such services from individuals with disabilities.		
131	1	6	Leisure as a human right: an exploration of people with disabilities' perceptions of leisure, arts and recreation participation through Australian Community Access Services Leisure is a human right. However, there is not much research conducted regarding how individuals with disabilities participate in leisure, arts, and recreation activities. When aiming at increasing the accessibility to these activities, it is important to focus on aspects, such as individualized services, local accessible services, transition and transportation, community inclusion, positive organizational culture, co-production, and innovation. Moreover, there are three main initiatives which can amplify accessibility in leisure, art, and recreation activities, namely i) universal access to leisure education, ii) the adoption of a capability framework which focuses on the potentials and strengths of individuals with disabilities, and iii) local placements of such activities.	Transpiration accessibility and Recreation accessibility	https://doi.org/10.1080/11745398.2017.1307120

132	1	6	The Conspicuous Absence of People with Disabilities in Public Fitness and Recreation Facilities: Lack of Interest or Lack of Access? Physical activity can improve the health of individuals with disabilities. Hence, it is important to ensure equal access to public recreation and fitness facilities. However, there is an evident lack of individuals with disabilities participating in such facilities. In several cases, outdoor environments are even less accessible than indoor facilities. The weather, safety, and non-accessible amenities and equipment are some additional reasons why public recreation and fitness facilities are less commonly used. It is essential to encourage individuals with disabilities to participate in public fitness and recreation facilities and promote the significance of ensuring high accessibility for everyone in such facilities.	Transportation accessibility and Recreation accessibility	https://doi.org/10.4278/0890-1171-19.5.327
133	1	6	Accessibility as a key management component of the Paralympics. The research presents measurements for enhancing circulation access during the Olympics and Paralympics in stadiums, encompassing standards for seating diagrams, access widths, and amenities. To support individuals with vision impairment, the study recommends	Accessibility in Paralympics, stadiums	https://doi.org/10.1057/978-1-137-43522-4_3

		addressing physical barriers. Accessible communication is facilitated through the Olympic Coordination Committee (OCOG) and websites compliant with the World Wide Web Consortium (W3C). The International Paralympic Committee (IPC) Accessibility Guidelines aim to transcend the confines of Olympic and Paralympic venues, adopting a holistic approach to destination accessibility. The IPC initiative provides leadership by establishing a common language for bidding and host cities, recognizing the evolving expectations across impairment types and support needs. While guidelines do not ensure implementation, evidence from the London 2012 case study and Rio 2016 guidelines indicates that the IPC's efforts are yielding positive outcomes. However, as highlighted in the London 2012 case study, the legacy depends on sustained impact and changes in the material position of people with disabilities in the host city and country. This underscores the ongoing commitment needed to improve the human rights position of individuals with disabilities, as outlined by the United Nations Convention on the Rights of Persons with Disabilities (UN CRPWD).		

134	1	5	Including Visitors who are d/Deaf or Hard of Hearing. This study delves into strategies to motivate visitors with hearing impairments (DHH) to attend museums and explores methods for these visitors to learn and access information within museum settings. The research also investigates the integration of apps into museum visits, emphasizing specific applications that include videos, assistive listening systems, and sign language features, with feedback gathered and discussed from all participants. To enhance the experience for visitors with DHH, the study underscores the importance of museums providing advance information about accessible services. Notably, effective signage plays a crucial role, serving as the primary means through which individuals with DHH can access information about exhibits. Visitor suggestions include the creation of a record or backup of exhibits, allowing them extra time to comprehend new information.	Accessible museums for individuals with hearing difficulties enhancing inclusivity in exhibitions, multi-sensory exploration	https://www.informalscience.org/sites/default/files/2015-04-17_2015_Including_Visitors_who_are_Deaf_or_Hard_of_Hearing.pdf
135	2	7	UK- Fire Safety Law: The Evacuation of Disabled People from Buildings. Retrieved from A PEEP, or Personal Emergency Egress Plan, serves as an evacuation strategy specifically designed for disabled individuals, aiming to ensure	Accessible Evacuation in case of fire, fire drills, PEEPs	https://www.nifrs.org/wp-content/uploads/2021/02/Fire-

			their safe evacuation without relying on the Fire and Rescue Service. It details the evacuation method for a disabled person in various areas of a building. The meaningful involvement of disabled individuals in the development and review of their PEEP is essential. Doors, including self-closing devices, should adhere to the recommendations of the appropriate British Standard regarding opening and closing forces, designed to contain smoke and fire, protecting building occupants and facilitating their evacuation. Concepts such as stair enclosure, fire compartmentation, and evacuation chairs play crucial roles in the overall effectiveness of evacuation plans.		Safety-Law-The-Evacuation-of-Disabled-People-from-Buildings.pdf
136	2	7	Fire Safety Risk Assessment Means of Escape for Disabled People: A Supplementary Guide. Disability awareness, evacuation etiquette, moving and handling techniques, effective communication practices, understanding fire-resistant enclosures, and the importance of pre-planned evacuation routes are key components of PEEP development. All building staff should be familiar with fire safety measures and strategies, ensuring they have the opportunity to choose the safest route in the event of a fire. Employers hold the	Risk Assessment in case of fire, PEEP, evacuation training for staff	https://assets.publishing.service.gov.uk/media/5ec5401ee90e0754d1dedf20/9446_Means_of_Escape_v2.pdf

			responsibility of providing suitable evacuation plans for employees, taking into consideration the disabled person's movements within the building, operational procedures, available escape routes, building systems, and the existing egress plan. Designating a Disability Contact for each building can be beneficial, as they oversee the provision and maintenance of evacuation plans for disabled individuals and report to the coordinator. Training should encompass practice evacuations to ensure the smooth execution of evacuation plans. Specialized evacuation lifts and fire-fighting lifts, equipped with features and safeguards, may be suitable for use during a fire, while other lifts are typically deemed unsuitable for fire evacuation purposes.		
137	2	7	Evacuation of Disabled Persons: Personal Emergency Evacuation Plans (PEEPs). Based on the questionnaire data, it is crucial to create Personal Emergency Egress Plans (PEEPs) as disabilities can significantly impact individuals in emergencies. Challenges arise for those unaware of alarms or emergency situations, such as the blind or deaf, and individuals with both visual and hearing impairments face double the difficulty. Various conditions, including mental health problems,	Personal Emergency Egress Plan (PEEP) for people with accessibility needs Specific difficulties and barriers in case on an urgent evacuation	https://www.lancsfirerescue.org.uk/wp-content/uploads/2018/09/personal_emergency_e

			learning disabilities, mobility issues, and medical dependencies, highlight the need for tailored evacuation plans. Recognizing these challenges underscores the importance of developing PEEPs to effectively address fire risks for individuals with disabilities.		vacuation plans peeps .pdf
138	3	7	Building Fire Protection Regulation. The regulation aims to protect life and health by preventing the spread of fire within and outside the building, safeguarding the building and its contents, and ensuring rapid evacuation and safety from smoke, toxic fumes, and heat. The regulation specifies minimum design requirements for escape routes that facilitate quick and safe evacuation to a safe location or another building, ensuring protection from smoke and heat. It includes the provision of sufficient width for final exits on the evacuation floor, taking into account the needs of various users, including the elderly, children, and people with disabilities. The regulation includes the need for "protected accessible waiting areas" where individuals with disabilities can remain safe temporarily during a fire, typically incorporated into protected escape routes or elevator lobbies. These areas are constructed according to prevailing specifications to ensure	Evacuation routes and exits, protected accessible waiting areas	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20180100080

			accessibility. The Fire Safety Regulation is detailed, with specific safety requirements taking precedence over general building design codes, and applies concurrently with other building regulatory requirements. Special adjustments and compensatory measures are allowed for buildings of historical or traditional significance, ensuring fire safety without compromising their protected character. These exceptions are documented in technical reports and approved by the Fire Service.		
139	3	1	Standardization Mandate to CEN CENELEC AND ETSI in support of European accessibility requirements for public procurement in the built environment (M/420 EN). This document is a standardization mandate issued by the European Commission, specifically by the Directorate-General for Employment, Social Affairs and Equal Opportunities. The mandate, dated December 21, 2007, is addressed to three European standardization organizations: CEN (European Committee for Standardization), CENELEC (European Committee for Electrotechnical Standardization), and ETSI (European Telecommunications Standards Institute). The purpose of the mandate is to request these standardization	Design for all, functional requirements, technical details for accessibility.	https://www.ane.c.eu/images/attachments/m420ENfinalMandate.pdf

			bodies to develop standards that support European accessibility requirements- A European Action Plan for public procurement in the built environment providing guidance in two levels such as functional requirements and technical details for accessibility. In other words, it outlines a directive for creating standardized guidelines and criteria related to accessibility in the construction and infrastructure projects that are subject to public procurement processes within the European Union. The goal is likely to ensure that built environments including products and services are designed and constructed in a way that is accessible to all, including people with disabilities.		
140	1	1,6	Accessibility of Sport Buildings for People with Disabilities - Intervention of Rehabilitation Nurses. This study, conducted in Portugal, evaluates accessibility in sports buildings of rehabilitation nurses' point of view. The Rehabilitation Nurse has to face challenges to ensure that the Building that are going to use for their services is inclusive and a safe space for people with disabilities. The evaluation of buildings includes identification of the architectural obstacles, the compatibility with specific sports, comprehensive guidance for persons with disabilities concerning both mobility limitations	public sports buildings, public sports buildings with pools, swimming pools	https://doi.org/10.33194/rper.2019.v2.n2.02.4568

			and their chosen sports. This research is a component of the +Saúde Famalicão project. It is particularly relevant in the context of the Basic Law for the Prevention and Rehabilitation and Integration of People with Disabilities and Decree-Law 163/2006, which highlights the importance of sports for citizens with disabilities.		
141	1	6	Developing a Measure of User-Perceived Universal Design for Sport Facilities This research created and verified a measuring tool for evaluating user perceptions of universal design in sports facilities. It addresses the need for Universal Design (UD) guidelines and evaluation tools that can apply to sport facilities.. The research aims to identify user-centered UD principles and develop a reliable and valid measurement tool with attributes like equitability, usability, convenience, aesthetics, safety, and pleasantness. The study highlights the theoretical contribution by transforming designer-centric UD principles to user-centered perspectives and demonstrates that evaluation measures can be different between these two. The findings emphasize the importance of appropriate UD guidelines to meet diverse user requirements. The study	Inclusive sport facilities, equitability, usability, convenience, aesthetics, safety and pleasantness	https://www.ajol.info/index.php/sajrs/article/view/168241

			acknowledges some limitations and suggests future research on various groups of athletes and types of sport facilities.		
142	4	1	Union of Equality: Strategy for the Rights of Persons with Disabilities 2021-2030. The "Union of Equality: Strategy for the Rights of Persons with Disabilities 2021-2030" serves as a comprehensive communication document from the European Commission to various European institutions. Completed in March 2021, it underscores the commitment of the European Commission to address challenges faced by individuals with disabilities and promote their inclusion in society. This strategic plan spans diverse areas, encompassing employment, education, healthcare, accessibility, and social inclusion. By proposing specific actions and policies, it aims to ensure equal opportunities and rights for persons with disabilities over the next decade. The strategy extends beyond the EU, touching on global advocacy for disability rights. It aligns with initiatives like the Citizenship, Equalities, Rights, and Values programme (CERV), fostering independent living through deinstitutionalization in mental health, and promoting new skills for emerging jobs. Additionally, it emphasizes social economy	Design for all, functional requirements, technical details for accessibility.	https://policycommons.net/artifacts/1677300/union-of-equality/2408949/

			improvements, social protection system consolidation, and equal access to justice, healthcare, education, goods and services, supported learning in inclusive settings, sustainable healthcare access, cultural and recreational accessibility, safety, and protection. The strategy also focuses on implementing the Common European Asylum System (CEAS) acquis, considering the specific needs of vulnerable applicants, including persons with disabilities. This overarching approach aligns with global initiatives, such as the Toolbox on the "Rights-Based Approach" for EU development cooperation and strengthening the EU Framework under the UN Convention on the Rights of Persons with Disabilities (UNCPRD).		
143	1	3,5	Universal Design Principles Applied in Museums' Historic Buildings The principles of universal design can be used to improve accessibility to museums. Architecture design choices should focus on flexibility in use, intuitive and simple use, size and space for approach and use, low physical effort, equitable use, error tolerance, and perceptible information. To ensure higher accessibility the following can be applied for each principle: i) flexibility in use: flexible multifunctional hall, several ways to interact and perceive the exhibition, vertical	Museum accessibility and Educational accessibility	https://doi.org/10.31522/p.30.1(63).9

			communication among all floors, and free exhibition route, ii) intuitive and simple use: color coding of specific zones, easy routes, clear orientation, and sensory and visual contact with the environment, iii) size and space for approach and use: visible and reachable elements and appropriate construction dimensions, iv) low physical effort: comfortable movement, movable chairs, and resting points, v) equitable use: accessible adaptations for all individuals, comfortable ramps and exterior spaces, accessible toilets, and clearly visible and easy to find common and side entrances, vi) error tolerance: easy to use, resistant, and durable exhibits and materials, risk-free environment, slip-resistant floor materials without glare, and vii) perceptible information: Hands-on and multisensory exhibits, alternative formats of multimedia information, and easily understandable pictograms and signs.		
144	1	3,5	Cross-pollinating culturally sustaining pedagogy and universal design for learning: Toward an inclusive pedagogy that accounts for dis/ability Cross-pollination can positively affect the universal design for learning and help shape a culturally sustaining pedagogy which, in turn, can lead to the creation of emancipatory pedagogies that focus on	Educational accessibility and Cultural aspects	https://doi.org/10.17763/1943-5045-86.3.366

			equality and inclusivity. In this context, emphasis should be placed on designing a curriculum suitable for every student which will allow multiple means of engagement, representation, and expression. Hence, material, assessment, instructional methods, and goals should be flexible and appropriate to tend to every individual's needs and culture.		
145	1	3,5	Disability cultural centers: How colleges can move beyond access to inclusion In several cases, within colleges and institutions there are centers that serve minority students. Nonetheless, centers that focus on housing students with disabilities are scarce since most centers focus on simply meeting the legal requirements. This fact results in the existence of only a limited number of disability cultural centers. However, such infrastructure can significantly enrich the expression and validation of disability culture which is particularly important since a sizable number of undergraduate students are characterized to be having a disability. Universities should acknowledge, promote, and support disability culture through creating a lending library, inviting appropriate speakers, scheduling low-cost events, and soliciting student volunteers. Additionally, as they serve as a	Educational accessibility and Cultural aspects	https://doi.org/10.1080/09687599.2019.1679536

			welcoming and safe space, they should emphasize that disability is a natural aspect of human diversity, welcome all individuals, educate stakeholders about ableism, and create cultural bonds between the local community and the campus.		
146	1	2,5	Social media, social inclusion, and museum disability access Social media have become an integral part of modern life. Hence, ensuring high accessibility to them by all individuals is imperative. Moreover, social media can positively affect social inclusion by providing people with disabilities a platform to express themselves, connect with others, and feel a sense of belonging. Museums can be regarded as educational institutes which have a key social role as they serve as leisure gathering places and provide a sense of community. Museums lack knowledge and resources on how to effectively engage all audiences. In many cases, museums have used social media platforms to reach a larger audience. Social media including other Web 2.0 applications can provide several new possibilities for individuals with disabilities to take part in cultural, social, work-related, and community activities. Hence, they can act as a bridge to connect the disability community with museums and improve social inclusion. Inclusion,	Museum accessibility and Digital accessibility	https://doi.org/10.1080/15596893.2017.1361689

			disability access, social media and technology, exclusion conditions, museum access, educational impact as well as funding and cost are some of the key aspects that should be taken into account to improve accessibility to and in museums.		
147	1	5	Disability, cultural accessibility, and the radio archive Radio and other forms of media have played a vital role throughout recent history. Therefore, archivist actions have taken place to secure the retention of radio history. It has been highlighted that radio was used as a political means, as a means to maintain and disseminate cultural values, and was also used by individuals with disabilities as an information source and as a means for rehabilitation. It is also worth noting that the radio acted as a means through which individuals with disabilities could express themselves in times when disabilities were frowned upon. The history of radio is closely related to social inclusion and the embodiment of individuals with disabilities.	Cultural aspects	https://doi.org/10.1080/17400309.2018.1524963
148	3	1,2	Accessibility Requirements for ICT products and services. Harmonized European Standards. ETSI stands for the European Telecommunications Standards Institute. It develops	European Telecommunications Standards Institute WCAG	https://ipr.etsi.org/

			globally applicable standards for information and communication technologies (ICT), including telecommunications, broadcasting, and related areas. ETSI focuses on establishing guidelines and criteria such as WCAG 2.1 AAA Success Criteria to ensure that information and communication technologies are designed and implemented in a way that is accessible to individuals with disabilities. This could include considerations for the functional performance such as the usage of Assistive Listening Devices for people with limited hearing or other generic requirements like providing Real Time Text (RTT) functionality and other facilities such as access without speech. Accommodations regarding the hardware are being provided such as hardware products with speech output and related to the software like text alternatives.	2.1 AAA Success Criteria Accessible ICT products and services	
149	3	4	Disability Inclusion Practice Note Working Draft Physical Accessibility Making UN Premises & Facilities Accessible through the Business Operations Strategy (BOS)2.0 This document aims to express what the United Nations Country Team should prioritize to provide accessibility through Business Operations Strategy. Accessibility in buildings	Accessible Workplaces	https://unsdg.un.org/sites/default/files/2021-04/Physical%20Accessibility-BOS-

			involves considerations for entrances, exits, restrooms, bathrooms, WCs, meeting rooms, conference rooms, and accessible work areas. Digital requirements, such as text-to-speech functionality and the availability of Braille keyboards and printers, should be implemented to support individuals with disabilities in their work. In terms of signage, the use of International Symbols of Accommodation (ISA) is recommended to facilitate navigation for individuals with disabilities. Ensuring multi-sensory alarms and providing large-print instructions is essential for safe evacuations. The document also lists some of the methods that accessibility can be improved in general such as Accessibility Audit, Accessible Formats, Policies, Accessibility Feature using technology, Reasonable Accommodation etc.		Disability%20Inclusion-Practice%20Note-20210303.pdf
150	1	3	Limited accessibility of free online resuscitation education for people with disabilities The study reveals a significant gap in web accessibility for English-language massive open online courses (MOOCs) in Basic Life Support (BLS). Out of 30 courses, none met Level AA or AAA of WCAG 2.1 guidelines, posing challenges for people with disabilities. The findings emphasize the need for international best practices,	Web Accessibility, MOOCs	https://doi.org/10.1016/j.ajem.2022.03.039

			aligning with web accessibility standards, to enhance the usability of digital resuscitation education content. The study concludes by urging increased awareness and organizational efforts to make resuscitation education accessible to a broader audience.		
151	1	3	Access Provision for Students with Reading Disabilities (SRDs) in Nigerian University Libraries The article emphasizes the importance of making critical information resources accessible for the success and development of individuals within institutions, particularly those with reading disabilities (SRDs). University libraries are urged to adopt a service-oriented approach, providing inclusive collections, assistive technologies, and training for staff to support SRDs. The paper suggests collaborative efforts, public awareness campaigns, and adherence to legal standards to enhance accessibility. The comprehensive recommendations encompass technological, infrastructural, and societal aspects, aiming to bridge the gaps in access faced by SRDs in Nigerian university libraries.	University libraries, Collaborative Platforms, Accessible Formats,	https://doi.org/10.1016/j.acalib.2022.102622

152	3	1,2	The European Parliament and the Council of the European Union. Directive (EU) 2016/2102 is a legal framework established by the European Parliament and the Council of the European Union. The directive, adopted on 26 October 2016, focuses on ensuring the accessibility of websites and mobile applications of public sector bodies. The aim is to ensure that people with disabilities, including those with visual, auditory, motor, and cognitive impairments, can access and use these digital services. Public sector bodies across all European Union, including government agencies, educational institutions, and other entities that provide public services, are required to comply with the accessibility standards outlined in the directive by a specified deadline. Member States are typically responsible for monitoring the implementation and the progress made by public sector bodies in achieving accessibility. The text of the directive specifies its relevance to the European Economic Area (EEA), indicating that it applies not only to EU member states but also to countries within the EEA.	Accessible digital services, Accessibility standards for websites and mobile applications	https://www.eumonitor.eu/9353000/1/j4nvk6yhcbpeywk_j9vvik7m1c3gyxp/vk9pdf7297zs

153	1	3	University access policies for persons with disabilities: Lessons from two Chilean universities This study investigates the admission policies of two pioneering universities in Chile that have achieved significant access for individuals with disabilities. Through qualitative case study methodology, including documentary analysis and interviews, the study identifies facilitators, barriers, and challenges in the access of students with motor, visual, and sensory disabilities. Facilitators include national and institutional policies, accommodations in university selection tests, and specific support programs. Barriers encompass overestimation of grades during school, limited awareness of admission processes, and inconsistent admission policies. Challenges and proposals for improvement involve creating support programs for transitioning from high school to higher education, enhancing outreach channels, diversifying admission mechanisms, and raising awareness within the educational community about the value of inclusion.	accessible infrastructure, accessible admission tests, accessible information, accessible dissemination strategies on university websites	https://doi.org/10.1016/j.ijedudev.2022.102577

154	1	6	Exploring the accessibility of sport stadia for people with disability: towards the development of a Stadium Accessibility Scale (SAS). This paper examines the importance of universal accessibility in professional football stadia. The study proposes a Stadium Accessibility Scale (SAS) and inclusive stadiums in order to have societal acceptance. It promotes the social model of disability and a holistic approach in contrast with the dominant medical model. The analysis does not stay only on the subject of simple access, but proceeds to the wider experience of the stadium and the big events. There are two propositions for sport management: alignment with the HOPES framework for an "accessible end-to-end journey" and the development of an "Accessible Stadium Scale Performance Measurement System" to help global stadium accessibility. The study underscores the need for inclusive, lived experience-focused research in sports management.	accessibility of sporting stadia, sight lines for spectators with disabilities-disability spectator viewing	https://doi.org/10.1108/sbm-05-2021-0064
155	1	3	Inclusivity and accessibility in undergraduate osteopathic education for students with disability: A scoping review This systematic scoping review focuses on the educational	accessible support mechanisms, access to support	https://doi.org/10.1016/j.ijosm.2021.02.003

			experiences of learners with disabilities in UK osteopathic education. While osteopathy is a regulated health profession, there is limited literature on the educational experiences of students with disabilities. Key findings include significant attainment gaps and higher attrition rates for disabled learners, with negative attitudes of staff identified as a major barrier. The issues of disclosure and access to support were consistently discussed, with a lack of available support affecting student success. The study underscores the need for further primary research on barriers and enablers for disabled students in UK osteopathy.		
156	1	3	Access and Inclusion for Students with Disabilities in Performing Arts Higher Education The article addresses the challenges faced by the global performing arts sector, emphasizing the need for inclusivity and accessibility. The focus on racial injustice is acknowledged, but the article argues that accessibility and inclusion, particularly for individuals with disabilities, are equally vital. The paper delves into issues in both the US and Spain, advocating for transformative change in performing arts education, starting with training programs. The article discusses accessible and inclusive productions,	physical accessibility, inclusive learning experiences, inclusive services, inclusive practices, inclusive production processes	https://doi.org/10.32621/ACOTA.CIONES.2021.4.7.01

			citing examples from the US and Spain. Barriers include limited representation of disabled actors and insufficient accessibility services in theaters. The article highlights the importance of considering accessibility in both existing and new space designs, introducing Universal Design Principles as a guiding standard. The article, also, focuses on an inclusive-centered theatre curriculum, detailing methods such as qualitative surveys and data analysis. Approaches for designing an inclusive-centered theatre curriculum are proposed, emphasizing the integration of accessibility and inclusion topics into education.		
157	1	4,6	Developing indicators to evaluate instructor management of sports centers for the people with disabilities based on universal design principles in South Korea. The aim of the study was to create evaluation indicators for instructor-led management of disabled sports centers in South Korea, applying universal design (UD) principles. By using the Delphi technique with experts, the study developed indicators to assess instructors in hiring, training, and management skills. Recommendations include validation of the evaluation indicators by applying them to public sports centers and	evaluation of sports instructors for the disabled, sports instructors' capabilities	https://doi.org/10.3389/fpubh.2022.871468

			emphasizing integrated programs. Additionally, the need for more indicators in areas like programs, public relations, safety, and finance, based on UD principles, was highlighted. The study also advocated for an awareness education program on UD concepts for a fair and accessible environment in sports centers.		
158	2	3	Guidelines for Describing STEM Images. The National Center for Accessible Media (NCAM) in collaboration with the American Foundation for the Blind developed guidelines for the description of STEM images and graphs based on research. The project was also supported by the DAISY Consortium. The NCAM website presents 9 guidelines for the description of STEM images based on the themes emerging from their research.	accessible STEM images	https://www.wgbh.org/guidelines-for-describing-stem-images
159	1	6	Participatory accessibility: Creating audio description with blind and non-blind children The article presents a study which examines participatory accessibility. The purpose of the study was to create audio description for a live opera performance with the help of the end users, 6 young viewers with visual impairment. Young viewers suggested having a	accessible opera / live performance	https://doi.org/10.47476/jat.v1i1.50

			short introductory text, showed a preference for more description of characters and less for objects, a preference for including the mention of colors in the AD and a preference for the explicit mention of a point of view, even though these last two characteristics are not typical in conventional AD.		
160	2	5,6	Art Beyond Sight The Art Beyond Sight is a museum education institute focused on accessibility. They offer materials such as evaluation tools and training guides for inclusion and accessibility. On their website, a guide for writing verbal descriptions meant for audio tours can be found. It includes tips on the duration, the format and the content of a verbal description and provides examples with corresponding pictures.	accessible paintings / art	https://www.artbeyondsight.org/mei/verbal-description-training/writing-verbal-description-for-audio-guides/
161	1	5,6	Scripted or spontaneous? Two approaches to audio describing visual art in museums The paper presents a study comparing two different styles of audio description for describing artwork in museums. The first style consists of traditional audio description which is separate from the guide-talk and has a specific format and the second style provides spontaneous audio description given in-between the guide-	accessible paintings / art	https://doi.org/10.1080/0907676X.2022.2046816

			talk. The four participants of the study appreciated both styles, praising the first for its precision, but were able to have a collective experience by taking part in collective meaning-making of the artwork during the second.		
162	1	5,6	Museum audio description: the problem of textual fidelity The paper discusses the challenged of museum audio description in comparison with film audio description. While reviewing the literature, the authors note that museum audio description presents different challenges and requires the cooperation of the describer with museum staff. Concluding, they make suggestions for the content of museum audio description and future research. They suggest including information about emotions and about the museum itself in order to make the experience holistic as that of a sighted visitor.	accessible exhibits / museum	https://doi.org/10.1080/0907676X.2018.1473451
163	1	5	Words to see: On the intersemiotic translation of composition in paintings. The paper discusses the similarities between theories for audio description for film and verbal description for static art. After reviewing the theoretical literature, the authors review prevalent guidelines on verbal	accessible paintings / art	https://www.researchgate.net/publication/307954713_Words_to_see_on_the_intersemiotic_translation_of_composition_in_paintings

			description providing useful information on how visual content can be turned into a verbal description. Emphasis is given on the prioritization of information as the paper proposes techniques for providing the overview of a painting and the positioning of its elements with examples of realistic and abstract paintings.		rsemiotic translation of composition in paintings
164	4	6	A comparative study of audio description guidelines prevalent in different countries. The study presents the prevalent guidelines for audio description, mainly for film, in different European countries. The comparative study was published by the Royal National Institute of Blind and it presents different countries' guidelines on audio description. The guidelines examined come from the UK, Spain, Germany, Greece and France. They include the aspects that should be included in an audio description, the aspects that should be not, the description of characters, the language employed and the desired way of voicing a description.	accessible film / video	https://unidescrip tion.org/storage/app/uploads/public/5f1/a3e/bb1/5f1a3ebb17896460620035.pdf
165	2	5,6	The audio description coalition standards for audio description and code of professional conduct for describers The Standards for Audio Description and Code of	accessible film / theater / opera / museum exhibition	https://www.perkins.org/wp-content/uploads/

			Professional Conduct for Describers provide guidelines not only on the general guidelines of audio description, but also include separate chapters with specific guidelines for reported and live audio description and audio description for film, for theatre, for opera and for museums and exhibitions. Many of the guidelines are followed by explicit examples for describers with dos and don'ts.		elearning-media/adc_standards.pdf
166	3	1	DIRECTIVE (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services (Text with EEA relevance). Directive (EU) 2019/882 is a legislative act issued by the European Parliament and the Council of the European Union. It was adopted on 17 April 2019 and pertains to the accessibility requirements for products and services. The main focus of this directive is to ensure that products and services in the European Union (EU) are accessible to all, including people with disabilities. The directive includes provisions and specifications regarding the design, production, and provision of products and services to make them accessible to individuals with disabilities. This involves considerations such as the design of user interfaces, the incorporation of assistive	Legislation for accessible services and products, assistive technologies, accessibility standards	https://data.europa.eu/eli/dir/2019/882/oj

			technologies, and other measures to enhance accessibility. The text contains detailed guidelines and requirements for businesses and organizations operating within the EU to comply with these accessibility standards.		
167	1	5	Inclusion and accessibility of persons with disability in brazil: Senses and sensations in the access to patrimonial historical museums in the state of rio de janeiro. The focus of the research is on the interdisciplinary perspective of "access to museums," emphasizing the importance of understanding the atmosphere as a crucial factor for the mobility of individuals with disabilities. The results have been retrieved from a research project on accessibility conducted by the Pro-Access Research Group at the Federal University of Rio de Janeiro in collaboration with the Brazilian Historical Patrimony. The central theme revolves around exploring what a person with a disability experiences when moving through exhibition halls, emphasizing the impact of environmental perception on the affective relationship people develop with the spaces they visit. The primary objective is to enhance the understanding of 'Accessibility to Museums' by exploring sensorial like touching the exhibits and emotional perspectives	Accessibility and inclusivity in historical museums	https://www.academia.edu/download/32055166/Inclusive_Museum_Conference_Australia_-_COHEN-R-DUARTE-R-BRASILEIRO-A-2009.pdf

			on environmental perception. The methodology employed involves ethnographic participant observation and the analysis of routes taken by individuals with disabilities in museums.		
168	1	5	Improving accessibility to cultural heritage for people with Intellectual Disabilities: A tool for observing the obstacles and facilitators for the access to knowledge. The participants were 8 individuals with Intellectual Disabilities who had been used before Augmentative and Alternative Communication and they had represented an adequate reading (decoding) capacity, and a low or medium level of reading comprehension. All the participants had to navigate to three different places across the archeological area of the city by using totems with visuals and written information. The results revealed many of the barriers that people with ID facing in the cultural heritage related to the perception and physical interaction with content resources, the language and symbols, the contents comprehension, the engagement with knowledge. Furthermore, the participants shared good practices that can improve the accessibility standards and services in historical places.	Accessibility to cultural heritage for individuals with intellectual Disabilities.	https://doi.org/10.1016/j.alter.2020.06.016

169	1	5	Selection against disability: Abortion, ART, and access. The paper argues that limiting trait-based selection through legal or practical bans can have negative consequences, preferring one form of difference over another and restricting reproductive liberties. The essay advocates for societal and clinical reforms to improve decision-making, educate parents and providers, and expand access to reproductive health care. The paper advocates for diminishing pressure on prospective parents to select against disability and supporting the inclusion of people with disabilities in all aspects of healthcare, including reproductive health. Recommendations include educating providers, separating conversations about screening from the delivery of testing results, incorporating non-directive counseling into reproductive care, disability training, and other proposals for revamping clinical practice and culture. The focus should be on promoting choice and respect for people with disabilities rather than drawing lines between traits considered serious or problematic for pre-implantation or prenatal selection.	Accessibility in education, healthcare and culture	https://doi.org/10.1111/jlme.12235

170	1	3	Connecting Universal Design for Learning with Culturally Responsive Teaching Teachers play a vital role in the educational process. Hence, it is important for educators to be culturally responsive by considering how different characteristics of students influence their learning and apply appropriate pedagogies to address the diversity. To effectively use the universal design for learning (UDL) principles, it is essential to also consider differences in culture and socioeconomic status. Hence, the UDL framework should be expanded to also regard culturally responsive pedagogies. In order for that to materialize, culturally responsive considerations must be taken into account. This potential expansion can be amplified by adopting practices, such as having multisensory representations, adopting different methods, applying metacognitive strategies, collaboratively exploring and discussing new content, reshaping the curriculum, promoting cross-cultural conversations, cultural capital, and a growth mind-set, encouraging active participation and proactive behaviors, accepting diversity, acknowledging local dialects, promoting equality and mutual respect, providing constructive and personalized feedback,	Cultural accessibility and Educational accessibility	https://doi.org/10.1177/0013124518785012

			and allowing students to make decisions on topics and assignments that interest them. Specifically, to promote culturally responsive teaching, multiple means of engagement, of representations, as well as actions and expressions should be provided.		
171	1	3	Accommodations, accessibility, and culture: Increasing access to study abroad for students with disabilities Although internationalization is an important aspect of higher education, there are particular student groups, such as students with disabilities, that are under-represented due to mobility difficulties and restrictions. To address this issue, it is important to evaluate the accessibility and inclusivity of education through appropriate models, such as the Advocacy, Accommodations, and Accessibility (A3) model. The vast majority of institutes, even those with strong study abroad programs, mostly focus on providing the appropriate accommodations and only recently have put emphasis on designing programs through the lens of accessibility. The creation of a culture of accessibility and a culture of inclusion in study abroad programs is becoming imperative. Multiple stakeholders should collaboratively participate and adopt and	Cultural accessibility and Educational accessibility	https://doi.org/10.1177/1028315319842344

			integrate models and principles, such as the universal design, into study abroad programs. As new programs are created, it is important to plan accordingly having accessibility in mind from the start.		
172	1	6	Access to physical activity and sport And the effects of isolation and cordon sanitaire during COVID-19 for people with disabilities in Scotland and Canada. The purpose of the study is to examine the effects of Covid-19 on persons with disabilities (PwD), focusing on their involvement in sports and physical activities in Scotland and Canada. The study, aligned with the World Health Organization's research roadmap, explores the effects of isolation measures on individuals' health and well-being. Conducted through online focus groups and interviews, the research highlights the challenges faced by people with disabilities, emphasizing the importance of addressing inequalities and promoting inclusive access to physical activities. The study supports collaborative efforts between governments, international agencies, and disability organizations so they can carry out inclusive policies	inclusive sports activities during pandemics and isolation	https://doi.org/10.3389/fspor.2020.594501

			supporting the mental and physical health of persons with disabilities during and after the pandemic.		
173	1	6	Development of Evaluation Indicators for Sports Facilities for People with Disabilities Considering the Universal Design: Focusing on the Republic of Korea. The purpose of the study is to develop an evaluation index for sports facilities for people with disabilities, incorporating Universal Design (UD) principles. Expert opinions gathered via the Delphi method and three main criteria and thirteen sub-criteria were identified. Key considerations include ensuring safe and easily accessible spaces for exercise, convenient movement and passage areas and common spaces for social functions. The study underscores how important it is to apply UD principles to sports facilities, taking into consideration factors like safety, accessibility, and ancillary services.	accessible sport facilities, living space, common space, gymnasium, changing rooms, ancillary facilities, toilets and showers, finishing materials	https://doi.org/10.3390/healthcare10112151
174	1	1,2	Instant tactile-audio map: enabling access to digital maps for people with visual impairment. The purpose of this study is to make navigation to local places more accessible to individuals with vision impairments using tactile- audio maps.	Tactile- audio maps	https://doi.org/10.1145/1639642.1639652

			The approach first detects and segments texts from a map image and recreates the remaining graphical parts in a tactile form which can be reproduced immediately through a tactile printer. Then, it generates an SVG (Scalable Vector Graphics) file, which integrates both text and graphical information. The tactile hardcopy and the SVG file together are used to provide a user with interactive access to the map image through a touchpad- IVEO, resulting in a tactile-audio representation of the original input image. This supports real-time access to the map without tedious conversion by a sighted professional.		
175	1	2,5	The Blind and the Model of Architecture Touching. This study aimed to assess perception of shape and plan through 2D explanations of building features and corridors while touching 3D paper models to enhance understanding. Volunteers were congenitally blind and asked to touch 3 paper models of three different famous buildings that were representing ancient, middle, and modern ages. Methods included interview, observation, photography, and note-taking. All the participants had been trained to understand the principles of Orientation and Mobility (O&M) which is the skill to know how to navigate independently from one place to	Orientation and Mobility for people with visual impairment Navigation into buildings of cultural heritage	https://he02.tci-thaijo.org/index.php/Veridian-E-Journal/issue/view/3953

			another safely, using any available information from the environment such as noises, smell, objects and/or tactile information. The results revealed that congenitally blind participants couldn't perceive architectural shape directly. However, O&M training helped participants comprehend space and movement for safe navigation in various environments. New ideas had been provided for design guideline of building planning and space for the blind in the future since it could be used as design criterions for their perception and safety.		
176	1	1	New cultural geographies of disability: Asian values and the accessibility ideal It is essential to critically analyze the accessibility of the environment to increase the mobility and independence of individuals with disabilities. This is particularly true in developing countries, such as Indonesia. Based on cultural aspects, several people with disabilities are excluded from various daily activities. Hence, to pursue the ideal of a “barrier-free environment” which will promote social inclusion, differences among nations and even among groups within the same nation, such as economic bases, cultural traditions,	Daily life events and activities	https://doi.org/10.1080/14649360.020028285

			resources, and demographic distribution, should be taken into account.		
177	1	5,6	Accessibility of tourist signage at heritage sites: an application of the universal design principles Tourist signage is another area in which the universal design principles can be applied to increase accessibility. Tourist signage can be an essential aspect that facilitates navigation in service facilities, attractions, and heritage sites for all individuals. Moreover, ineffective tourist signage can lead to poor tourism experiences which can also affect the duration of an individual's stay. How one perceives tourist signage can be influenced by several factors, such as the culture, personality, purpose of visiting, background, physical capabilities, etc. In some cases, the fact that tourist signage provides a sense of direction using a consistent design style can be regarded as the main benefit. Hence, it can be inferred that tourist signage is closely related to the Simple and intuitive (Principle 3) and Perceptible information (Principle 4) of universal design. However, in some occasions, tourist signage might be insufficient, difficult to view, and too far from the locations they specify while in others, they can be hidden or even non-	Cultural heritage accessibility, tourist accessibility, and transportation	https://doi.org/10.1080/02508281.2022.2106099

			existent. These issues are mostly related to the Perceptible information (Principle 4) and the Low physical effort (Principle 6) principles.		
178	1	6	“Sports for All”—An Evaluation of a Community Based Physical Activity Program on the Access to Mainstream Sport for Children with Intellectual Disability. The study is about the challenges that children with intellectual disabilities (ID) face when they take place in sports, including structural and social barriers. A German self-help organization carried out an 8-week program in sports clubs. In Germany sports clubs receive financial support in order to make their programs inclusive. There was positive feedback from the children, but parents were critical about their childrens’ inclusion and acceptance. The clubs expressed interest but there were some concerns about facilities, staff, and qualifications. The study underlines the need for improved coach training and collaboration with disability organizations. Despite challenges, the program provided valuable insights and potential for social	accessibility in sports, inclusion in soccer, basketball, handball	https://doi.org/10.3390/ijerph191811540

			inclusion in mainstream sports like football, basketball, gymnastics etc.		
179	1	3	Evidence for the effectiveness of visual supports in helping children with disabilities access the mainstream primary school curriculum The article discusses a project evaluating the impact of visual supports on children facing challenges in daily routines at home and school. Data from questionnaires, completed by parents and teachers, indicate diverse perceptions of children's functioning. Despite varying scores, common concerns emerged, including difficulties in task execution, following instructions, organizing belongings, and sustaining attention. The study implemented visuals tailored to individual goals, such as independent living routines. Feedback revealed increased independence, reduced anxiety, and positive behavioral changes in children. The Visual Resource Specialists (VRS) played a crucial role, receiving high praise from families and teachers for support, collaboration, and effectiveness. The study acknowledges challenges and suggests further exploration of teacher attitudes and the role of VRS in achieving positive outcomes.	accessible visual graphics, presentations, inclusive language	https://doi.org/10.1111/1471-3802.12105

180	1	3	Beyond Communication Access: Promoting learning of the general education curriculum by students with significant disabilities The Survey examined the effects of implementing the Beyond Access model in three main areas: teaming practices, presumed competence, and student performance. The findings indicated overall improvement in team dynamics, student engagement, and communication skills. Team members reported increased efficiency in meetings and better collaboration, leading to positive school-family relationships. The concept of presuming competence was emphasized, encouraging teams to believe in students' abilities to learn general education curriculum. This led to changes in teaching practices, such as providing appropriate supports and opportunities for student participation in general education activities. The study also highlighted improvements in student performance, including increased classroom membership, participation, and communication skills. Team collaboration and professional development played significant roles in driving these positive changes.	inclusive classroom environments, communication, modifying materials, inclusive practices, augmentative and alternative communication	https://journals.Iww.com/topicsinlanguagedisorders/fulltext/2006/07000/Beyond_Communication_Access_Promoting_Learning_of.8.aspx

181	1	6	Effects of motivation in sports: a study with people with visual impairment. The subject of the study is social inclusion for individuals with visual disabilities through sport participation. The study used a long-distance race intervention program. Results showed that physical condition, psychological and especially the emotional state and self-esteem, and also the autonomy and social relationships of the participants improved after the intervention. Recommendations of the study include personalised physical and psychological interventions for participants by supporting their training in order to improve the performances.	inclusive sports, inclusive long-distance races for people with impairments	https://doi.org/10.21506/j.ponte.2018.1.32
182	1	5	Analysis of the educational spaces and universal design: The case study of Duzce University faculty of art, design and architecture campus. Duzce University Art, Design, and Architecture Faculty are being evaluated in terms of universal design principles. The research aims to assess the current state of campus facilities regarding universal design and proposes interventions to enhance inclusivity. Video recording and observation studies are employed to analyze the interaction between the physical environment and campus	Universal design, intervention that enhance inclusivity in Art and Architecture	https://dialnet.unirioja.es/servlet/articulo?codigo=8319212

			users. Findings reveal patterns of interaction, leading to the identification and classification of areas needing universal design solutions based on priority. Problem areas suitable for enhancing inclusivity through small-scale design interventions are determined, and initial design ideas are developed.		
183	1	5	“The Florence Experience”: A multimedia and multisensory guidebook for cultural towns inspired by Universal Design approach. This research project addresses the challenges faced by tourists with disabilities in accessing comprehensive information when planning trips. The objective of the project was to develop an inclusive guidebook, titled "The Florence Experience," incorporating both Universal Design and Performance Design approaches. The outcome is a multimedia and multisensory bilingual guidebook in Italian and English, providing information through paper-based content, web pages, MP3 audio files, and portable tactile maps. The project represents a significant step forward in creating a unique information tool for both disabled and non-disabled individuals, surpassing the limitations of many existing	Multisensory guidebooks accessible to people with sensory needs Accessible information through paper-based content, web pages, MP3 audio files, tactile maps	https://content.iopress.com/articles/work/wor2256

			guidebooks by considering a broader range of needs such as sensory accessibilities.		
184	1	1	Cultural barriers in access to healthcare services for people with disability in Iran: A qualitative study There are several cultural barriers associated with healthcare services and the access that individuals with disabilities have. These barriers can be related to policy makers (e.g., lack of concern or support), individuals with disabilities (e.g., shame, disability denial, insufficient support), and health services providers (e.g., disrespect, reluctance to provide services). Misconception is another barrier that is present at all society levels. The societal cultural norms are closely related to the negative attitude toward individuals with disabilities. Hence, all policy makers should focus on examining accessibility from different dimensions, promoting a culture of disability, and reducing or even eliminating the cultural barriers. Including individuals with disabilities during decision making can assist in increasing accessibility and promoting a culture of disability.	Healthcare accessibility, Cultural barriers	https://doi.org/10.14196/mjiri.31.51

185	1	1,5	Museum Education for Disability Justice and Liberatory Access Museums are an integral educational means. Hence, it is important to ensure high accessibility by following disability justice principle, such as posing critical questions, promoting a notion of flexibility, ease of traverse, and crip time, focusing on collective responsibility and curatorial care, and following a “leadership of those most impacted” strategy. To achieve a highly accessible museum that also focuses on solidarity, appropriate practices should be followed. Due to their lived experience and expertise, individuals with disabilities should actively be engaged in planning and decision making. In this sense, when designing for accessibility, the public practices adopted should be thoroughly examined having individuals with disabilities play a vital role as co-creators of their own experience. Staff should also be appropriately educated and trained. A culture of supporting and celebrating differences while at the same time demonstrating respect and commitment to all individuals should be promoted through the practices adopted.	Museum accessibility, Co-creation	https://doi.org/10.1080/10598650.2022.2072155

186	1	2	Consilience for universal design: the emergence of a third culture Digital systems have become an integral part of daily life. Moreover, when designing information and technology applications, it is important to focus on catering to diverse needs and requirements. As the environment changes continuously, digital systems should be able to evolve and adapt. However, in order for that to materialize, it should be realized that designing such systems is a dynamic, complex, and continuous activity which gets affected by various unforeseen complications. As there are various types of software (e.g. domain independent software, domain dependent experiment software, and domain dependent embedded software) and different types of domains based on their resolution (e.g., sequential resolution, incremental resolution, and evolutionary resolution), design practices should be flexible enough to be applicable to diverse domains and use cases. As adaptive design is crucial for creating accessible systems and applications, it is important to note that design as a process is characterized by several aspects, such as being a continuous learning process defined by trial-and-error, a highly valued and satisficing activity, an interactive	Digital system design and development	https://doi.org/10.1007/s10209-006-0049-5

			negotiation that leads to innovation, as well as being an interface and an artefact. As the design of accessible systems and application is a complex sense-making and decision-making process, there should be a consilience at the micro, macro, and meta levels between scientific enquiry and artistic flair and creativity while also taking perspectives from the humanities and sciences into account.		
187	1	2,5	Accessibility of Cultural Heritage Sites for People with Disabilities: A Case Study on Krakow Museums It is imperative to ensure high accessibility of cultural attractions through thorough assessments regarding both their physical and digital accessibility. In several cases, museums are more prepared to receive individuals with physical disabilities than they are to receive visually impaired, blind, hearing-impaired, or deaf individuals. Although effort is put to ensure digital accessibility, most focus is placed on comprehensibility and compatibility which, in turn, leads to lower scores in functionality and perceivability. When evaluating cultural heritage sites, it is important to consider both its physical and digital accessibility and use appropriate metrics for each case. For example, operability, perceivability, robustness,	Accessible digital information	https://doi.org/10.3390/su16010318

			understandability and whether a museum has a website or not can be used to assess its digital accessibility whereas evaluating the amenities provided to individuals with disabilities (e.g., appropriate doors, ramps, lifts, platforms and toilets, having descriptions in Braille, induction loop, communication routes, pictograms and warning signs, audio signals, etc.) can be used to assess its physical accessibility.		
188	1	2,5	Universal Design and Cultural Heritage Cultural heritage and values can also be disseminated through new technologies and digital means. However, to ensure equal access to this information, high accessibility to web-platforms should be a top priority. Universal Design principles are widely used as cornerstones when designing web applications, systems, and platforms having accessibility in mind. Nonetheless, to develop highly accessible digital information, it is important to design from the start having individuals with disabilities as a focal point. New technologies, such as carving technology, 3D printing, 3D scanning, etc., have brought about new opportunities to create interactive and accessible material. In the context of museums, personalized applications, 3D modeling, tactile exhibits, Braille and audio supported guides,	Accessible digital information	https://doi.org/10.26493/2350-5443.10(2)27-33

			and mobile applications to support traverse can increase accessibility. Additionally, using interoperable digital platforms in combination with University Design principles can result in overall accessibility improvement.		
189	1	2,5	Understanding users with reading disabilities or reduced vision: Toward a universal design of an auditory, location-aware museum guide Designing information systems to provide equal access to information or improve the experience in cultural heritage sites, such as museums, for individuals with reduced vision and reading disabilities. To address this issue, appropriate design principles should be adopted. Location-aware, auditory, and portable information systems can further improve accessibility to museums when designing them for individuals with disabilities in mind and following a universal design approach. For example, allowing users to listen to information multiple times, having distinct interface elements and high-quality sound, offering detailed information about the exhibit, and providing clear directions and navigation are ways that can improve accessibility. To develop an effective information system for individuals with disabilities, it is important to consider the relevant to the target group aspects,	Accessible digital information, application and system specifications and considerations	https://doi.org/10.1515/IJDhD.2006.5.2.147

			elicit the system and information requirements, create a conceptual design based on the needs, and assess the system. Nonetheless, in many occasions such a system could also be beneficial to all individuals since non-typical user groups have higher but not always different demands than typical user groups.		
190	1	6	Sports participation and quality of life in individuals with visual impairment. The aim of the study is to examine the relation between sports participation and the quality of life in visually impaired individuals. Studies have shown that various sports could improve physical and psychological health and social life. Also, there are sports activities that could be properly adapted for people with visual impairments like swimming, goalball, football etc, but there aren't any studies on participation and quality of life of athletes who take part in these. The evaluation of quality of life should be taken into account in every rehabilitation program. In the present study SF-36 quality of life scale has been utilized and according to the findings, athletes and people who take part in sports activities appear to have a higher level of quality of life.	accessible sports activities, rehabilitation programs for people with VI	https://doi.org/10.1007/s11845-020-02285-5

191	1	5	Digital Humanities and disability: A systematic literature review of cultural accessibility for people with disability Heritage buildings carry a lot of historical and cultural value. In several cases, heritage buildings are being refurbished. To ensure that these buildings are accessible and sustainable, universal design or other principles should be followed. In the existing literature, not enough emphasis is put on the combined and interrelated examination of heritage, inclusiveness, and sustainability or on individuals with disabilities. However, there are several recommendations and legislation on how to refurbish heritage buildings focusing on accessibility and sustainability. For example, in the case of accessibility, there are sources, such as WHO, CRPD, SWD, EIDD, COM 636, ISO 41001, CPR 306, in the case of built heritage, there are sources, such as UNESCO/UIA, ICOMOS, Europa Nostra, COM 477, ZVKD-1, and in the case of sustainability, there are sources, such as UN, COM 614, COM 445, EE-03-2014, ASHRAE, EN 16883, EPBD 31.	Accessible building specifications	https://doi.org/10.1093/llc/fgac045

192	1	2,5	Sustainability and universal design aspects in heritage building refurbishment The rapid technological advancements have led to the rediscovery and use of cultural content through digital platforms. Digital humanities can support cultural accessibility and inclusiveness for individuals with disabilities by offering digital repositories and tools for processing cultural contents as well as allowing the 2D and 3D reconstruction and modeling of archaeological sites, models, and monuments. Additionally, new technologies, such as 3D models, CNN, OCR, artificial intelligence, virtual reality, extended reality, QR codes, and NoSQL databases, can be used to further improve accessibility.	Digital tools and technologies for accessibility	https://doi.org/10.1108/F-07-2018-0081
193	1	3,4	Providing Access to Engagement in Learning: The Potential of Universal Design for Learning in Museum Design Museums constitute places in which learning can occur. Many museums have focused on improving their facilities in terms of accessibility. However, there are still many issues and challenges that must be addressed so individuals with disabilities can more meaningfully engage and participate in learning activities within museums. Besides its other	Specifications of learning in informal settings	https://doi.org/10.1111/cura.12030

			benefits, universal design can also be adopted to improve access to engagement in informal learning environments, such as museums. To achieve a universal design for learning framework, it is important to set clear and descriptive learning goals that are broad enough to involve the aspirations of diverse learners. This is particularly true in informal learning environments. To apply such a framework, there is a need for innovative approaches to be integrated together with design-based research to combine the practice of design with learning sciences creating, thus, a continuous development cycle of design, implementation, research, analysis, and redesign. It can, thus, be inferred that the universal design for learning framework is a continuously evolving and adapting framework that will evolve as knowledge of learning in informal and authentic contexts improves.		
194	2	5,6	Pictures painted in words: ADLAB Audio Description guidelines. The ADLAB guidelines are the result of a three-year research project between Italy, Spain, Portugal, Belgium, Poland and Germany financed by the European Union. The guidelines mainly focus on film audio description (AD) by providing information on the wording and cohesion of AD and	accessible film /theater/ museum	https://www.openstarts.units.it/server/api/core/bitstreams/69c52c7c-5d01-4bc5-8438-

			its combination with subtitles. An example of an AD script is also provided. The guidelines also include a short chapter about verbal description in museums by presenting a few general guidelines that most describers follow.		41dd123b66c0/content
195	1	6	Audio description for (postdramatic) theatre. Preparing the stage. The paper discusses audio description for theater performances and even though it underlines the need for objectivity, it concludes that interpretation is needed in dynamic art, especially when the meaning would not be clear based on strict objective description of objects that may instead have a metaphorical meaning important to the play. The importance of involving the director is also highlighted as the performance is their vision.	accessible theater	https://repository.uantwerpen.be/docman/irua/378fa6/153173.pdf
196	1	5	The accessible museum: Towards an understanding of international audio description practices in museums. The paper explores audio description practices for museum exhibits around the world, mainly the USA and Europe. The participants were describers and the study employed a mixed methods approach. All participants consider that audio description should be informative and engaging and it should	accessible museum (audio description)	https://doi.org/10.1177/0145482X20971958

			also provide a mental picture. American and European describers' answers showed disagreements on the value of interpretation and cognitive prompts		
197	1	6	Designing a course on audio description and defining the main competences of the future professional. The paper presents the design of a course for audio describers. After reviewing the literature, the authors present the content and activities of the suggested course. Besides, describing the qualities of an audio description professional, they give examples that are useful for the content of an audio description, like how to approach the description of clothes or facial characteristics.	accessible film (audio description)	https://doi.org/10.52034/lanstts.v6i.195
198	1	6	To what extent does the Paralympic Games promote the integration of disabled persons into society? The paper discusses whether and to what extent the Paralympic games play an important role for the inclusion to society of people with disabilities through sports, with various references in the Convention of the Rights of Persons with Disabilities and other treaties, like the Universal Declaration of Player Rights, International Covenant on Civil and Political Rights ('ICCPR')	elite sports accessibility	https://doi.org/10.1007/s40318-020-00164-w

			and the International Covenant of Economic, Social and Cultural Rights ('I'ESCR'). Paralympic games are a major athletic event, separate from Olympic games, but face some difficulties like the absence of some categories of impairment as well as the fact that the media over-promotes the technology involved and the prosthetics and not the athlete. The article concludes that in general the Paralympic Games contribute to the social inclusion of athletes		
199	1	1	The case for universal design if you can't use it, it's just art Universal design can be integrated into different domains to increase their accessibility and inclusivity. Designing experiences, environments, services, goods, and tools is a complex process in which several aspects should be taken into account. Design should be flexible, adaptable, and compatible, have all individuals in mind, and acknowledge differences. Designing for more people can lead to more business-oriented benefits and gains.	Benefits and elements of universal design	https://doi.org/10.1007/BF02681057
200	1	3,5	People with learning disabilities and access to mainstream arts and culture: A participatory action research approach Art and culture are an integral part of any	Learning in cultural environments,	https://doi.org/10.1111/bld.12303

			society and should be accessible to all individuals. Community and a sense of belonging is an essential element tied with culture and arts. This is particularly true for individuals with disabilities. However, the accessibility of individuals with learning disabilities to such places and their overall experiences are not always taken into consideration. Some of the main barriers that need to be addressed are related to cost, transport, and the need to be accompanied by another person to attend related cultural events. Additionally, individuals' physical and emotional access should also be better supported. Cultural sector organization should offer a safe and warm environment. Staff should also be adequately trained through co-created training delivered together with individuals with disabilities who should also play an active role in decision-making and consultation.	transportation, and recommendations.	
201	1	2,5	A revaluation of the cultural dimension of disability policy in the European Union: The impact of digitization and web accessibility Cultural services and goods should be accessible to all individuals. This is the case for both physical and web accessibility. Principles and rights which are in line with the United Nations Convention on the Rights of Persons	Web accessibility, recommended practices for cultural accessibility	https://doi.org/10.1002/bsl.2102

			with Disabilities and the European Disability Strategy 2010–2020 should be adopted to ensure high accessibility. Access to cultural services and goods can be increased through further promotion, copyright exceptions, adoption of web accessibility policies, and digitization of orphan works and cultural materials.		
202	1	5	Magic for the mind's eye: A promising avenue for more universal design in the art of magic Magic tricks can be regarded as a form of art that is closely related to cognitive science. Hence, they should also be available in some form to individuals that are visually impaired or blind. Specifically, the tricks can be adopted in a non-visual format. When comparing the visual and non-visual format of the same trick, the results can be pretty comparable. Thus, the illusions of imagery for non-visual presentation can be considered as an effective approach to adapt magic tricks to reach visually impaired or blind individuals and as an avenue to be considered when applying universal design in the arts.	illusions of imagery for non-visual presentation	https://doi.org/10.1177/20416695231222995

203	1	5	An appraisal of universal design compliance of museum buildings in Southwest Nigeria In some countries, museums are experiencing a decrease in the number of visitors which, in turn, leads to a decline in social relevance and economic viability. This fact influences several aspects including the inclusion and accessibility of individuals with disabilities to such facilities. Therefore, based on the universal design principles, although some museums are able to continue performing adequately and remain approachable (e.g. sufficient transportation system and entrances, properly planned ground floor level), they struggle to meet accessibility (e.g., not having handrails, lifts, or ramps) and usability (e.g., improper artifact locations, insufficient stall and baby-changing facilities) requirements for individuals with disabilities. To achieve end-user satisfaction and serve all individuals there is a drastic need to adopt and integrate universal design principles. This is particularly true for underdeveloped countries, such as Nigeria.	Approachability, usability, and accessibility indicators	http://eprints.covenantuniversity.edu.ng/9850/
204	1	3,5	Universal design for learning and the arts Universal design learning can effectively enhance arts education as it can support affective, recognition, and strategic learning. Hence,	Universal design learning principles for multiple	https://doi.org/10.17763/haer.83

			there should be multiple means of representation (e.g., various options for language, symbols, comprehension, and perception), of actions and expressions (e.g., various options for communication, action as well as executive and strategic function), and of engagement (e.g., various options to sustain engagement, develop self-regulation, and recruit interest). By integrating the aforementioned, art facilities can become more accessible to all individuals and tailored to different learners.	means of representations, actions, and engagement	1.33102p26478p54pw
205	1	3,5	Intersections in Music Education: Implications of Universal Design for Learning, Culturally Responsive Education, and Trauma-Informed Education for P–12 Praxis Different pedagogical approaches, such as trauma-informed education, culturally responsive education, and universal design for learning can be integrated into music education to remove barriers to learning and make learning more inclusive and accessible. These approaches share common principles as they recognize diversity in learning, put emphasis on learners' strengths, and promote students' agency and self-efficacy. The shared principles are related to the need to reform curriculum, practice cultural humility, establish healthy and firm boundaries, offer choices and honor	Shared principles of UDL, CRE, and TIE	https://doi.org/10.1177/00274321221087737

			students' voices and preferences, build strong relationships with the community and families, as well as know and value each student's experiences and goals.		
206	1	4	Mapping ICT access and disability in the workplace: An empirical study in Italy. The purpose of the study is to examine the degree of accessibility in ICT of employees with disabilities in Italian private companies. It is a fact that people with disabilities use ICT consistently in the workplace to carry out their everyday tasks. These technologies, among other options for customization, are used by the employees to interface with assistive technology devices which enables them to perform any task. However, the research shows that they are usually in the position of clerk and the office worker, that is low in the hierarchical scale. This is mainly for reasons relevant to technological barriers such as intimidation that sometimes new technologies cause, the different rate of advance between the technology and the interfaces for people with disabilities and also the fact that assistive technology can be complex in many cases.	ICT accessibility in workplace with physical presence, assistive technology	https://doi.org/10.3233/wor-141868

207	1	4	Return to work considerations in the lingering COVID-19 Era: Long COVID, multiple chemical sensitivity, and universal design. Nowadays, in USA, employers are more interested in hiring and accommodating employees with disabilities than ever before. This is because initiatives of diversity, equity and inclusion must be prioritized. Investors not only evaluate the financial performance of the company, but also the Environmental, Social and Governance (ESG) scores. Hiring people from various backgrounds affects the ESG score. Furthermore, the paper examines how applying the main seven principles of UD has a positive effect on workers with Long COVID, which is considered a presumptive disability under the Americans with Disabilities Act (ADA), or MCS (Multiple Chemical Sensitivity).	inclusion in workplace by applying UD principles, inclusion for employees with Long Covid and MCS	https://doi.org/10.3233/wor-223641
208	2	1	UKAAF minimum standards: Clear and Large print. UK Association for Accessible Formats. The UK Association for Accessible Formats (UKAAF) represents a document of minimum standards for Accessible, Clear and Large Prints. These standards should meet each individual's requirements where possible, without compromising the integrity of the	Clear and large prints, criteria, standards for accessible information	https://www.ukaaf.org/wp-content/uploads/2020/03/MS03-UKAAF-Minimum-

			original information. The document of minimum standards for Clear and Large Print include criteria for the presentation of the informative print, the identification and the navigation of the document, the interpretation and adaptation, the Accuracy, the Finishing and packaging. The criteria that should be provided in all the documents is order to provide accessible information are many among others the size of the paper, the font, the layout, spaces between the words and the sentences, the contrast between text and the background etc.		standards-Clear-and-large-print.pdf
209	3	1	ISO/IEC GUIDE 71:2014(E): Guide for addressing accessibility in standards. This is a guideline that represents many possible limitations and impairment that can affect the variety of functions of the humans and the Universal Design and usability considerations that should be put in place in order to apply to these needs. Many strategies of accessibility should be provided such as efficiency, the multi means of information presentation, the different types of interactions, fixed and specific parameters that accommodate the widest range of needs. Minimizing the unnecessary complexity should also be a goal for accessibility, simplifying the language and the performance requirements for activity, basic functionality	Strategies for accessibility, minimizing the complexity	https://www.iec.ch/webstore/free/pubs/isoiecguide71%7Bed2.0%7Den.pdf

			should be easily accessible, providing individualized access to the systems and providing flexibility and alternative resources using assistive technology where is needed. The International Classification of Functioning, Disability and Health (ICF) is being used as a resource for terminology. Last but not least a checklist is provided to identify specific needs in order to accommodate those needs.		
210	3	1,2,3	ISO/IEC 24751-1: Information technology — Individualized adaptability and accessibility in e-learning, education and training — Part 1: Framework and reference model. ISO/IEC 24751 is a functional guideline which is intended to facilitate the matching of individual user needs and preferences with educational digital resources that meet those needs and preferences. The present legislation provides the description of a learner's accessibility needs and preferences, including 1) how digital resources are to be displayed and structured, 2) how digital resources are to be controlled and operated, and 3) what supplementary or alternative digital resources are to be supplied b) the description of the characteristics of the resource that affect how it can be perceived, understood or interacted with by a user, including 1) what sensory modalities are used	Accessible e-learning in education, accessible technology and digital resources	https://webstore.iec.ch/preview/info_isoiec24751-1%7Bed1.0%7Db.pdf

			in the resource, 2) the ways in which the resource is adaptable (i.e. whether text can be transformed automatically), 3) the methods of input the resource accepts, and 4) the available alternatives.		
211	3	2,3	ISO/IEC 24751-2: Information technology — Individualized adaptability and accessibility in e-learning, education and training - Part 2: “Access for all” personal needs and preferences for digital delivery. ISO/IEC 24751-2 sets standards for creating e-learning and training materials that can be customized to meet the individual needs and preferences of users, promoting inclusivity and accessibility in the digital learning environment. The identification of the variety of the needs and the basic principle of accessibility are provided. The emphasis is given to Vocabulary codes, the alternative types of the information been provided in order to be accessible to the individuals such as a) the different modes of textual, visual, auditory, b) the adaptation to individual’s needs using Braille, audio description, c) the alphanumeric layout vocabulary codes, d) the auto scan repeat vocabulary codes, Braille dot number/grate vocabulary codes etc.	Accessibility to information technology, Individualized adaptability, accessible e-learning	https://cdn.standards.iteh.ai/samples/43603/a65d9d88eca8405d9ba8fce6255c8575/ISO-IEC-24751-2-2008.pdf

212	3	2,3	ISO/IEC 24751-3: Information technology — Individualized adaptability and accessibility in e-learning, education and training — Part 3: “Access for all” digital resource description. This standard is specifically designed to address the digital resource description for "Access for All." Within the realms of e-learning, education, and training, a digital resource description entails furnishing information about educational materials, content, and resources to enhance their adaptability and accessibility for a diverse user base. This encompasses metadata and supplementary details that assist systems in comprehending and interpreting the content, thereby simplifying the provision of customized learning experiences. The Access For All Digital Resource Description (DRD) Information Model comprises a) Access For All Digital Resource Description, b) Access Mode Statement, c) Adaptation, d) Adaptation Statement. Attribute Descriptions and Recommended Use cover a) access for all digital resources, b) access mode statement and usage, c) control flexibility statement and display transformability, d) color coding, e) hazard, and f) adaptation. Finally, a list of terms is provided to enhance accessibility.	Accessibility to information technology, Individualized adaptability, accessible e-learning	https://cdn.standards.iteh.ai/samples/43604/b58f37c7a44a4476a3abd70261eddaed/ISO-IEC-24751-3-2008.pdf

213	3	2,3	ISO/IEC 29187-1. Information technology — Identification of privacy protection requirements pertaining to learning, education and training (LET) — Part 1: Framework and reference model. The framework and reference model outlined in ISO/IEC 29187-1 serve as guidelines for organizations, developers, and stakeholders involved in the design, implementation, and maintenance of technologies and systems used in learning, education, and training (LET). By identifying and incorporating privacy protection requirements from the outset, the standard aims to promote responsible and privacy-aware practices within the realm of information technology for educational purposes. The current guideline includes six specific areas of interest a) the terms and definitions with cultural adaptability, b) the Learning Transaction Model (LTM), c) the Integrated set of Information life cycle management (ilcm) principles, d) Coded domains for specific state changes, e) Use and adaptation of the ISO/IEC 14662 Open-edl Reference Model, f) the users requirements.	Accessibility to information technology, Identification of privacy and protections requirements	https://cdn.standards.iteh.ai/samples/45266/11e5fa72d4d3403d8b703aba2ff16102/ISO-IEC-29187-1-2013.pdf

214	3	2	Technical report- ISO/IEC TR 29138-2. Information technology — Accessibility considerations for people with disabilities — Part 2: Standards inventory The document "Part 2: Standards inventory" focuses on compiling or inventorying existing standards that pertain to accessibility in information technology for people with disabilities. This includes standards related to web accessibility, software design, hardware interfaces, user oriented standards, environment oriented standards, communication oriented standards and communication services. The goal of this standard part is to provide a comprehensive list or inventory of existing standards that organizations and developers can reference to ensure their information technology products and services are accessible to people with disabilities. It could serve as a valuable resource for those looking to align their practices with established accessibility guidelines and standards in the realm of information technology.	Web accessibility, software, hardware, environment and communication standards	https://webstore.iec.ch/preview/inf_29138-2%7Bed1.0%7Den.pdf
215	1	4	Universal design of workplaces through the use of Poka-Yokes: Case study and implications. The paper describes the application of the Poka-Yoka technique as the subject of a	accessibility in manufacture environment,	https://doi.org/10.3926/jiem.v4n3.p436-452

			case study in a Sheltered Work Centre for the Disabled (SWD) close to Valencia, Spain. The Poka-Yoka technique was developed and is used for eliminating errors in workplace. It is designed for people without disabilities, but the study indicates that is beneficial for every worker, including those with disabilities. It comprises simple and affordable methods to improve accessibility and productivity. Furthermore, it is an important and useful tool for incorporating the principles of Universal Design in the workplace.		
216	1	4	Review of accommodation strategies in the workplace for persons with mobility and dexterity impairments: Application to criteria for universal design. The purpose of this literature review is gathering knowledge from previous research regarding accommodations for employees with mobility and dexterity impairments in their working environment. The acquired knowledge can be used to inform Universal Design and integrate UD principles in the workplace. Four types of accommodations can be found in existing literature: assistive technology, eliminating the barriers of the physical work environment, adjustments in job requirements and personal assistance. Incorporating the UD principles	accessible workstation, inclusive work furniture, accessible physical work environment, computer and other devices accessibility, ergonomic work environment, assistive technology in the workplace	https://doi.org/10.3233/tad-2007-19404

			would reduce the need for those adjustments. The ultimate goal is that all employees can utilize the same equipment and resources.		
217	1	3	Universal Design for Learning in Adapted National-level Digital Mathematics Textbooks for Elementary School Students with Disabilities After the adoption of digital textbooks in South Korea, this study set out to analyze the conformity of adapted Math textbooks to Universal Design for Learning (UDL) standards by examining the adapted textbooks of grades 3 through 6. The textbooks were examined based on the three UDL principles; providing multiple means of representation (UD I), providing multiple means of action and expression (UD II) and providing multiple means of engagement (UD III), all of which include multiple guidelines. The textbooks provided customized options for displaying text and for employing tactile objects (UD I), resented Math problems with familiar objects (UD I), allowed easily adding notes and bookmarks in the eBook (UD II) and provided modified levels of guided practice according to students' abilities (UD III).	accessible Math	https://doi.org/10.1080/09362835.2021.1938062

218	1	1,3, 4	Disability Law in Germany: An overview of employment, education and access rights. The two basic laws for the rights of disabled people in Germany are the Neuntes Buch des Sozialgesetzbuches - SGB IX (Book 9 of the Social Code) and Behindertengleichstellungsgesetz - BGG (Equal Opportunities for Disabled People Act). The first one defines the benefits in community life and workplace and medical benefits. The second one focuses on implementing equal rights for the disabled in all aspects of life. The document provides the definitions and the legal conditions for disabled people and Severely Disabled People and discusses the benefits in the workplace and the obligations of the employers. Furthermore, it outlines the German education system, which is the responsibility of each state. In some states co-education is practiced while in others it is not. If children cannot receive the needed assistance in general school, special schools should help them to achieve the educational aims. Germany has different types of schools according to types of disability. The document also provides an overview of the specifications for barrier free public and private spaces and transportation benefits.	legal benefits of disabled, education accessibility, spatial accessibility, communication aids	- https://doi.org/10.1017/s2071832.200013286

219	1	3	Rethinking Higher Education Unit Design: Embedding Universal Design for Learning in Online Studies The aim of the study was to explore the impact of Universal Design for Learning practices in online higher education courses. The study employed a pre-test–post-test quasi-experimental design to examine differences between the pre-UDL and post-UDL student cohorts. The post-UDL courses included recorded lectures with oral narration, lecture transcripts (with the option to change fonts), downloadable presentations, online hurdle quizzes for self-paced studying and gave the students the option to choose the focus of their assignments and they way they would present them (written essay, PowerPoint presentation or oral presentation).	accessible online courses, accessible higher education	https://doi.org/10.5204/ssj.2300
220	1	3	Universal Design: an Embedded Case Study on the Approach towards the Inclusion of Students with Physical Disabilities in Higher Education in India This study explores barriers in higher education learning environments, particularly focusing on the built environment's impact on students with physical disabilities. Utilizing the Universal Design approach, the study evaluates architectural barriers within an architecture	architectural barriers, built environment	https://doi.org/10.20372/dcidj.577

			and planning institution in India, aiming to influence the perspectives of design professionals, faculty, staff, and peers. While equitable educational access is a global characteristic of universities, addressing equity issues in higher education remains challenging, with students with disabilities facing barriers from primary education onwards. Design professionals often overlook the diverse needs of individuals, resulting in disabling environments that hinder participation. Accessible infrastructure is crucial for independent living and equal participation in higher education. The Indian higher education sector's growth necessitates a focus on designing inclusive built environments. Evolving building legislations in India highlight the need for increased awareness and the adoption of Universal Design principles to ensure usability and accessibility for all individuals, ultimately promoting democracy and equity.		
221	1	3	Universal design for learning in higher education: A concept analysis. The paper explores Universal Design for Learning (UDL) in higher education, analyzing its surrogate terms, antecedents, attributes, practical examples, and consequences. It discusses the origins of UDL, its	universal instructional design, accessible educational frameworks,	https://doi.org/10.1016/j.teln.2021.07.009

			implementation in higher education, its structural and functional attributes, and practical examples of teaching with UDL. The article also highlights the outcomes and implications of UDL for students and faculty, emphasizing the need for further research and awareness in nursing education.	inclusive teaching practices	
222	1	2	Accessibility in the Metaverse: Are We Prepared? The metaverse is slowly getting ground as a means through which people can interact within fully immersive environments. As the metaverse matures, it is important to ensure that individuals with disabilities will have access to it. Based on the interaction modalities on how humans communicate and interact with computer systems, accessibility should be ensured at all modality levels including vision, audition, tactition, olfaction, gustation. There are several barriers when creating a fully accessible metaverse both in terms of hardware and software. The requirement of having sign language interpreters and the lack of open metadata are some of the barriers that must be addressed. However, the advances in the field of artificial intelligence can provide new opportunities and solutions. Representing content in a multimodal way, finding alternative input methods, and creating metadata which encode an object-	Metaverse considerations, barriers, and topics to explore	https://doi.org/10.5753/waihews.2022.226618

			haptic properties are things that should be further examined. Currently, it might be too difficult or maybe too early to guarantee that the metaverse will be accessible to all individuals.		
223	1	2	Accessibility and inclusiveness of new information and communication technologies for disabled users and content creators in the Metaverse In its current form, the inclusion of individuals with physical disabilities in the metaverse remains low and there is an obvious lack of related regulations and standards to account for accessibility. To increase inclusion and accessibility to the metaverse, it is crucial to create effective content creation tools and natural user interfaces, to provide educational and community support, use transcripts and captions, encourage inclusive communication, to identify and categorize disabilities in the context of the metaverse, to integrate user-centered approaches (e.g., artificial intelligence assisted collaborative computation arts), and to increase awareness. Furthermore, to increase accessibility universal design principles should be applied, individuals with disabilities should be actively involved in the design and development of metaverse projects, new	Metaverse considerations and approaches	https://doi.org/10.1080/17483107.2023.2241882

			accessibility approaches and features should be created, and regulatory bodies and governments should play a more active role. Additionally, implications of the digital divide on inclusivity should also be taken into account. Furthermore, there are several limitations in terms of technical requirements which, in turn, create the need for new mechanisms, tools, and methods as well as effective web data repositories, knowledge and feedback exchange mechanisms to be developed. As the metaverse is constantly evolving, there is a need for a paradigm shift toward purposeful design of user interfaces and experiences and for the creation of a social model of disability and for new standards as existing ones (e.g., WCAG) do not consider the metaverse.		
224	1	2	Development of an intelligent system based on metaverse learning for students with disabilities The metaverse has the potential to be used as a platform that can provide high quality education to all learners. The capabilities of metaverse can be expanded when a student-centered approach is followed to design and develop the educational experience which can be further enriched when combined with appropriate course management systems. Indicators, such as ease of use,	Metaverse and VLE indicators	https://doi.org/10.3389/frobt.2022.1006921

			degree of immersion, enjoyment, and realistic representation of the environment, can be used to evaluate the educational metaverse experience. Such environments have the potential to improve students' learning achievements and skills gain.		
225	3	2,3	ISO/IEC 20016-1: Information technology for learning, education and training — Language accessibility and human interface equivalencies (HIEs) in e-learning applications — Part 1: Framework and reference model for semantic interoperability. The document titled "Information Technology for Learning, Education, and Training" is centered around the application of IT in the education and training sector. It places a significant emphasis on language accessibility, aiming to make content inclusive for individuals proficient in diverse languages, ensuring that e-learning applications can accommodate multiple linguistic preferences. Additionally, the focus extends to Human Interface Equivalencies (HIEs), emphasizing the need for user interfaces in e-learning applications to be uniform and accessible to all users, irrespective of their abilities or disabilities. As the document is likely geared towards electronic learning or online platforms, the specified "Part 1" suggests a multipart structure,	Information Technology for learning, Education training, accessibility for e-learning	https://webstore.iec.ch/preview/info_isoiec20016-1%7Bed1.0%7Den.pdf

			with the current section focusing on establishing a "Framework and reference model for semantic interoperability." The primary objective of the document is to develop a structured framework and model to facilitate seamless information exchange and understanding among e-learning applications, particularly emphasizing semantic interoperability, which involves a shared understanding of data meaning across different systems. In essence, the document serves as a standard or guideline for leveraging Information Technology in education and training, with a specific emphasis on language inclusivity, user interface accessibility, and semantic interoperability within the realm of e-learning applications.		
226	3	2	ISO/IEC 15944-8: Information technology — Business Operational View — Part 8: Identification of privacy protection requirements as external constraints on business transactions. The present document is an International Standard that has been developed by the International Organization for Standardization (ISO) and the International Electro-technical Commission (IEC), falls under the broader category of Information Technology. In specific terms, ISO/IEC 15944-8 focuses on the Business Operational	Privacy protection requirements on Business transactions	https://www.iso.org/standard/51544.html

			View, particularly addressing the identification of privacy protection requirements as external constraints on business transactions. This indicates that the standard is concerned with outlining guidelines or requirements related to privacy protection in the context of business operations and transactions. The goal is to establish a framework or set of principles for organizations to follow when handling privacy considerations within their business processes.		
227	3	2	ISO/IEC 15944-7: Information technology — Business Operational View — Part 7: eBusiness vocabulary. The present document is an International Standard about the Information technology on Business Operational View and e-Business vocabulary. This standard, applies to the broader category of Information Technology. Specifically, ISO/IEC 15944-7 focuses on the Business Operational View, with a specific emphasis on defining an e-Business vocabulary. In the context of information technology, e-Business refers to the use of electronic means to conduct business, including activities such as online transactions, electronic communication, and digital collaboration. The goal of this standard is to provide a common understanding and language for participants in e-	E- Business Vocabulary, IT systems environment neutrality, Rules governing development of multilingual equivalents for eBusiness vocabulary entries	https://webstore.iec.ch/preview/info_isoiec15944-7%7Bed1.0%7Den.pdf

			Business environments, helping to facilitate interoperability, communication, and collaboration across different systems and organizations.		
228	1	3,4	Flexibility in Formal Workplace Learning: Technology Applications for Engagement through the Lens of Universal Design for Learning. The article examines technology tools that could be efficient for adult learning in working environments. More specifically it discusses tools relevant to engagement, one of the principles of UDL. Engagement includes guidelines for recruiting interest, sustaining effort and persistence and self regulation. For recruiting interest, techniques similar to game playing would be beneficial. Also, advance organizers like concept maps and KWL could be useful. Moreover, tools like Plickers help learners to understand the reasons for engaging in the educational process. Voice comments using the Google Drive add-on Kaizena and the Google Chrome extension Read & Write for Work, as well as social media, enhance flexibility. Self-regulation skills can be developed through information provided by augmented and virtual reality simulations	technology tools for adult/workplace learning	https://doi.org/10.1007/s11528-019-00455-6

229	1	2,3	Evaluation of change blindness in multimedia learning environment with cognitive process Eye-tracking is one of the prominent input methods used in multimedia learning environments and is closely related to cognitive process and change blindness. To evaluate the effectiveness of such learning environments, it is important to consider the participants' perception and attention through appropriate tests, such as the d2 Attention test and the Group Embedded Figures test respectively. Moreover, learners' attention levels are positively correlated with their ability to detect changes on screens and field-independent individuals can detect changes in the multimedia learning environment more easily. To create effective learning environments, it is important to distinctively present the required changes in content focusing on central changes and using signals and cues. Besides these factors, visual intelligence, memory, as well as the effects of signaling and cueing should be taken into account.	Change blindness, cognitive process, attention span, and content representation.	https://doi.org/10.1080/10494820.2018.1530682
230	1	2	How should metaverse augment humans with disabilities? As the metaverse is increasing in popularity, focus must be placed on how individuals with cognitive and physical	Human augmentation	https://doi.org/10.1145/3532525.3532534

			disabilities can also be augmented within the metaverse. Such platforms can assist in socializing, rehabilitation, e-learning, skill learning, entertainment, real-world training, and even constitute earning revenue sources. However, at their current state, the metaverse and virtual reality environments are neither effectively addressing the representation of individuals with disabilities nor accessibility in general. There is a drastic need for design principles that focus on accessibility and inclusiveness to be developed.		
231	1	2,3, 4	Sustainable Vocational Preparation for Adults with Disabilities: A Metaverse-Based Approach The metaverse can be a means through which vocational preparation programs can be created. These platforms have the potential to provide new ways for individuals with disabilities to acquire the skills needed to find, secure, and retain employment. In addition to this, within these virtual learning environments, individuals' interviewing and communication skills, problem-solving capabilities, and interpersonal relationships can be enhanced. Hence, besides providing new educational opportunities and bridging the gap between regional educational opportunities for individuals with disabilities, the	Vocational skills and requirements	https://doi.org/10.3390/su151512000

			metaverse can also assist them in job preparation, adaptation, and employment maintenance. It is important to note that the experiences provided through the metaverse should be personalized for each individual while taking the severity and nature of their disability as well as their capabilities and specific job requirements into account. Due to the digitalization of the industrial sector and the fourth industrial revolution efforts should be placed in identifying occupations that will be sustainable and resilient to automation as well as in increasing individuals with disabilities hard and soft skills required for specific roles.		
232	1	2,3	Improving Accessibility to Copyright Works for Persons with Print Disabilities in Australia and Singapore. The article examines the legislation in Australia and Singapore relevant to the access of individuals with print disability to copyright works. The Marrakesh Treaty was signed to ease access of people with these types of disabilities and intermediary organizations. One of the main factors for poor accessibility of those people is “book famine”, characterized by limited printed material and the accessible formats of it. In spite of the progress of technology, the high cost for publishers of	accessibility to copyright material for people with print disabilities	https://doi.org/10.1007/s40319-021-01095-1

			printing these formats has not changed much. E-books are a positive thing, but barriers could appear like the encryption which sometimes prevents the use of screen readers. Technologies like technological protection measures (TPMs) and artificial intelligence and also the work of libraries such as Bookshare, can prove beneficial. Furthermore, the obstacle of confirmation of digital identity could be addressed through government verification platforms.		
233	1	3	A systematic review of VR/AR applications in vocational education: models, affects, and performances Teaching vocational skills is a critical intervention to ensure that individuals will be able to participate in various activities and live independently. This is particularly true for individuals with disabilities. Virtual reality and augmented reality applications can enrich vocational education. However, there are barriers that must be addressed including equipment and educational material development, costs, integration of theoretical knowledge with course task design, and realistic scene replication. There is a clear need for appropriate frameworks to	Vocational education barriers and gaps	https://doi.org/10.1080/10494820.2023.2263043

			be developed and multidimensional investigations to be carried out..		
234	1	3	Artificial intelligence in special education: a systematic review Artificial intelligence is being widely used in several domains including the educational one. In the context of special education, artificial intelligence can yield several benefits due to its ability to offer personalized learning and to facilitate several tasks (e.g., assessment tasks, administrative tasks, etc.). Most of the existing studies adopt software-based methods and delve into affective and cognitive factors as well as skill development of individuals with disabilities when integrating artificial intelligence in education. Additionally, most studies use technical models and technical theoretical infrastructures (e.g., SVM and ANN) and focus on individuals with disorders on the autism spectrum. There is currently a need for more international studies to be conducted which explore the application of artificial intelligence in special education while focusing on STEAM-based educational strategies.	AI potentials in special education	https://doi.org/10.1080/10494820.2022.2067186

235	1	3	Augmented reality for learning in special education: a systematic literature review Due to its interactive nature, augmented reality can be used to assist students with special needs. Specifically, it can increase their social, navigation, and physical skills, improve their confidence and comfort, and support their learning and daily lives. Most studies focus on participants with ASD, MR, LD and to a lesser extent on participants with ASD and MR, Blindness, and ADHD. Additionally, emphasis is put on how augmented reality experiences improve students with special needs independent life, academic performance, social, vocational, and communication skills as well as on identifying the limitations that exist. Although augmented reality is positively viewed by students, leads to increased students' learning motivation, and provides personalized learning opportunities, there still remain open issues related to the development of educational augmented reality applications being time-consuming, expensive, and requiring specific knowledge, expertise, and skills.	Augmented reality benefits and barriers in special education, most examined disability types, and most examined factors	https://doi.org/10.1080/10494820.2021.1976802

236	1	7	A multi-indicator evaluation method for spatial distribution of urban emergency shelters. The study aims to assess the spatial distribution of urban emergency shelters to identify potential weaknesses in the city's evacuation service capacity. The primary outcome is expected to be the enhancement of urban emergency shelters to better meet the needs of evacuations in various scenarios. The area of research is divided in two scales, the individual emergency shelter and the regional groups of emergency shelters. The evaluation indicator system of the spatial distribution of urban emergency shelters was constructed based on the five criteria of effectiveness, accessibility, safety, suitability, and fairness. The multi- indicator could assess multiple areas of needs in a case of evacuation such as the effective number of people served, the distance to the nearest hospital, the number of flammable and explosive storage places, the service population ratio etc. Shanghai was the city that had been evaluated and the results revealed that the indicator enables the experts to identify many of the barriers and the difficulties of the evacuation capacity of the city.	Evaluation of urban emergency shelters City evacuation service capacity	https://doi.org/10.3390/rs14184649

237	1	7	Evaluating the evacuation and rescue capabilities of urban open space from a land use perspective: A case study in Wuhan, China. This study evaluates the suitability of spatial distribution for open spaces as post-disaster shelters, responding to the Chinese government's heightened emphasis on urban safety. Utilizing a CSDI based on the gravity model, the research focuses on Wuhan, China, employing ESDI, RSDI, and CSDI to assess evacuation and rescue capabilities. Key findings highlight the effectiveness of these models in integrated evaluations, considering travel time, open space capacity, and rescue facility service capability. The quadrant distribution analysis of ESDI emerges as a valuable method for guiding planners in policy adjustments. The study provides crucial insights for spatial layout evaluations of public facilities and decision-making in urban planning optimization. Positive, negative, and inconspicuous correlations between different values on SDIs and their impact on comprehensive evacuation and rescue capabilities are revealed. A spatial mismatch in Wuhan underscores the necessity for rational distribution, and while traffic congestion affects capabilities, integrated rational facility distribution can partially mitigate its impact on disaster	Evaluation of the evacuation and rescue capabilities	https://doi.org/10.3390/ijgi6070227

			response efficiency. The research highlights the importance of measuring suitable spatial supply-demand relationships in shelter planning.		
238	1	5	Design for All in multimedia guides for museums. Computers in Human Behavior. The study aims to approve the Multimedia Guides for All (MGA) approach using high technological tools that can make the exhibition of the heritage more accessible and interactive to visitors with a variety of needs. The present tour guide of MGA provides accessible information through text, image, video, audio adaptable to the people with sensory and cognitive needs. Visitors of museums should be provided freely with audio guides that include audio descriptions, audio navigation, magnification and a contrast modifier. The subtitles characteristics and sign language should also be provided as an option. The study introduces the hardware that relies on the Ultra Mobile Personal Computer (UMPC) category and is also consistent with the MGA specifications, the needs of the R&D project and with the configuration of most museums.	Audio guides, accessibility through high technological tools for audio navigation, descriptions	https://doi.org/10.1016/j.chb.2010.07.044

239	1	3,5	SCAMP: an analytical framework for examining flexible social playfulness around interactive museum exhibits Museums are places in which learning can occur. By enriching museum exhibits with interactive mechanisms, social playful behaviors can be accomplished. Such behaviors can trigger competition and collaboration among learners which can amplify the effect of learning. Such social interactions can also assist individuals with disabilities. Hence, it is important to consider several factors when designing such experiences and focus on inclusiveness and accessibility. The design should consider the initial hypothesized expectations (e.g., supports/enables, mandate, hinder), the goal orientation actions (e.g., parallel, collaborative, and competitive), the play actions should involve different aspects of playing, teaching, and receiving, and the overall duration (e.g., short, long).	Social interactions, social behavior, playful learning	https://doi.org/10.1080/10494820.2022.2153148
240	1	2,3	The effectiveness of robot training in special education: a robot training model proposal for special education The use of robots in educational settings is becoming more popular as they can enrich various training programs and adapt to the needs of all learners. Robots are regarded as a means through	Integration of robots in education, framework and aspects to consider	https://doi.org/10.1080/10494820.2019.1710542

		which special education can be further supported by improving the way teacher candidates learn and develop. There are several challenges associated with robot training, such as inexperience in using robots, adaptation of learning objectives, creating new activities, as well as designing and implementing effective strategies. Hence, before integrating robots in classrooms, it is important to examine several factors, such as the objectives of special education, familiarize with the functions of the robots, and create effective lesson plans. However, when effectively integrated, robots can help special education teacher candidates improve their knowledge, raise awareness, develop positive attitude toward robots, and attain professional self-efficacy in using robots in their classrooms. Therefore, to effectively integrate a robot training model in special education, it is important to provide the required conditions and infrastructure for robot training, to raise awareness and conduct visibility activities, to provide adequate training, to focus on applied and project-based learning, and to carry out sustainability and dissemination activities.		

241	1	7	GIS-based accessibility analysis of urban emergency shelters: The case of Adana city Pre-disaster emergency evacuation zoning can significantly contribute toward disaster prevention and mitigation. Urban emergency shelters should be accessible to all. Hence, it is important to conduct accessibility and serviceability analysis on these facilities. Factors such as usability, sufficiency, maximum capacity, population density, and walking time are factors which can influence the accessibility of urban emergency shelters. Other aspects to consider are the evacuation destinations optimization, shelter space accessibility calculation, and emergency evacuation distribution analysis. To ensure the establishment of effective and accessible urban disaster prevention planning in the future, it is vital to determine the shelter area (e.g., open spaces, school gardens, green spaces), to carry out analysis of standards (e.g., usability, capacity, sufficiency, accessibility, shelter area size), to analyze accessibility (e.g., evacuation demands, suitability, carrying capacity, accessibility to shelter areas), and to create effective service area maps.	Urban planning, urban emergency shelters design factors, transportation	https://doi.org/10.5194/isprs-archives-XLII-2-W1-95-2016

242	1	3,4	The invisible work of co-creating disability access in work integrated learning. The article examines the access of healthcare students with disabilities entering and during their work integrated learning (WIL). More specifically, a study conducted based on four themes relevant to the invisible work of health care professionals in order to achieve accessibility: the extra time needed, the emotional work, the relational work and navigating complexities. These types of work are always undervalued, but they are necessary for an inclusive WIL program. One of the main problems of this “invisible work” is the inevitable insufficient presence of institutional mechanisms. In the future, institutions should strive to the recognition of this work which is vital for accessible places in healthcare education.	accessibility in work integrated learning (WIL) of health care students	https://doi.org/10.1007/s10459-023-10216-z
243	1	5	Access to museums for visually challenged people in Japan. The research examines the accessibility of museums in Japan, particularly focusing on individuals with visual impairments. Data were gathered through a questionnaire survey conducted by the Japanese Association of Museums in August 2004. Many museums offered tactile versions of	Accessibility in museums for people with visual impairments, tactile exploration	https://doi.org/10.1016/j.ics.2005.05.068

			exhibits, along with audio descriptions. The findings indicated that facilities were more accessible for people with mobility difficulties compared to those with sensory needs. Despite slightly advanced accessibility services for visitors with sensory needs, numerous barriers and limitations still exist. Further research is necessary to address and improve accessibility for these individuals.		
244	1	5	Introducing digital accessibility: A headnote to the section. This text explores the historical connection between new technologies and universal access, citing Alexander Graham Bell's development of the telephone influenced by his work in deaf education. Currently, individuals with visual impairments are embracing Apple's mobile devices, particularly the VoiceOver screen-reader functionality. Additionally, the role of artists in advancing technology for universal museum access is emphasized, with examples like WGBH's Media Access Mobile system and the Roundware platform which had been developed by artist Halsey Burgund in order to collect sourcing the spoken word components of participatory installation artworks. Despite the rapid adoption of new technologies, some users, including not just older	Universal access to the cultural heritage through new technologies	https://doi.org/10.1111/cura.12033

			audiences, may resist or feel uncomfortable with mobile devices in museums. The value of analog interpretive services, such as live tours by signing docents, remains crucial for real-time dialogue and engagement with visitors.		
245	1	5	Museum manners: The sensory life of the early museum. The study explores instances where museums and exhibition spaces facilitated tactile exploration of exhibits for individuals with visual impairments, citing the 'Touch Me' exhibit at the Victoria & Albert Museum in London as an example. Beyond the primary function of showcasing art and artifacts, museums and galleries serve as venues for social interaction and the conveyance of cultural authority. The text reflects on the historical challenges faced by curators in balancing the need for tactile access with conservation concerns, questioning how early curators navigated these demands. Despite the association of handling with potential damage, the mention of experiences at the Ashmolean and the British Museum over a century ago suggests that tactile engagement has long been a significant aspect of museum visits, highlighting the evolving	Tactile exploration of the exhibits at the cultural heritage	https://www.jstor.org/stable/25096398

			social and sensory aspects that a comprehensive study of early museum visitor behavior would need to consider.		
246	1	6	Accessibility in Buildings of Tourist Attraction: A case studies comparison. This study thoroughly investigated the inclusivity of three prominent tourist destinations in Malaysia with a focus on accessibility for individuals with disabilities. Recognizing the Malaysian government's commitment to fostering a compassionate society, the assessment considered both exterior and interior spaces to meet the needs of those individuals. Through site observations, facilities simulations by people with disabilities, and interviews, the study revealed that older buildings tended to be less accessible than newer ones, emphasizing the ongoing need for enhanced accessibility in public spaces. The research also highlights the negative impact of an inaccessible environment on the well-being of disabled individuals, causing stress, low self-esteem, and discomfort. The architectural analysis aimed to identify areas lacking accessible facilities, emphasizing the importance of creatively designing a barrier-free environment while	Building accessibility, accessibility in public spaces, services and facilities, designing free-barrier environments	https://doi.org/10.1016/j.sbspro.2012.02.067

			preserving the heritage value of these tourist attractions. The study advocates for improvements to enhance accessibility without compromising the authenticity and historical significance of the buildings.		
247	1	3,4	Universal design for learning: enhancing achievement and employment of STEM students with disabilities. The article discusses the benefits of applying the principles of UDL in the field of STEM sciences. These principles help today's students secure a position in the STEM workforce and future global economy. Furthermore, the article presents helpful hardware and software applications that enhance learning accessibility: Apple's accessibility features and accommodations like Voice Over Technology and color inverting screens for VI, closed captioning, mono audio and U-LISTEN for hearing loss. SPEAKall! app aids students with autism in communication and behavior skills. InftyReader is an application for VI students that enables them succeed in high level mathematics. All students should have the opportunity of various ways to access academic content and for achieving this professors	accessibility in STEM sciences using software and hardware for VI, hearing loss, autism	https://doi.org/10.1007/s10209-013-0332-1

			should incorporate flexibility in their curricula and leverage the new technology features.		
248	1	5	Adapting artworks for people who are blind or visually impaired using raised printing. This study focuses on creating tactile adaptations of artworks for individuals with visual impairments, specifically exploring a new technique using an inkjet printer, the Roland UV LEC-330. The research involves three stages of adaptation of Empress Elisabeth's portrait, aiming to enhance the tactile experience for the visually impaired. The first adaptation revealed limitations in low raised lines, prompting the addition of textures in the second adaptation based on user feedback. The third adaptation further refined details, addressing subjects' preferences and recognition challenges. The inkjet printer technique allowed for delicate lines and diverse textures. The study involved subjects from the Slovenian Association of People with Visual Impairments, aiming to exhibit the tactile adaptations in a museum setting. Results showed that the tactile adaptations significantly improved the understanding of	Tactile adaptations of artworks for individuals with visual impairments	https://doi.org/10.1177/0145482X1410800108

			the visual world for the participants, highlighting the potential of this technique for inclusive cultural experiences for individuals with visual impairments.		
249	1	2,5	Mobile navigation through a science museum for users who are blind. In Universal Access in Human-Computer Interaction. This paper introduces mAbES, a mobile, audio-centric environment simulator aimed at fostering the enhancement of orientation and mobility skills (O&M) in individuals with visual impairments. The simulation scenario utilized a science and technology museum in Brazil. Developed for independent use by individuals who are blind, the mAbES application enables the testing and development of mental maps as blind users navigate through the museum without the need for a facilitator or assistance. The mAbES software represents a real, familiar or unfamiliar environment to be navigated by someone who is blind. The virtual environment is made up of different elements and objects (walls, stairways, doors, toilets or elevators) through which the user can discover and become familiar with his location. It is possible to interact with doors, which can be opened and closed. mAbES includes	Virtual reality and mobility and orientation in museums, navigating in a virtual reality environment	https://link.springer.com/chapter/10.1007/978-3-319-07446-7_68

			three modes of interaction: Free Navigation, Path Navigation and Game Mode.		
250	1	3,4	Reducing Ableism in Social Work Education Through Universal Design for Learning and Policy. The article discusses the benefits of using the UDL principles in higher education and particularly in social work schools and the need for eliminating ableism in the field. All schools in the United States, including institutions of higher education should adhere to the Rehabilitation Act and ADA providing reasonable accommodations when needed. In higher education the students should self identify having a disability and request for accommodations, but a lot of people may be unwilling to disclose their disability. The solution is changing university culture to become inclusive. The field of social work has not adopted yet UDL. The main reason is that social work views disability from the medical model and consequently leaves this subject to medical schools. It is about time starting viewing the	accessibility in higher education, inclusion in social work schools	https://doi.org/10.1080/10437797.2021.1997686

			topic from the social and interactionist models of disability and enrich the curricula with the relevant content.		
251	1	4	Access to work: Employment services for people with disabilities in Scotland. The article discusses the employment services for disabled people offered in Scotland. The primary statutory agencies involved are the Department of employment, the National Health Service and the Social Work Department. The main legislation for promoting inclusion in the workplace in Scotland is the Disabled Persons (Employment) Acts of 1944 and 1958. Teams for Placement, Assessment, Counseling and Training (PACTs) are responsible for the implementation of the legal provisions and assisting people with disabilities to enter the workforce. PACTs consist of various specialties, including disability employment advisers (DEAs). Furthermore, the article underlines the importance of occupational therapy services in the field of work rehabilitation.	accessibility in workforce, work rehabilitation, services for unemployed individuals with disabilities	https://doi.org/10.3233/wor-1995-5104
252	1	4	Universal Design for Workplace. The article discusses the application of UD principles in the workplace. More specifically, it outlines the promotion of UD in designing Fujitsu Solution	inclusive workspace, inclusive offices, reception	https://www.fujitsu.com/global/documents/about/

			Square and the preparation of the Fujitsu Facility Design Guideline. The main legislation in Japan related to workplace design includes the “Heart Building Law”, which focuses on buildings and the “Welfare Town Building Ordinance” that addresses the broader environment. Fujitsu, based on the legislation and regarding the aging population of Japan, as well as the awareness of corporate social responsibility, is aimed at creating workspaces, with the use of IT, accessible and comfortable for employees and their clients utilizing IT.	area, desktop conference tools	resources/publications/fstj/archives/vol41-1/paper13.pdf
253	1	4	Reframing workplace inclusion through the lens of universal design: Considerations for vocational rehabilitation professionals in the wake of COVID-19. The article discusses the benefits of applying UD and UDL in work environments focusing on the role of vocational rehabilitation professionals in the context of COVID-19 pandemic. The primary legislation in US for employees with disabilities is the Civil Rights Act of 1964 with the Title VII and which established the Equal Employment Opportunity Commission (EEOC) and the ADA. Vocational rehabilitation professionals should acquire the necessary knowledge and skills reflecting UD AND UDL principles during their years of study and then apply them in	inclusive working environment, vocational rehabilitation professionals’ curriculum and interventions	https://doi.org/10.3233/jvr-201119

			interventions for employees and consultations of employers. UD enables all people to be part of the workforce and enhances productivity while being significantly cost-effective. Furthermore, it utilizes the talents of every individual who is part of the workforce.		
254	1	4	The Integrated and Disability Health Program of AUSL Bologna. The Alstom experience for employment access in high functioning autism spectrum disorders. In 2017, the Integrated and Disability Health Program (IDHP) partnered with Alstom Ferroviaria SPA, a multinational company, to start an innovative employment project for young adults with ASD. The six-month project included cognitive and functional assessments, support meetings, information sessions with the Disability Employment Center, social skill groups, parent training, and specific training for ALSTOM employees. The overarching goal was to acquire competences for integration into the labor market. Concurrently, group interventions on social skills addressed key aspects of ASD, fostering personal and relational growth. Ultimately, this project provided a	accessibility to the labor market, equal employment opportunities for people with disabilities, training on social skills, parent training, exposure to the labor market	https://pubmed.ncbi.nlm.nih.gov/32567575/

			genuine opportunity for individuals with ASD to embark on successful careers.		
255	1	3	Access Education: What is Needed to Have Accessible Higher Education for Students with Disabilities in Jordan? The study set out to investigate the accessibility of libraries and computer labs as well as the accessibility awareness of web developers in the universities of Jordan. The article provides lists of the environmental and technological barriers identified and the services provided, such as large monitors, screen readers, elevators, private rooms etc. and thus highlights the needed tools and services for accessible libraries and computer labs.	accessible library / accessible computer labs	https://files.eric.ed.gov/fulltext/EJ1196695.pdf
256	1	3	School Counselor Preparation to Support Inclusivity, Equity and Access for Students of Color With Disabilities The value of a school counselor's role is recognised internationally. The American guidelines act as an example but cannot always be applied in international settings. School counseling can be provided by social workers, psychologists or guidance counselors and all providers of school counseling must learn to recognize ethnic disparities in disability	school counselor knowledge / skills	https://doi.org/10.3389/feduc.2021.588528

			identification as there is usually tendency to over-identify certain categories of disabilities in minorities. The ASCA National Model: A Framework for School Counseling Programs is recommended as a way to fully prepare counselors for the challenges they have to face. The model incorporates leadership, advocacy, collaboration and systematic change / social justice. The article presents the knowledge and skills required of counselors and the areas they should be trained on, such as career readiness.		
257	1	4	Participation in Work Life and Access to Public Transport – Lived Experiences of People with Disabilities in Sweden. The study examines the barriers and limitations faced by people with disabilities in public transportation and employment in Sweden. Specifically, it aims to understand the difficulties related to physical, social-attitudinal and communication access. The findings indicate that public transport is partially accessible with problems in completing the entire travel chain and impacting traveling to work and arriving in time. In the workplace the main problems highlighted include the design of the physical environment, lack of technical aids, lack of flexibility in working conditions and tasks, stress about	public transport accessibility, busses, airtravel, seatravel, accessibility in workplace	https://doi.org/10.1017/jrc.2012.15

			being misunderstood and feelings of discomfort among both employers and employees. Regarding air and sea travel, the experiences were positive. The research took into account the Swedish national action plan, From Patient to Citizen, (Prop 1999/200: 79).		
258	1	3	Access work: Experiences of parking at school for families living with childhood disability. The article discusses the findings of an ethnographic study conducted in Ontario, Canada, focusing on the accessibility of school sites and parking lots. The results indicate that most of the times accessible parking site is available but unfortunately it is usually functionally inaccessible. This is due to poor design that overlooks the school and the buses' schedule and most of the times parents are expected to undertake extra work for their children's access to education. This invisible work may be physical and temporal, but also could be social and emotional. Schools should incorporate the experiences of families with children with disabilities into their design planning and adhere to Ontario's regulatory contexts, such as the Accessibility for Ontarians with Disabilities Act, 2005 (AODA), and the	school transportation, accessibility in school environments, accessible school parking areas	https://doi.org/10.1016/j.tra.2019.08.016

			Accessibility Standards Regulation (IASR). Furthermore, a critical ableist studies (CAS) perspective would be beneficial.		
259	1	4	Australia's Disability Employment Services Program: Participant perspectives on factors Influencing Access to work. The article discusses the role of Australia's Disability Employment Services (DES) in assisting people with disabilities securing a job and the findings of the Improving Disability Employment Study (IDES). There are various types of barriers in finding and maintaining employment. These could be vocational, non vocational and structural. Vocational barriers include a lack of degrees and low levels of education, non vocational may refer to health issues and structural barriers include discrimination, low investment and a scarcity of job positions. The aim of the study was to understand the participant's views on the subject of unemployment and the key factors influencing employment results.	employment accessibility, employment program for people with disabilities	https://doi.org/10.3390/ijerph182111485

260	1	4	Access to employment in Kenya: the voices of persons with disabilities. The study examines the factors of unemployment among people with disabilities in Nairobi, Kenya. The factors include a lack of attending higher education, inaccessible formats of job advertisements, a lack of family and community support, misconceptions and prejudices and poor legislation on employment of individuals with disabilities. Despite the fact that Kenya is a member of the International Labour Organization (ILO), has signed the Convention on the Rights of Persons with Disabilities (CRPD) and the Constitution of Kenya and the Persons with Disabilities Bill (2013) address the rights of people with disability, the unemployment rate remains high. One major barrier is the discrimination and the stigma fueled by religious and cultural beliefs about disability. Government should take action in raising awareness about disabilities and inclusion.	employment accessibility, inclusive employment in low-income countries	https://doi.org/10.1515/ijdh-2015-0029
261	1	4	Disability, access, and food delivery work in Singapore. The article examines the employment opportunities offered by food delivery platforms to individuals with disabilities. In particular, it describes the questionable initiative of Grab, a	employment in food delivery platforms for people with disabilities	https://doi.org/10.1177/14614448221090638

			food delivery platform in Singapore. Grab aimed in the economic empowerment of food deliveries and drivers with disability. Without doubt, it helps individuals with disabilities to have a job and earn a living but at the same time their bodies acquire representational value participated in various videos that became viral. The article also states that food delivery work among disabled people is biopolitical and investments in such initiatives may lead to “inclusion at all costs” which eventually could be harmful.		
262	1	4	Access to health care and employment status of people with disabilities in South India, the SIDE (South India Disability Evidence) study. India’s legal framework for people with disabilities include the Persons with Disability Act, 1995 and the endorsement of UN Convention on the Rights of Persons with Disabilities (UNCRPD). Unfortunately a lack of awareness exists, even among medical professionals, regarding the needs of people with disabilities. The study explores the barriers and challenges these people face in assessing health care and employment. Regarding healthcare the main barriers are the ignorance about the services, the cost of the services and transportation. Regarding employment the	health care accessibility, employment accessibility	https://doi.org/10.1186/1471-2458-14-1125

			most common issues immersed are need of special equipment and constant help and supervision and the lack of understanding from the employers regarding their needs.		
263	1	4	Generative Fusions: integrating technical and professional communication, disability studies, and legal studies in the work of disability inclusion and access. The article examines how the company JP Morgan communicates its commitment to inclusion and accessibility in its public documents. Moreover, the study explores the benefits of combining Integrating Technical and Professional Communication, Disability Studies, and Legal Studies for the TCP professionals in creating access documents. It is highlighted that JP Morgan, like other companies, has the intention of creating equitable and inclusive content but sometimes they depend on normative forms of discourse that hinder their original intention. The article also includes guidelines for effectively integrating TPC, DS, and LS and examples for the appropriate implementation of the guidelines.	Creation of inclusive public documents	https://doi.org/10.1109/tpc.2021.3090597

264	1	3	A critical analysis of universal design for learning in the U.S. federal education law. The article discusses the findings of an analysis of references to UDL in the text of three federal education laws in the USA: the Higher Education Opportunity Act (HEOA), the Individuals with Disabilities Education Act (IDEA) and the Every Student Succeeds Act (ESSA). References to UDL in ESSA mainly focus on the development of assessments. Moreover, there is a reference to UDL considering technology-based learning and the teachers' preparation. In IDEA, there are references related to UD principles and not to UDL. In HEOA, among others, there are references for instructors' preparation with the use of technology, activities and teachers' training consistent with UDL. Both ESSA and HEOA provide funding opportunities for incorporating UDL principles in the teaching process.	Educational practices consistent with UDL	https://doi.org/10.1177/14782103231179530
265	1	3,4	Access to work and disability: the case of Italy. Access to Work and Disability: The Case of Italy All individuals should have equal access to work opportunities. It is important to conduct surveys using validated tools, such as the ISTAT survey on Health Conditions and Use of Health Services	Employability factors (e.g., educational background, gender, age, type of disability)	https://www.jstor.org/stable/26151575

			Survey 2004-2005, to get a better understanding of individuals with disabilities accessibility to work. Age, gender, educational background, and type of disability are factors that also influence this fact. Findings showcase that overall individuals with disabilities are less likely to be employed and this is particularly true for individuals with psychic, intellectual, or mental disabilities. There is a drastic need to create policies that aim at increasing the educational level of individuals with disabilities to improve their employability.		
266	1	4	The Agreements for Access to Employment of Persons with a Disability: a Genuine Tool to Promote People and Work Individuals with disabilities should have equal access and opportunities to the labor market. However, due to allegedly having reduced performance, they are regarded to be of secondary importance in the core business. Appropriate legislation, mechanisms, and rules should be adopted to satisfy the interest of both parties involved. The Art. 14, legislative decree no. 276/2003 is a prominent example of an effective mechanism as it allows social cooperatives to play an active role in the value chain, promotes dignity, professionalism, and satisfaction to workers, and obliges employers to	Recruitment obligations	https://ejcls.adapt.it/index.php/ejcls_adapt/article/view/1160

			impartially recruit all individuals. Finally, the need to provide reasonable accommodations is highlighted in both national (Art. 3, par. 3-bis, legislative decree no. 216/200375) and European (Art. 5, Dir. 2000/78/EC) legal systems.		
267	1	3	UDL for inclusive higher education—What makes group work effective for diverse international students in UK? Group work plays a vital role in the context of education. As internalization and student exchanges are becoming increasingly popular, it is important to ensure inclusiveness in higher education. Specifically, principles of the Universal Design for Learning, such as the multiple choices of learning activities, expression of outcomes, and materials, are interrelated and can increase accessibility and inclusivity for all students when applied in a student-centered manner in face-to-face, online, and even hybrid learning environments. Technology affects several aspects of higher education; hence, it is important to ensure access to the required resources for all students. Providing structured support and scaffolding which is mindful of and sensitive to diverse international students and their experiences can further improve their capabilities of being better integrated into new	UDL principles and strategies for diverse, equitable, inclusive learning in group activities for all individuals, digital tools and technologies, communication barriers and diverse linguistic and cultural backgrounds	https://doi.org/10.1016/j.ijer.2023.102277

			environments and be more effectively engaged in group activities. Besides the use of Universal Design for Learning principles adopting strategies (e.g., encouraging the use of different mediums and roles in group work activities, mapping group work tasks to specific assessment criteria and learning outcomes, and allowing students to select the mediums in which they collaborate and use to submit their work) offers increased accessibility, inclusivity, and optionality. By applying similar strategies, it is possible to create learning environments that are equitable, diverse, and inclusive for all learners.		
268	1	4	Locations of employment services and people with disabilities: A geographical analysis of accessibility. The text describes the methodology and data collection process for a research project involving the analysis of Vocational Rehabilitation (VR) and One-Stop service locations in the United States. Anselin's Local Indicators of Spatial Association (LISA) is the primary technique used for the analysis. The analysis utilizes spatial autocorrelation and LISA to identify clusters of non-employment and unemployment, visually comparing them with the locations of VRs and One-Stops, providing insights into the spatial distribution of these services.	Vocational Rehabilitation (VR) and One-Stop service locations, identification of the clusters of non-employment and unemployment, spatial distribution	https://doi.org/10.1177/10442073070180020501

			The analysis reveals variations in clustering between non-employed people with disabilities and unemployed people at the national and state levels. The study highlights discrepancies in the sitting of employment services, with some regions inadequately served, and offers insights into the locations of Vocational Rehabilitation and One-Stop services in relation to high-high clusters of non-employed people with disabilities.		
269	1	4	Discrimination in access to employment for graduates with disabilities: proposals for improvement. The study explores the differences in the labor market between people with and without disabilities and represents recommendations of the improvement of the employability for individuals with disabilities. The survey's objective was to furnish insights into the employment market integration of Spanish university graduates. Survey on the Labour Market Insertion of University Graduates (EILU) encompassed a variety of indicators, including the quality of labor integration, labor market access conditions, alignment between university education and job roles, contract types, and mobility. At the time of data collection, the employment rate for graduates with disabilities	quality of labor integration, labor market access conditions, alignment between university education and job roles, contract types, and mobility, ICT skills.	https://doi.org/10.1080/09687599.2023.2227332

			is lower compared to that of graduates without disabilities. Addressing institutional barriers, such as social prejudices and a lack of adapted workplaces, is crucial for promoting the employability of graduates with disabilities. Investing in their education and skills, particularly in areas like foreign language proficiency and ICT skills, can contribute to improving their employment prospects. Despite these improvements, the study acknowledges the persistent existence of institutional factors, including negative social prejudices, affecting the recruitment of graduates with disabilities. Data from various sources highlight discrimination experienced by people with disabilities in personal relations, job searches, and workplaces in Spain. Efforts to reduce such discrimination are essential for fostering a more inclusive and supportive work environment.		
270	1	4	Framework for universal design of digital support and workplace design in industry. This section introduces a framework for achieving a human-centric and socially sustainable Industry 5.0, addressing challenges for both larger and smaller industrial companies. The framework emphasizes human-centered digitalization, focusing on individual well-being and societal needs and advocates for personalized and	International Classification of Functioning, Disability, and Health (ICF) standard, inclusive workstations, universal design	https://doi.org/10.1504/IJMR.2023.135652

			user-adapted workplaces, beginning the analysis by understanding individual needs using the International Classification of Functioning, Disability, and Health (ICF) standard. The ICF standard helps assess the functioning of a person and links health conditions, personal factors, environmental factors, and activities to production outputs. The concept involves a sequential approach of observation, training, and independent assembly, supported by animated video instructions. The design incorporates principles such as error-proofing (poka-yoke system) and visualizations. Throughout this project, the company has modified its workstations for house module assembly with a guiding principle of 'inclusive without excluding.'		
271	1	3	Use of a UDL literacy environment by middle school students with intellectual and developmental disabilities. This qualitative study investigates the potential of Udio, an online Universal Design for Learning (UDL) literacy environment, to support students with intellectual and developmental disabilities (IDD). Utilizing a grounded theory approach through classroom observations, teacher and student interviews, electronic logs, and student-produced	Udio a high-tech literacy environment, developing comprehension for children with IDD, audio-assisted reading and sentence starters	https://doi.org/10.1352/1934-9556-55.1.4

			materials, the research explores the extent to which students with IDD can use Udio and their experiences with it. The findings reveal that students independently navigate Udio, utilizing embedded supports like audio-assisted reading and sentence starters. The Udio program aims to enhance reading comprehension and engage students who may have felt disconnected from traditional practices. Additionally, it highlights the positive aspects of Udio, such as providing opportunities for independent learning, autonomy, and motivation through activity choices, age-relevant content, and engaging social experiences.		
272	1	3	Aligning and inventing practices to achieve inclusive assessment policies: A decade of work toward optimal access for US students with disabilities 2001–2011 In the educational domain developing inclusive assessments that are available and applicable to students with disabilities is of great significance. The 2001 No Child Left Behind Act (NCLB, PL 107–110) is regarded by many as the beginning of the mandate for inclusive education. However, there is a need for new policies, practices, and strategies to be developed in the context of nation and state wise assessments. There are	Actions for accessibility and inclusivity in national and statewide assessments and tests	https://doi.org/10.1080/1034912X.2012.654935

			various actions that can lead to an increase in accessibility and inclusivity in assessments. Some of the most widely suggested actions include i) test access needs for subgroups of students with disabilities should be examined, ii) test items sensitive to the full performance range should be created, iii) flexible approaches for item delivery should be developed, iv) item performance should be examined in controlled studies and cognitive laboratories, v) the opportunities that individuals have to learn should be further examined, vi) new methods to use and analyze test results should be developed, vii) assessment participation decisions should be systematically examined and approached.		
273	1	4	Integration of people with disabilities in the workplace: A methodology to evaluate the accessibility degree Sensorial, cognitive, and physical deficiencies can influence the accessibility to work opportunities and employment as well as the working conditions in companies. When evaluating the accessibility in these cases, multiple accessibility levels should be classified, both the accessibility “in the” and “to the” workstation should be regarded, and the informational and physical accessibility should be examined separately. As there	311 item evaluation tool using 27 groups to assess workplace accessibility Multiple related factors	https://doi.org/10.3233/OER-2007-7203

			are multiple variables and factors to consider when evaluating accessibility in the workplace, a methodology to effectively assess it was developed in the context of the INCLUDE Program which contains 27 groups/categories and uses a total of 311 items to classify the accessibility to adequate or minimal.		
274	1	4	Access for All: Universal Design and the Employment of People With Disabilities The article provides an overview of disability policy and known barriers to employment and then makes suggestions about the implementation of universal education access (UAE) principles by social workers in order to increase employment success of individuals with disabilities. Six UAE principles are presented. The first refers to a welcoming work environment (ex. signage, materials placed in reach of wheelchair users), the second refers to the determination and possible restructuring of essential job components, the third underlines the need for regular feedback, the fourth promotes the use of multimodal techniques, the fifth refers to building a variety of options for individuals to show their progress and the sixth refers to the	universal design in the workplace /the job market / universal education access (UAE) principles	https://doi.org/10.1080/15367100.903202771

			maintenance of an inclusive environment by the provision of all materials in alternative accessible forms.		
275	1	4	Access to employment for people with disabilities: findings of a consumer-led project The study explores the access to employment of people with disabilities and the obstacles they face. The study included a questionnaire answered by employers and an interview answered by nine individuals with disabilities with some experience of the job market. Employers mentioned the structure of the workplace and the nature of a job as possible barriers for people with disabilities and the current legislation as a deterrent for the company itself. The article underlines the need for cooperation among agencies in order to ensure that information is effectively disseminated to the interested parties. Companies need to be informed about the support available to them when employing people with disabilities and individuals with disabilities need to be better informed on the available job opportunities for them.	accessible job market	https://doi.org/10.1080/09638280.0296818

276	1	4	Reassessing cultural capital: access to employment for women with disabilities in Saudi Arabia. The study describes the efforts of nine women with disabilities in Saudi Arabia to become members of the country's workforce and the barriers that they encountered. The study uses Yosso's cultural capital conceptual framework. Employment for women in Saudi Arabia is a complex matter, with two aspects, the "Islamic femininity" on one hand and the country's development which is intended to include women in the private sector of the workforce. The legislation framework includes the Legislation of Disability and the Rules and Regulations of Special Education Programs. Additionally, in 2008, Saudi Arabia ratified the United Nations Convention on the Rights of Persons with Disabilities. Furthermore, employers must have 4% of their workforce composed of people with disabilities, but the legislation is not enforced. The other critical barriers are discrimination, a lack of support to the employers to overcome the obstacles, and the lack of women's social relationships.	accessibility in employment for women	https://doi.org/10.1108/edi-08-2017-0156

277	1	3	An integrative review of the potential of wireless assistive technologies and internet of things (IoT) to improve accessibility to education for students with disabilities. This research paper aims to analyze the challenges and possibilities of utilizing wireless technologies and the Internet of Things (IoT) to enhance educational access for students with disabilities (SwDs). According to the research there are three reasons contributing to the underutilization of assistive technology such as a) Teacher training and support, b) Perception of Assistive technology, c) Affordability concerns. The study revealed that teachers with experience and knowledge in using the AT are more able to integrate this into their lessons and to encourage SwDs to engage. Furthermore, using AT and wireless devices could provide an accessible and inclusive environment where SwDs are motivated to learn. Ultimately, the article offers specific recommendations to maximize the potential of wireless technologies in improving educational outcomes for students with disabilities and developing their autonomy during the learning process.	Assistive Technology, wireless devices, autonomy during the learning process, inclusive environment	https://doi.org/10.1080/10400435.2021.1956639

278	1	3	Catering to inclusion and diversity with universal design for learning in asynchronous online education: A self-determination theory perspective. The study involved designing and implementing two asynchronous online courses based on Universal Design for Learning (UDL) and assessing their effectiveness among university freshmen in a quasi-experimental setting. The research aimed to determine if the universal instructional design addressed inclusion and diversity across genders and academic characteristics and to evaluate how the teaching design supported learners' needs satisfaction and engagement. Notably, there were no discernible differences in needs, satisfaction and engagement between science and art students. While the universal designs successfully supported autonomy and competence, they fell short in fully satisfying learners' relatedness needs. Additionally, the asynchronous UDL-based learning, although effective, was found to be less engaging compared to real-time peer learning. The study concluded that blended courses incorporating live and interactive elements, such as video conferencing, were more effective in meeting students' intrinsic	Asynchronous online courses, Universal Design for Learning, diversity across genders and accessibility.	https://doi.org/10.3389/fpsyg.2022.819884

			needs, with close connections to peers and teachers enhancing inclusion and belonging in the learning experience.		
279	1	3	Supported eText: Effects of text-to-speech on access and achievement for high school students with disabilities. The recent study aimed to assess the effectiveness of Text-to-Speech Assistive Technology (TTS-AT) in supporting students with disabilities in an online curriculum designed for the transition from school to post-school settings. The study revealed a moderate functional relationship between TTS and unit quizzes, emphasizing the clarity gained by examining overall student means within baseline versus intervention. Notably, students with varying reading abilities showed consistent improvement in unit quiz scores with TTS, benefiting intensive readers and even non-readers. The study emphasized the substantial impact of TTS on reading comprehension, particularly for strategic and intensive readers. Results challenged the intervention recommendations based on the AIMSweb Maze reading assessment, suggesting a need for more precise matching of support to students' significant needs.	Text to speech interventions, developing reading and literacy skills	https://doi.org/10.1177/016264340902400302

280	1	4	Improving access to competitive employment for persons with disabilities as a means of reducing social security expenditures. The article discusses the problem of the growing expenses and the increasing number of beneficiaries of the Social Security Administration's (SSA) disability programs in the USA over the years. The suggested solution is funding initiatives of competitive and supported employment for individuals who were previously part of segregated work environments. Changes over the past decades like assistive technologies, job coaches, and legislation for disability rights like the Americans with Disabilities Act, contributed to expanding the competitive work options for people with disability. The article suggests strategies for accomplishing this national shift from segregated work, which is not profitable and productive, to competitive employment.	employment programs for people with disabilities, supported employment	https://doi.org/10.1177/108835769701200103
281	1	4	College students with disabilities: An access employment group There are several issues and concerns regarding employability and employment for college students with disabilities that are transitioning from academic to work settings. In this context, students with disabilities are	Access employment groups, job seeking	https://doi.org/10.1080/01933920108413783

			concerned about self-advocacy, reasonable accommodations, legal rights, professional self-presentation, disclosure, as well as establishing credibility. Having “access employment groups” (AEG) that put emphasis on career-related insights and self-knowledge for job-seeking and employment opportunities can be an effective way to enrich the career services and opportunities of college students with disabilities. Such groups offer personalized recruitment and screening, have a flexible group structure which consists of 6-12 members, capitalize on facilitators who are people with disabilities and have related experience for their organizational planning, and have a diverse format of activities that integrates both experiential and psychoeducational activities.		
282	1	4	Social Work and Accessibility of Persons with Disabilities in Mexico: Hidden Barriers To achieve the inclusion of all individuals in society, it is important to understand the concept of diversity. Different programs are being adopted to promote the inclusion of individuals with disabilities in society and workplaces. Despite the fact that these programs have unique specifications based on which context they are applied, they do share some common objectives. Specifically, these	Digital literacy requirement, social accessibility programs	https://doi.org/10.15453/0191-5096.4174

			programs aim at increasing individuals with disabilities access to quality jobs, specialized and generalized health services, education, tourism, sports, transportation, private and public spaces, as well as to information technologies. Additionally, these programs aim at providing individuals with disabilities with greater public and political participation, justice, and representation into government programs and policies. However, the advancement of Information and Communication Technologies (ICT) have brought about new barriers (e.g., lack of access to ICT) which amplified the digital divide. To increase the employability of individuals with disabilities, it is important to improve their e-awareness and information, technological, media, and digital literacy. Adopting approaches that focus on Universal Design and Equal Opportunity can improve social accessibility.		
283	1	4	Assistive technology and universal design in the workplace Assistive technologies can support individuals with and without disabilities. Hence, applying appropriate design options following approaches and principles such as those defined in the universal design is imperative. The same stays true for the environments and products as they should also be	Workplace assistive technologies	https://doi.org/10.1080/10400435.1998.10131959

			accessible and usable by all individuals. When taking the requirements and complexity of workplaces into account, the necessity to apply the universal design approach to increase accessibility and inclusivity becomes evident. Legislation, such as The Americans with Disabilities Act, have highlighted the increasing need for creating workplace assistive technology that is designed with consideration for individuals with and without disabilities. To further increase the advancement of such technologies, it is important to promote the use of universal design and workplace assistive technologies as well as integrate universal design throughout the development circle of future assistive technologies.		
284	1	1,3	The biggest little ways toward access: thinking with disability in site-specific rhetorical work. The article discusses site-specific rhetorical work and highlights the importance of including people with disabilities and disability activists in any effort to eliminate accessibility barriers. The article is based on the Rhetoric Society of America Project in Power, Place, and Publics at the University of Nevada. This Project developed a Methods Map using Google Maps for identifying access barriers on the campus, but the GPS pins	Site-specific rhetorical work accessible methodologies	https://doi.org/10.1080/15358593.2020.1737195

			also included experiences on the campus. Site-specific rhetorical work focuses on creating methodologies that are flexible and adaptable and would be useful for the local communities in physical and in textual spaces.		
285	1	3	What Middle School Educators Should Know about Assistive Technology and Universal Design for Learning. The article discusses the inclusion of Middle School students with learning disabilities with the use of assistive technology. Most of the time, students with learning disabilities enter middle school without prior experience with assistive technology as this was not necessary in the elementary years. General educators should adopt flexible teaching methods, aligned with UDL principles, the No Child Left Behind Act (2001), and the Individuals with Disabilities Education Improvement Act (IDEIA). Assistive technology that plays a crucial role in building independence and confidence, includes speech recognition software, text-to-speech software that can come with an optical scanner, and word prediction software packages. Furthermore, every school should have an assistive	assistive technology for learning disabilities, middle school assistive technology teams	https://doi.org/10.1080/00940771.2009.11461681

			technology team of professionals to make the right decision regarding every student's needs.		
286	1	3	Universal design for learning for educating students with intellectual disabilities: a systematic review. The review describes the findings of seven studies about educational interventions based on the Universal Design for Learning (UDL) for students with Intellectual Disabilities (ID). It focuses on reviewing the interventions, examining the research methodology, and evaluating the effectiveness of the interventions. The interventions consisted of digital environments such as Udio and others with audiovisual and practical activities, various types of software, e-books, story books, activities related to the adult world and other multimedia based tools. The studies showed positive results in utilizing practices based on UDL for the education of students with intellectual disabilities. UDL is significantly effective in teaching both academic and social skills.	interventions and tools based on UDL for students with intellectual disabilities	https://doi.org/10.1080/20473869.2021.1900505

287	1	3	Learning from the experts: Evaluating a participatory autism and universal design training for university educators. The study examines the efficacy of an online participatory training program developed for post-secondary educators focusing on autism and Universal Design. Autistic and non-autistic scholars cooperated in this training's development. Results indicate that there is an improvement in autism knowledge and a reduction in autism stigma after the training. Moreover, the interest in UD and the willingness to apply its principles significantly increased. Furthermore, the study highlights the difficulties faced by the academic staff in supporting autistic students mainly due to the lack of understanding about autism. Therefore, training is essential to assist professors and other academic staff in supporting these students, regardless of whether there is a formal diagnosis and disclosure of a diagnosis or not.	Training programs for autism, evaluation of online training programs for autism and UD	https://doi.org/10.1177/13623613221097207
288	1	3	Universal design for learning in physical education: Overview and critical reflection. The article discusses the application and the effectiveness of applying the UDL principles in Physical Education. Specifically, it examines the	inclusive Physical Education, application of UDL principles in PE	https://doi.org/10.1177/1356336x231202658

			existing literature, research, and scientific evidence regarding the benefits of integrating UDL as a pedagogical practice in integrated PE spaces. Physical Education has been one of the first educational spaces where students with and students without disabilities learn together and PE teachers are interested in creating an inclusive class by utilizing UDL principles through equipment, instruction, and the surrounding environment. Despite the general benefits of UDL in inclusive education, there is a significant lack of research and scientific evidence about UDL in PE and it appears to be premature to fully depend on UDL principles in the PE class for the time being.		
289	1	3	Universal Design for Learning and Assistive Technology: Leadership considerations for promoting Inclusive education in today's Secondary Schools. The article highlights the advantages of combining the application of UD principles with assistive technology in the classrooms of secondary education. It specifically addresses the barriers and challenges faced by students with learning disabilities in acquiring knowledge in class and achieving educational goals, and the difficulties faced by teachers in selecting,	Assistive technology for secondary students with learning disabilities, secondary teachers training in UDL and AT	https://doi.org/10.1177/0192636510371977

			implementing, and assessing the assistive technology device. AT should be an option for every student with learning disabilities and could be low-tech or high-tech, such as a pencil grip, word prediction software, an electronic dictionary, etc. Furthermore, teachers face primary barriers like a lack of knowledge about AT and insufficient time for training. Therefore, professional development plays a crucial role for teachers in selecting and implementing the right AT device for each student.		
290	1	3	Universal design of auditory graphs. A comparison of sonification mappings for visually impaired and sighted listeners. The study compares and discusses the findings of data sonification and auditory graphs for sighted and visually impaired students. The procedure involved participants listening to different sounds and making magnitude estimates for temperature, pressure, velocity, size, and number of dollars represented by the sounds. Previous studies have demonstrated the ability of blind and visually impaired to access various categories of data from sonified line graphs, like spatial information. Furthermore, the context of the auditory information played a crucial role as well as the time that blind	auditory representation of data for blind and visually impaired	https://doi.org/10.1145/1714458.1714459

			people lost their vision. For instance, the knowledge of the ultimate utility of sound has led to designing effective software like the Accessible Graphing Calculator (AGC)], the Math Description Engine (MDE) Graphing Calculator, the Sonification Sandbox. The designer of such software packages must always have in mind the user's specific needs and background to enhance usability.		
291	1	1,3	Universal Design in Interior Architecture Education: The Case of Store Design. The aim of the study is to examine the proposals of interior design students for the design of an apparel store in Turkey, focusing on inclusion and UD principles and utilize the findings for enhancing interior design curricula. The study revealed that the students have some knowledge about UD, but not at a high level. Their proposals emphasize the importance of factors like the height of the shelves, the accessible cashier counter, circulation, and accessible fitting rooms. Additionally, many students referred to the flooring, the doors and resting areas and suitable chairs for the elderly. The psychological comfort of the clients was also taken into account. Furthermore, the study underscores the commercial success of user-friendly products. The findings	accessible stores and shopping centers, interior architecture curricula	https://doi.org/10.15320/ICONAR.P.2019.92

			highlight the importance of including more lessons about accessibility and universal design into Turkish undergraduate level curricula.		
292	1	3	Universal Design in Elementary and Middle School: Designing Classrooms and Instructional Practices To Ensure Access to Learning for All Students. The article discusses the tools for creating an inclusive educational environment in Elementary and Middle school classrooms. It emphasizes the importance of ensuring that every student's Individualized Educational Program (IEP) meets their specific educational needs, incorporating UDI principles. Useful tools for Elementary and Middle school include accessible textbooks through books on tape and digital formats and audio output. Moreover, equipment and materials should be user friendly like graphic organizers and diagrams with raised lines for middle school students and computer equipment should accommodate fine motor difficulty. Other helpful inclusive tools include organizers and schematic maps, hands-on activities, project menus and simple instruction with consistent vocabulary.	accessible tools and equipment for elementary and middle school, textbooks, web quests, computer equipment, inclusive teaching	https://proquest.umi.com/pqdweb?did=1473995661&Fmt=3&clientId=74379&RQT=309&VName=PQD

293	1	3	Universal Design for Learning as a curriculum development tool in physical education. The aim of the article is to underscore the beneficial role of UDL in physical education teaching and to illustrate how UDL could be a curriculum development tool for physical education teachers. It has been observed that physical education instructors have a difficulty in making their classrooms inclusive often due to a lack of the relevant courses during their studies. By dedicating time to design the curriculum with the application of UDL principles, incorporating the adjustments from the beginning, and utilizing goals, methods, materials and assessments, the physical education teachers would help students to become expert learners. Additionally, for an effective and inclusive curriculum design, it is imperative to examine the National Standards for K–12 Physical Education and the relevant state standards.	inclusive physical education teaching, UDL in PE curricula	https://doi.org/10.1080/07303084.2019.1614119
294	1	3	“ALL Faculty Should Take this”: a Universal Design for Learning Training for Community College Faculty. The article discusses professional development in education, particularly focusing on community colleges and the	active learning methods, accessible training locations, considering	https://doi.org/10.1007/s11528-019-00439-6

			implementation of Universal Design for Learning (UDL) in higher education settings. It emphasizes the importance of structured professional development to enhance teaching practices and student outcomes. Various studies and recommendations are highlighted, suggesting that successful professional development should involve collaboration, sustained support, and active learning. Additionally, it explores the challenges and opportunities in implementing UDL in higher education, stressing the need for comprehensive training and ongoing support for faculty.	factors like seating, lighting, and noise	
295	1	3	Universal design in the education of architecture students The implementation of universal design principles in architectural education is essential to cater to the diverse needs of individuals with disabilities. The authors, emphasize the importance of incorporating universal design in teaching architecture to ensure accessibility for people with special needs. By adhering to the principles outlined in the UN Convention on the Rights of Persons with Disabilities, designers can simulate the experiences of individuals with various disabilities, fostering empathy and understanding. The authors advocate for the integration of functional and spatial	multi-sensory experience in architectural education, including visual, auditory, olfactory, and tactile aspects, designing for elderly populations, physical accessibility	https://www.wiet.e.com.au/journals/WTE&TE/Pages/Vol.18,%20No.3%20(2020)/15-Gronostajska-B.pdf

		solutions dedicated to seniors in architectural designs. They highlight the significant number of disabled individuals in Poland and stress the need for barrier-free design across educational, cultural, and healthcare facilities. Furthermore, they discuss the educational approach based on theoretical, empirical, and phenomenological aspects of universal design, emphasizing the importance of considering the needs of individuals with disabilities at all stages of life. The article also outlines seven main principles of universal design, stressing equitable use, flexibility, simplicity, clarity, error tolerance, minimal effort, and good access. Additionally, it proposes an original teaching method encompassing theoretical, empirical, and phenomenological aspects, supported by workshop classes involving individuals with disabilities. The education model prioritizes the social model of disability, promoting changes in the environment and social attitudes to overcome barriers and ensure inclusivity. Furthermore, the article highlights the importance of adapting architectural designs to address contemporary challenges, such as natural disasters and epidemics like the SARS-CoV-2 pandemic. It suggests		

			responsive, portable architecture as a viable solution to swiftly deploy medical facilities to affected areas.		
296	1	3	Evaluation of a digital UDL-based learning environment in inclusive chemistry education The study investigates the impact of a digital multimedia learning environment, developed according to Universal Design for Learning (UDL), on students with and without special educational needs (SEN) in two 90-minute chemistry courses. The research involved 89 students aged 13-15, including 16 SEN students, in German classrooms. Assessments included pre-post-follow-up chemistry tests and attitude surveys towards the learning software. Results indicate significant improvement in chemistry performance, particularly in understanding chemical reactions, and positive feedback on the learning software. Video analysis reveals both SEN and non-SEN students utilizing the software effectively. The study concludes that the digital learning unit	UDL principles in software development, digital learning tools, digital learning environment, assessment methods	https://doi.org/10.1515/cti-2018-0026

			benefits heterogeneous learning groups, providing individualized learning opportunities while allowing teachers to assist students individually. The mixed-methods approach enables tailored research insights while considering the inclusivity of teaching methods and individual student needs		
297	1	1	Design Solutions Creating Barriers to Achieving Universal Design Compliance of Academic Buildings in Universities in Nigeria This study concerns barriers to achieving UD in academic buildings in Nigeria, include inadequate infrastructure such as absence of dropped kerbs, open drainage, inaccessible carparks, and inappropriate door and ramp provisions. These barriers hinder access for individuals with mobility impairments and contradict UD principles. Addressing these barriers is essential for creating truly inclusive environments.	physical accessibility, steps/stairs, kerbs, parking spaces, doors, ramps	https://iaeme.com/home/article_id/IJCIET_10_01_061
298	1	3	Consulting with children and young people who have disabilities: views of accessibility to education The Scottish Education Act requires improvements in three areas, a) the students' ability to participate in the school curriculum, b) the physical environment and c) communication. The Act	accessible primary and secondary education	https://doi.org/10.1111/j.1467-8578.2007.00452.x

			puts emphasis on the communication with the students themselves about their needs and suggestions and that's what the paper focuses on. Students in primary and secondary education took part in the consultation presented. The students' comments highlighted the need for improvements in access to special equipment, the ability to work independently, communication with teachers about their personalized needs and abilities, the available support for homework and the information provided about post-school options.		
299	1	1,3	Effectiveness of universal design education in architectural design studios The article evaluates the integration of universal design elements into architectural design studio works at the Faculty of Architecture and Design, Slovak University of Technology in Bratislava (FAD-STU), Slovakia. It assesses the transfer of theoretical knowledge from the compulsory subject Universal Design to practical design studios, comparing outputs with diploma theses, the capstone projects. Findings indicate a need to sensitize students to user diversity and link theoretical knowledge with practical implementation. Bachelor's degree students tend to focus on legislative regulations, while Master's degree students	Education on universal design principles and application, physical accessibility	https://www.wiete.com.au/journals/GJEE/Publish/vol25no2/12-Machacova-K.pdf

			emphasize broader aspects of universal design, including cognitive accessibility and well-being. The importance of intensive consultations and teachers' expertise in implementing theoretical knowledge is highlighted. Education models should integrate theoretical and practical subjects to enhance universal design implementation in practice.		
300	1	3	Universal design for learning principles and students with learning disabilities: an application with general education teachers in Saudi Arabia This study investigates the UDL principles among general education teachers in teaching and assessing students with learning disabilities, considering gender, experience, and qualification as moderators. Data was collected via questionnaires from male and female teachers in the eastern region of Saudi Arabia from 2019 to 2021. Findings reveal that teachers predominantly apply UDL principles, particularly "Providing multiple tools for presenting information by the teacher." Significant differences were observed based on experience levels, with more experienced teachers showing higher adherence to UDL principles. However, no significant differences were found based on qualification levels. Female teachers exhibited a higher likelihood of implementing UDL	accessible learning environments, teaching and assessing students with learning disabilities	https://doi.org/10.1108/JME-06-2021-0085

			principles compared to male teachers. Recommendations include providing training courses for teachers to enhance UDL implementation regardless of gender or experience, encouraging the use of self-evaluation skills for students with learning disabilities, and tailoring assignments and homework to their needs.		
301	1	3	Teaching STEAM through universal design for learning in early years of primary education: Plugged-in and unplugged activities with emphasis on connectivism learning theory This paper outlines the design and execution of an international eTwinning project by four teachers, employing the UDL framework and connectivism theory to provide inclusive STEAM education. Through qualitative content analysis, benefits emerged, such as enhanced learning processes, active student engagement, and self-reflection via student-based assessment. Pupil feedback highlighted preferences for certain project challenges, emphasizing the importance of varied engagement methods. Challenges included initial difficulties with robotic activities and virtual teamwork, although long-term remote teaching enhanced virtual collaboration skills. Teachers noted alignment	curriculum design, multiple engagement options, virtual learning challenges, incorporating peer assessment methods, need for accessible tools and methodologies to assess student skills effectively	https://doi.org/10.1016/j.tate.2023.104210

			of everyday practices with UDL but faced challenges in providing equitable access to STEAM-EDU and emphasized the need for student involvement in activity design. Implementation of UDL improved learning processes and skill development, fostering teamwork and communication. Despite advantages, challenges included planning complexities, schedule constraints, and assessment tool limitations.		
302	1	3	Accessibility centers in brazilian federal institutions and contributions of occupational therapists for the inclusion of persons with disabilities in higher education The paper explores inclusion programs for students with disabilities in Federal Institutions of Higher Education (in Brasil) and the role of occupational therapy in promoting access and permanence in higher education. The study analyzes an Inclusion Program of the Ministry of Education, identifying 55 centers in IFES and their actions. Results indicate progress in inclusion efforts, but challenges persist, especially regarding access for marginalized groups. While government programs have increased enrollment, the percentage of students with disabilities remains low. The Program faces organizational challenges, and occupational therapists play a crucial role in	Accessibility Centers in HEIs, accessibility in HE, physical accessibility,	https://doi.org/10.4322/2526-8910.ctoAO1743

			addressing individual and systemic barriers. However, their participation in the program is limited. The study emphasizes the need for expanded occupational therapy training and increased focus on education and disability in HEIs curricula. It also highlights the importance of addressing attitudinal accessibility and promoting broader societal changes to support the inclusion of students with disabilities in higher education.		
303	1	3	Higher education students with disabilities speaking out: perceived barriers and opportunities of the Universal Design for Learning framework Even though the number of students with disabilities in higher education is increasing, the same increase in degree attainment is not observed. Ten students, most of whom had learning disabilities, participated in semi-structured interviews. The students' perceptions showed agreement with the 1st principle of UDL. Students appreciated well-structured courses, but some forms of alternative representation of the materials were beneficial to some and a hindrance to others (online platform, use of powerpoint). As for the 2nd principle of UDL, the students agreed it was important for their success and referenced a	Universal Design for Learning/ higher education	https://doi.org/10.1080/09687599.2017.1365695

			variety of preferred evaluation methods (e.g. multiple choice examinations, multiple examinations) that again were not suitable to all. Students also agreed with the 3rd principle of UDL but showed differences in their need for autonomy.		
304	1	3	Universal Design for Learning and Inclusive Education: A Systematic Review in the International Literature. The study is based on a systematic literature review about UDL and inclusion. Specifically, the papers that were examined included empirical research on UDL, utilizing Coordination for the Improvement of Higher Education Personnel (CAPES) database. The results show that there are plenty of studies in UDL, but the majority of them are mostly theoretical, and not including applied research on the topic. Four categories arise after the papers have been analyzed: the UDL in student intervention, with papers examining how UDL affects the behavior and are focused on Physical and Motor education practices, the UDL and teacher training, with papers focused on vocational training, and the UDL from professionals' point of view. The findings suggest a demand for applied research on the topic.	UDL in intervention with students, UDL in teacher's training, UDL principles for motor skills	https://doi.org/10.1590/s1413-65382519000400009

305	1	3	Universal Design for Instruction in Nursing Education: An Integrative Review. The aim of the study is to examine the application of UDI principles in nursing education. While UDI contributes to creating an inclusive educational environment in postsecondary education through the use of technology, various resources, materials and assessment, it is evident that UDI is not well known in nursing education. Generally, there are not a large number of students with disabilities in post-secondary education, and there are some with unknown or hidden disabilities, mainly due to the fear of disclosure and stigma. Furthermore, postsecondary teachers are not familiar with UDI or other pedagogies. UDI helps students avoid unwanted disclosure and save teachers time on accommodations. Examples of applying UDI principles in lab courses include starting IVs from a sitting position and placing magnifiers on insulin syringes. Nurse educators should collaborate with experts in National Organization of Nurses with Disabilities (NOND.org) and other organizations for utilizing UDI principles.	UDI principles in postsecondary education, UDI principles in nursing education, inclusive nursing lab courses	https://doi.org/10.1097/01.nep.0000000000000249

306	1	3	Práticas educativas pautadas no Desenho Universal para Aprendizagem (DUA) This article explores the Universal Design for Learning (UDL) and its application in educational practices, particularly in Higher Education. Qualitative research, primarily literature review focused, indicates that UDL promotes flexibility in presenting information and allowing varied ways for students to express knowledge, thereby enhancing motivation. Several studies suggest restructuring classes and activities to foster inclusive learning environments. While UDL adoption is growing, research in Brazil remains nascent. Teachers appreciate UDL's potential to cater to diverse learning profiles, while students find it beneficial and advocate for its inclusion in curricula. UDL facilitates individualized learning through adaptable strategies and technology integration, leading to increased student engagement and motivation. Clear learning goals and activity rationales further enhance student involvement. The article underscores the importance of teacher training to effectively implement UDL principles and address diverse learning needs. Despite progress, there's a call for more action-oriented research and widespread adoption of UDL practices to	UDL practices and adoption	https://doi.org/10.21723/riaee.v17i3.17087

			promote inclusive education. The article concludes by highlighting the growing interest in UDL globally and its significance in fostering inclusive educational strategies.		
307	1	3	Ergonomics and universal design in interior architecture education This article discusses the integration of Human Factors and Ergonomics (HFE) principles into the design process, particularly focusing on Universal Design (UD) in an interior architecture undergraduate program. The study evaluates the effectiveness of a course dedicated to UD principles, which covers seven UD principles over a semester. The course employs lectures, discussions, and assessments to impart theoretical knowledge and practical skills in UD application. Assessment methods include weekly assignments, a midterm examination, and a final research paper evaluating public buildings. Results indicate significant improvement in students' understanding and application of UD and HFE principles over the semester. Moreover, students find the course beneficial for enhancing their design work and increasing awareness of accessibility issues. The article suggests integrating UD into interior design curricula as a standalone course and within design studios. It emphasizes	Human factors and ergonomics, Universal design practices	https://doi.org/10.4305/metu.jfa.2009.2.7

			the importance of practical assessments and discussions in fostering students' skills in evaluating and implementing UD principles in design projects. Overall, the study underscores the need for ongoing education and practical application of UD principles to enhance design quality and accessibility		
308	1	3	Inclusive schools and urban space diversity: Universal design strategies in use The paper examines the concept of 'urban space diversity' in the context of promoting social inclusion, particularly through inclusive education environments. It discusses the legislative framework supporting inclusive education globally and emphasizes the importance of creating appropriate physical environments to support diverse learning needs. The concept of Universal Design (UD) is introduced as a tool for creating inclusive spaces, with its principles aligning closely with the goals of inclusive education. The paper highlights three main areas where UD can be applied in inclusive educational environments: catering to the diversity of users, facilities, and spaces. It emphasizes the importance of providing equitable, flexible, intuitive, and accessible spaces to accommodate diverse needs. The text outlines specific strategies for	Accessible, flexible, equitable, and intuitive learning spaces	https://doi.org/10.4305/metu.jfa.2012.1.11

			achieving this, such as flexible classroom layouts, adaptable spaces, and providing clear and perceptible information. It also discusses considerations for safety, comfort, and the integration of technology. Overall, the paper argues that the architectural environment of inclusive education plays a crucial role in promoting social inclusion and diversity, with UD principles serving as a catalyst for achieving these goals.		
309	1	3	Promoting accessible physical environments in post-secondary school settings through attention to universal design Access to education is a fundamental right in Canada, yet many young adults with disabilities face barriers in attending post-secondary institutions due to inaccessible physical environments. Occupational therapists play a crucial role in advocating for more accessible campuses. Various barriers exist, including architectural, attitudinal, informational, and systemic obstacles. Mobility impairments are predominant among disabilities experienced by students. Addressing physical accessibility is essential for universal access to education and participation in post-secondary activities. A systematic scoping literature review highlights architectural barriers and facilitators, emphasizing the need for complex	Accessible physical environments in educational contexts	https://files.eric.ed.gov/fulltext/EJ941728.pdf

			renovations and potentially less costly modifications. The University Campus Accessibility Measurement (UCAM) is a comprehensive tool for evaluating accessibility in post-secondary schools, addressing both interior and exterior elements. Reports from UCAM assessments assist in enhancing awareness of universal design and guiding prioritization of modifications. The UCAM, along with its sister tool, the Physical Accessibility Measure for Schools (PAMS), is publicly available for assessing accessibility in educational environments. Utilizing data from the literature review and the UCAM, professionals can advocate for change to improve access to post-secondary education for students with mobility impairments		
310	1	3	Inclusive education in remote instruction with universal design for learning During extended school closures, such as those experienced during the COVID-19 pandemic, the shift to remote learning poses challenges for both teachers and students. While distance education has been successful before, the sudden reliance on technology for all students presents difficulties, especially for those with Special Educational Needs (SEN). Inclusive education principles	Distance education accessibility considerations	https://doi.org/10.18662/rrem/12.2Sup1/299

			emphasize meeting the needs of all students, but transitioning to remote instruction requires adaptation and consideration of individual differences. Teachers must address technological challenges and find strategies to differentiate instruction effectively. The Universal Design for Learning (UDL) framework, which promotes flexibility and reduces barriers in education, offers guidelines for inclusive teaching practices. UDL focuses on providing multiple means of engagement, representation, and action/expression to accommodate diverse learners. By implementing UDL principles, teachers can redesign curriculum and instructional materials to support all students, including those with SEN, in the online environment. This proactive approach facilitates participation and learning for all students, ensuring that educational goals are met regardless of individual challenges.		
311	1	3	Applying universal design to information literacy: Teaching students who learn differently at Landmark College The landscape of classrooms is evolving with an increasing number of students having diverse learning needs such as Attention-Deficit/Hyperactivity Disorder (AD/HD), dyslexia, or other learning differences. This poses a challenge	Universal Design for Information Literacy (UDIL), Universal Design for Instruction (UDI)	https://doi.org/10.5860/rusq.49n1.24

		for academic librarians to adapt information literacy instruction. The Association of College and Research Libraries (ACRL) Standards for Proficiencies for Instruction Librarians and Coordinators acknowledges the need for catering to diverse learners, and many librarians incorporate active learning methods. However, a more integrated approach ensuring accessibility for all learners is necessary. Universal Design for Instruction (UDI) offers a framework to design inclusive information literacy curricula. The Research Services Librarians at Landmark College have developed Universal Design for Information Literacy (UDIL), applying UDI principles to library instruction. Various principles of UDI, such as equitable use, flexibility in use, and simple and intuitive instruction, are highlighted with practical applications. By incorporating UDI principles, library instruction can become more accessible, accommodating various learning styles and needs. UDIL is an ongoing effort, requiring constant adjustment based on classroom experiences and research, with plans for formal assessments to validate its effectiveness.		

312	1	3	Universal design for learning in anatomy education of healthcare students: A scoping review The scoping review addresses concerns regarding the lack of anatomical knowledge among recent healthcare graduates. It investigates the use of Universal Design for Learning (UDL) in third-level healthcare education to improve student motivation, particularly in studying anatomy. Despite not finding explicit mentions of UDL, the review identifies teaching methods aligned with UDL principles in anatomy curricula. These methods include technology-enhanced teaching, contextualization, creating conducive learning environments, and promoting active learning. While these strategies positively impact student learning, the full potential of UDL remains underutilized due to educators' limited awareness of the framework. The review also highlights a gap in research on anatomy education in occupational therapy and speech and language therapy programs. Further exploration of UDL's role in enhancing motivation and accessibility in healthcare education is recommended.	Universal Design for Learning (UDL) practices and strategies	https://doi.org/10.1002/ase.2160

313	1	3	Implementing Universal Design for Learning (UDL) in Online Courses: Perspectives of faculty and students at Prince Sattam bin Abdulaziz University. This study examines the implementation of Universal Design for Learning (UDL) principles in online courses at Prince Sattam bin Abdulaziz University, based on feedback from faculty and students. Two questionnaires were administered, each containing 36 items related to UDL principles: multiple means of representation, multiple means of performance and expression, and multiple means of motivation and participation. Results indicated moderate agreement between faculty and students regarding the application of UDL principles, with a focus on providing multiple means of connection, expression, and representation. Notably, faculty members reported implementing UDL principles more consistently than students perceived, with significant differences in certain aspects. Gender, experience, and educational level did not significantly affect faculty perceptions, but participants with more training courses were more likely to apply UDL principles. Recommendations include incorporating peer evaluation, allowing student topic selection, and providing audio/text	Universal Design for Learning (UDL) policy considerations and training programs	https://doi.org/10.5430/jct.v12n6p143

			alternatives. Training programs and policy considerations for UDL implementation in e-learning are suggested, with future studies advised to address broader samples and obstacles to UDL application.		
314	1	2,3	Focus on inclusive education: evaluating apps for students with disabilities: supporting academic access and success When evaluating educational apps, educators should consider if the app aligns with academic standards, supports independent navigation, and allows customization. For students with disabilities, content differentiation and accessibility features like motion-based interactions should be assessed. Evaluators should also consider the feedback provided by the app and its ability to monitor student progress. Motivation and engagement are important factors to consider. Examples of apps for academic instruction are provided, with emphasis on evaluating their effectiveness through app evaluation rubrics. The goal is to assist educators in selecting apps that support academic learning for students with disabilities, emphasizing the need for thorough evaluation.	Educational applications and learning resources considerations	https://doi.org/10.1080/00094056.2016.1208014

			Future steps involve researching and supporting the use of these tools as effective options for academic instruction.		
315	1	3	A Review of the Disability Access Route to Education in UCD 2010-2013 The article evaluates the Disability Access Route to Education (DARE) at University College Dublin (UCD) from 2010 to 2013, focusing on its impact and recommendations for improvement. DARE allows applicants to secure places based on their disabilities and educational challenges. The National Access Policy aims to increase participation of underrepresented groups, including students with disabilities. However, targets remain low, indicating challenges in higher education access. Challenges include potential segregation and stigmatization of disabled students, alongside misconceptions about entry requirements. UCD addresses these issues through staff training and promoting Universal Design. Recommendations include reviewing DARE eligibility criteria to consider educational impact and prioritizing the most underrepresented students. The article emphasizes the need for a comprehensive approach involving schools,	Disability Access Route to Education (DARE), National Access Policy, eligibility criteria	https://doi.org/10.1080/1034912X.2017.1341042

			HEIs, and parents to ensure equitable access to higher education for all, particularly for students with disabilities.		
316	1	3	Access to higher education in Ghana: Examining experiences through the lens of students with mobility disabilities This article explores the challenges faced by students with mobility disabilities in accessing higher education institutions in Accra, Ghana. Utilizing the PhotoVoice methodology, which combines photographs and narratives, the study identifies accessibility issues within university campuses and their emotional and academic impacts on students. Results highlight encounters with inaccessible buildings, transportation challenges, and emotionally taxing experiences. Despite efforts to create accessible spaces, many areas remain functionally inaccessible due to architectural barriers. Emotional impacts include feelings of exclusion, fear, and frustration, while academic impacts manifest in limited access to content, support services, and academic freedom. The study underscores the necessity for architectural changes aligned with universal design principles and ongoing research to	Accessibility issues, inaccessible buildings, transportation issues, academic and emotional impact	https://doi.org/10.1080/1034912X.2019.1651833

			ensure inclusive education policies are effectively implemented.		
317	1	3	The twisting road to access to higher education for people with disabilities in Spain The study examines accessibility issues in higher education for people with disabilities (PWDs) in Spain. It explores barriers faced by PWDs in accessing education and compares differences by age, gender, and disability status. Data from the Social Integration and Health Survey revealed significant disparities in education access. PWDs faced challenges related to health, lack of confidence, architectural barriers, and internet usage. Interviews highlighted digital barriers and difficulties keeping pace with classes. Teacher attitudes and administrative obstacles were also identified. Recommendations include improving architectural accessibility, addressing educational needs of PWDs, and enhancing disability training. The study underscores the importance of inclusive policies and societal attitudes toward PWDs to achieve equitable education access.	The influence of age, gender, and disability status differences in accessing education	https://doi.org/10.1080/1034912X.2021.1910932

318	1	3	The policy problem: the National Disability Insurance Scheme (NDIS) and implications for access to education This paper examines shifts in disability support policy in Australia, focusing on access to education for individuals with disabilities through the National Disability Insurance Scheme (NDIS). The NDIS represents a departure from traditional service-based finance to individualized funding, administered by the National Disability Insurance Agency (NDIA). While the scheme aims to provide lifelong learning opportunities, its implementation faces challenges. Eligibility for the scheme is determined by strict criteria, and the focus on standardized outcomes may hinder integrated support. Education is integral to the NDIS, yet its alignment with education systems remains fragmented. The analysis reveals tensions between disability support and educational services, highlighting the need for greater collaboration. Despite the emphasis on individual control, access to mainstream services like education is constrained. The NDIS policy delineates responsibilities between the scheme and education systems, potentially limiting access to essential resources like assistive technology. The paper argues that the current NDIS framework	National Disability Insurance Scheme (NDIS) framework	https://doi.org/10.1080/02680939.2017.1280185

			inadequately addresses the multifaceted needs of individuals with disabilities, perpetuating policy problems related to diagnostic categorization and limited agency. The NDIS, while aiming for social inclusion, is critiqued for its reliance on medical assessment and economic rationalism, which may undermine its intended outcomes. The paper concludes that despite the NDIS's intentions, its design and implementation fall short of providing seamless access to services, particularly in education, perpetuating policy challenges and reinforcing existing inequalities.		
319	1	3	Supporting the development of students with disabilities in higher education: access, stigma, identity, and power The study examines the perception and experience of disability support centers (DSCs) among students with disabilities (SWD) in higher education. It applies three waves of student development theories and critical disability theory to analyze the role of DSCs in SWD's development and success. Interviews with 21 SWD reveal tensions between embracing and denying disability as 'difference' and identity in higher education. The findings highlight challenges such as lack of access, stigma, and power dynamics. While DSCs provide	disability support centers, challenges such as lack of access, stigma, and power dynamics	https://doi.org/10.1080/03075079.2021.1960303

			necessary support, they often overlook the importance of recognizing disability identity. The study suggests moving beyond mere redistribution to address the recognition aspect of disability. It also recommends transforming DSCs into general support centers to avoid segregating SWD. Additionally, it identifies self-stigma among SWD and the need for positive disability identity formation. The study advocates for structural changes in higher education policies and practices, promoting universal design and inclusive education principles. It emphasizes the crucial role of DSCs in fostering positive disability identity and activism among SWD. However, it calls for DSCs to broaden their services to include all students, regardless of disability status, and to engage in promoting cultural and political aspects of disability identity. Finally, it acknowledges study limitations and suggests avenues for future research.		
320	1	3	Exploring factors related to access to general education contexts for students with intellectual disability: a survey of district special education administrators in one state The study explores the roles and perceptions of district special education administrators regarding access to general	District special education administrators' perspectives	https://doi.org/10.1080/13603116.2020.1818140

		education environments for students with intellectual disabilities (SWID). Through an online survey, data was collected from administrators across different types of districts. Findings indicate a lack of diversity among administrators, with most being White women. Less inclusive districts were found to be more engaged in due process and litigation activities, citing external factors as barriers to inclusivity. Administrators perceived barriers such as reluctance to establish SWID programs and lack of facilities/equipment. Notably, there were significant differences in engagement in due process and litigation activities between less and more inclusive districts. Administrators' perceptions of their districts' performance varied, with most indicating a need for improvement. Differences in perceptions between district types suggest varying approaches to inclusive practices. The study highlights the need for further research into administrator decision-making, understanding of Least Restrictive Environment (LRE) principles, and alignment with inclusive policies and practices.		

321	1	2,3	HBCUs online: Can students with disabilities access Historically Black College and University websites? The study examines the web accessibility of 100 historically Black college and university (HBCU) websites after an amendment to Section 508 of the Americans with Disabilities Act. Using web accessibility software, it found that 94 HBCU websites were non-compliant with ADA standards, with an average of 62 WCAG errors per website. The most common errors were related to missing alt text and undefined hyperlinks. Voiceover analysis revealed only six HBCU websites were accessible enough for students with disabilities to navigate. The study discusses implications for HBCU leadership and suggests strategies for improving web accessibility, including professional development and investment in website infrastructure. It concludes by emphasizing the importance of embracing technology to ensure the future success of HBCUs.	Web accessibility	https://doi.org/10.1177/0021934719847373
322	1	3	Providing access to students with print disabilities: The case of the North-West University in South Africa The article explores accessibility in academic libraries, particularly focusing on services for students with print disabilities at the	Accessibility strategies and policy recommendations	https://doi.org/10.1080/15367967.2018.1547641

		North-West University (NWU) in South Africa. It highlights limitations in material and assistive technologies at NWU and discusses a legislative framework promoting information access for disabled individuals. The university has witnessed a rise in the number of students with disabilities, especially visual impairments, necessitating improved accessibility measures. Successful initiatives at NWU include Braille facilities, staff training, and customized programs for disabled students. A partnership approach with the South African Library for the Blind (SALB) aims to enhance accessibility through sponsored initiatives. Strategies include workshops, training, and resource-sharing to support visually impaired students. Additionally, the article recommends measures such as providing diverse resources, individualized support, and continuous policy review to improve accessibility. It concludes by advocating for ongoing research and fundraising efforts to further enhance accessibility and the learning experience for all students, especially those with print disabilities.		

323	1	3	Access to library facilities and services for users with disabilities: a study of Aligarh Muslim University in India The study aimed to evaluate the accessibility of library services for users with disabilities at Aligarh Muslim University in India. Utilizing both quantitative and qualitative methods, including questionnaires, interviews, and the IFLA checklist, the study found that although the university has a purpose-built library for users with disabilities, inadequate funds hinder the development of necessary facilities, assistive technologies, and accessible collections. Users faced obstacles due to inaccessible formats, lack of assistance from trained staff, and insufficient user training. Recommendations include implementing IFLA and UNESCO guidelines for accessible library services. Physical accessibility to the library building and facilities, availability of library materials in different formats, access to library services and facilities, and usage patterns of library services were evaluated. Findings revealed challenges in physical access, availability of materials, provision of services, and user training. While some services were available, such as computers with adaptive technology and Braille books, others, like home delivery and SMS/email	IFLA checklist, inaccessible material, lack of assistance from trained staff, and insufficient user training. physical accessibility to libraries	https://doi.org/10.1080/15367967.2020.1870120

			services, were lacking. The study concludes by emphasizing the need for improved funding, staff training, and specialized services to enhance accessibility and user satisfaction for individuals with disabilities in library settings.		
324	1	3	Recommendations to improve accessibility of sexuality education for individuals with intellectual or developmental disabilities: A qualitative study Sexuality education (SE) is recognized as a fundamental human right by the World Health Organization, aiming to enhance understanding and decrease instances of abuse, unplanned pregnancies, and sexually transmitted infections. However, individuals with intellectual or developmental disabilities often receive inadequate SE, which primarily focuses on safety and abuse prevention rather than adopting comprehensive and inclusive approaches. A sub-analysis was conducted to enhance SE accessibility, involving interviews and focus groups with individuals with disabilities, parents, healthcare providers, and educators. Recommendations to improve accessibility include utilizing educational guides, visuals, videos, universal design for learning (UDL), and direct	Accessibility recommendations and modalities	https://doi.org/10.1080/15546128.2020.1860177

			instruction tailored to individual preferences and abilities. Settings and modalities should be flexible, accommodating diverse needs and preferences. Parental involvement, open communication, and support groups are crucial. While various stakeholders suggest different modalities such as worksheets, role-playing, and online education, there's a consensus on the importance of adapting SE to individual needs. Furthermore, promoting inclusivity, positive relationships, and comprehensive SE content tailored to diverse identities is emphasized. Future research should evaluate the efficacy of these modalities in SE for individuals with intellectual or developmental disabilities.		
325	1	3	Human rights of students with disabilities in Ghana: Accessibility of the university built environment The article examines accessibility issues in higher education institutions, particularly focusing on students with disabilities in universities in Ghana. Through questionnaires and interviews, perceptions of persons with disabilities (PWDs) regarding the built environment and administrative priorities were assessed. Findings indicate challenges in communication, transportation, and physical environment, with perceived neglect from	Challenges in communication, transportation, and physical environment, with perceived neglect from university administrations, lack of government policy	https://doi.org/10.1080/18918131.2017.1348678

			university administrations. Recommendations include enacting and enforcing policies for disabilities, revising accreditation standards, and adopting universal designs for buildings. Lack of government policy and weak legal frameworks exacerbate the situation. The study underscores the need for concerted efforts from government departments, professional bodies, and universities to ensure accessibility and protect the rights of students with disabilities.		
326	1	3	Access and disability justice in theological education In this article, the author emphasizes the importance of promoting accessibility and inclusivity in theological education as more individuals with disabilities participate in these programs. Despite increasing attention to access and universal design for learning in education, theological schools have largely overlooked accessibility. The author presents a case study on evaluating accessibility in a seminary, advocating for a justice-based approach to access and inclusive learning. They introduce the concept of "disability justice" and discuss how it can guide theological education towards a more accessible future. The article concludes with the idea that "the future is accessible," inspired by disability activist Annie Segarra's	Accessibility evaluation, "disability justice"	https://doi.org/10.1080/23312521.2021.1895025

			#TheFutureIsAccessible movement, which emphasizes representation, visibility, and tangible practices prioritizing access and inclusion for disabled individuals.		
327	1	3	A Comparison Study between Universal Design for Learning-Multiple Intelligence (UDL-MI) Oriented STEM Program and Traditional STEM Program for Inclusive Education. This study investigates the impact of a Universal Design for Learning (UDL) and Multiple Intelligence (MI)-oriented STEM program on eighth-grade rural students' attitudes towards science, technology, engineering, and mathematics (STEM). The research, employing a mixed research design, selected 122 students divided into experimental and control groups. The UDL-MI-oriented program significantly enhanced and sustained students' STEM attitudes compared to traditional classroom teaching over a 10-week period. The study supports the need for inclusive STEM education, aligning with education reform and policy documents, and emphasizes the importance of designing inclusive STEM practices tailored to students' strengths. The findings suggest that the UDL-MI-oriented program, with its	inclusive STEM education for rural students, UDL-MI-Oriented Program	https://doi.org/10.3390/su13020554

			learner-centered teaching approach, fosters active engagement, diverse representation of ideas, and autonomy in learning. Despite limitations, particularly in focusing on environmental and biological sciences, the study underscores the program's potential as a catalyst for practicing UDL principles and MI theory in inclusive STEM education for rural students. Recommendations include extending the approach to other STEM disciplines and exploring its application in diverse socio-cultural contexts.		
328	1	3	Supporting Higher Education Students with Attention Deficit Hyperactivity Disorder through Universal Design for Learning. The text addresses the increasing prevalence of neurodiverse learners in higher education, particularly adult students with ADHD. To enhance support and achievement, higher education faculty should implement Universal Design for Learning (UDL) strategies, emphasizing engagement, representation, and action and expression. The Engagement principle focuses on autonomy, choice, relevance, and minimizing distractions to positively impact learning, especially for students with ADHD. Representation involves addressing cognitive barriers and executive functioning challenges, using	UDL strategies for adult learners, distraction-free environment	https://doi.org/10.1080/87567555.2022.2160959

			explicit instruction to support working memory and problem-solving skills. Action and Expression encourages instructors to provide students with various options to demonstrate their learning, accommodating diverse abilities and interests. This can include written assignments, presentations, or other creative formats. Implementing UDL strategies supports the diversity, equity, and inclusion movement in higher education, fostering positive academic outcomes and employment opportunities for adults with ADHD. The overall goal is to create an inclusive learning environment that benefits all learners in higher education.		
329	1	3	The Twisting Road to Access to Higher Education for People with Disabilities in Spain. This paper examines the accessibility challenges faced by people with disabilities (PWDs) in accessing higher education in Spain. The study analyzes data from focus groups, interviews, and the Social Integration and Health Survey 2012, focusing on differences in inclusive education by sex, age, and university type. The analysis reveals significant disparities in the perception of barriers to education between PWDs and those without disabilities. PWDs encounter obstacles related to architectural,	Utilization of the internet for educational activities, physical accessibility, ramps, steps, toilets, transport accessibility, teacher training for different disabilities	https://doi.org/10.1080/1034912X.2021.1910932

			virtual, and transport accessibility, along with issues of self-confidence, teacher attitudes, and lack of interest in studying. Additionally, the study identifies gender-based differences, with women with disabilities having a more positive view of accessibility barriers compared to their male counterparts. The findings emphasize the need for universities to address architectural barriers, cater to diverse educational needs of PWDs, and enhance disability training across institutions and society. Implementing such measures can contribute to a more inclusive, democratic, and egalitarian education system.		
330	1	3	Transforming Universal Design for Learning in Early Childhood Teacher Education from College Classroom to Early Childhood Classroom. This article explores the practical application of Universal Design for Learning (UDL) in teacher education programs, focusing on two research projects involving preservice teacher candidates. The studies delve into how participants comprehend and implement UDL in lesson planning, emphasizing its potential to train educators for diverse populations and promote inclusive learning. In Study One, teacher candidates utilized action research to implement UDL strategies, demonstrating positive impacts on student	accessible educational content, lesson planning	https://doi.org/10.1080/10901020.701366707

			behavior and learning. In Study Two, candidates designed lesson plans incorporating UDL principles during their practicum experiences, observing increased student engagement and learning. The research analyzes participants' experiences using grounded theory, highlighting recurring themes and patterns. Teacher candidates recognized the value of UDL in accommodating diverse learning styles and enhancing overall student understanding. The article emphasizes the importance of UDL principles in teacher preparation, noting the need for accessible technology and increased awareness among cooperating teachers to maximize UDL's potential for inclusive education.		
331	1	3	UDL in the Middle School Science Classroom: Can Video Games and Alternative Text Heighten Engagement and Learning for Students With Learning Disabilities? This article explores the impact of Universal Design for Learning (UDL) principles on the academic performance of 57 students with learning disabilities (LD) in inclusive science classrooms. The study involves alternating traditional curricular materials with UDL-aligned materials, including video games and alternative print-based texts. Results suggest that the UDL-	video games, UDL-based features for video games, vocabulary supports and detailed graphics in video games, alternative print-based texts aligned with UDL guidelines, explicit instruction and prompting	https://doi.org/10.1177/0731948713503963

		aligned units enhance students' engagement, providing multiple means of representation and expression. However, there were no significant differences in posttest scores between students with LD and those without LD. The study emphasizes the importance of alternative assessments for UDL-aligned units. Despite positive reactions from students and teachers, the quantitative analysis questions the effectiveness of UDL-enhanced instruction on test scores. The article discusses potential influences such as sample effects, instructional quality, and the impact of teachers' test review sessions. It also highlights the need for clearer educational objectives in video games. Additionally, students express appreciation for UDL-based features like vocabulary supports and collaborative learning during game play. The study recommends incorporating more collaboration and diverse assessments, including modeling methods and learning progressions, to enhance the effectiveness of UDL-aligned curricula.	to utilize technology-based tools	

332	1	3	Providing access to students with disabilities in online distance education: Legal and technical concerns for higher education. Students with disabilities encounter barriers in accessing online courses, although no single U.S. law mandates accessibility. Federal laws such as Section 504 of the Vocational Rehabilitation Act, the Americans with Disabilities Act (ADA), and Section 508 of the Rehabilitation Act, along with state laws, shape accessibility in online education. Accessible course design benefits all students by enhancing usability and comprehension. For instance, alternative text aids in keyword searches, while captioned videos assist those with language differences. Accessibility also extends to second-generation browsing devices. Despite legal frameworks, many online courses remain inaccessible, particularly due to HTML-based web pages. Section 508 standards address HTML accessibility, but challenges persist with multimedia elements in courseware like Blackboard and WebCT. Microsoft PowerPoint, commonly used in online courses, poses accessibility challenges due to its non-text elements. Converting PowerPoint presentations to accessible HTML formats can mitigate these issues. While legal and	web accessibility, HTML files accessibility	https://doi.org/10.1207/s15389286ajde1801_5

			technical requirements for accessibility are intricate, proactive steps by institutions can enhance online learning for all students. The text discusses the accessibility of HTML files and mentions Section 508 of the Rehabilitation Act standards, indicating technical indicators for web accessibility.		
333	1	3	Universal Design for Learning in postsecondary STEM education for students with disabilities: a systematic literature review. The literature review examines the application of Universal Design for Learning (UDL) in postsecondary STEM education, focusing on accessibility for all learners. Using specific criteria, including empirical literature in peer-reviewed journals published after 2006, the review identifies four studies and three literature reviews meeting the search criteria. The analysis highlights the potential impact of UDL on postsecondary STEM instruction, such as increasing inclusive teaching methods and self-advocacy from students with disabilities. Recommendations for further research are provided to address the need for more empirical studies exploring the efficacy of UDL in postsecondary STEM education. Notably, there's emphasis on addressing executive function (EF) disorders in future research, given their	inclusive teaching methods, classroom accessibility, learning environments, materials, and assessments for postsecondary STEM education	https://doi.org/10.1186/s40594-019-0161-8

			prevalence across various disabilities. The review suggests that while active learning strategies hold promise, their effectiveness for students with disabilities requires further investigation. The lack of research on UDL in postsecondary STEM underscores the need for additional studies to validate its effectiveness, with funding opportunities available from organizations like the National Science Foundation and the U.S. Department of Education.		
334	1	3	Student perspectives on the use of universal design for learning in virtual formats in higher education. Universal Design for Learning (UDL) in higher education serves as a valuable tool for supporting diverse student populations, particularly in enhancing academic outcomes and retention rates. As digital education becomes increasingly prevalent, especially for international students, a robust framework is imperative to cater to the needs of non-geocentric learners. This mixed-methods study, utilizing survey responses from undergraduate students, explores the perception and impact of UDL in various virtual learning modalities, including online courses, independent studies, and virtual study groups. Results indicate a significant difference in UDL scores across	virtual learning environments, online courses, independent studies, virtual study groups	https://doi.org/10.1186/s40561-022-00218-6

			modalities, with the virtual study group demonstrating the highest scores. Qualitative data underscore the importance of clear feedback, real-life connections in instruction, and time management skills for student success in virtual learning environments. The study suggests that integrating UDL strategies into virtual modes requires professional development, access to resources, and support systems. Further research is recommended to explore the effectiveness of UDL principles, especially among diverse student populations. The study concludes by emphasizing the role of higher education institutions in promoting diversity, equity, and inclusion through informed teaching practices, such as UDL, in virtual learning formats.		
335	1	3	Access and participation in higher education of students with disabilities: access to what? The Australian Government recognized students with disabilities as one of six equity groups in higher education in 1991. Despite government initiatives and funding for disability support services, there has been limited progress in increasing their enrollment, constituting only 4% compared to their 20% representation in Australia's population. Negative attitudes persist among	practical courses, legislative compliance, staff training	https://doi.org/10.1007/s13384-010-0002-8

		university lecturers, despite the existence of laws like the Disability Discrimination Act (DDA) and Disability Standards for Education. Research reveals a lack of understanding of legislative requirements and negative attitudes towards disabled students, especially in practical courses like nursing. Lack of knowledge about the DDA and negative attitudes hinder the inclusion of disabled students in nursing courses. Occupational status and personal experiences with disability influence attitudes toward inclusion. Universities need to educate staff about disability legislation and policies, particularly in fields like nurse education, to fulfill their responsibilities under the DDA. Efforts to promote access and participation of disabled students have been ongoing for nearly two decades, but more work is needed to ensure quality student experiences. It's crucial to address barriers faced by disabled students, including inflexible course requirements, and provide necessary support for their success. While there's a welcome focus on students from low socioeconomic backgrounds, attention to students with disabilities is also essential, including addressing teaching staff attitudes that may hinder their participation and success.		

336	1	3	Opening the door to university health research: recommendations for increasing accessibility for individuals with intellectual disability. The paper emphasizes the importance of including diverse groups in population health research to advance health equity. It particularly focuses on the underrepresentation of adults with intellectual disabilities (ID) in research samples despite their significant health disparities. The study identifies 11 key barriers to participation, including knowledge gaps and accessibility challenges. To address these barriers, the paper presents seven recommendations for researchers, such as building community partnerships and using plain language. Additionally, four products are provided to support inclusion efforts, including a checklist and plain language glossary. The paper underscores the need for ongoing accessibility throughout the research process and suggests applying a stakeholder engagement framework to enhance inclusion. While the recommendations target university research, they can be broadly applicable, promoting accessibility for diverse participants. Overall, the paper highlights the importance of inclusive practices in health research to address disparities	accessibility in research practices, accessible research materials	https://doi.org/10.1186/s12939-022-01730-4

			and calls for continued efforts to overcome barriers and promote meaningful participation of individuals with intellectual disabilities.		
337	1	3	Students with Disabilities and eLearning in Australia: Experiences of Accessibility and Disclosure at Curtin University. This article discusses a study conducted at Curtin University in Australia, focusing on students with disabilities and their experiences with eLearning. The study compares its findings with an earlier study conducted at Open Universities Australia (OUA). Results reaffirm that students with disabilities are attracted to eLearning, with mental illness and medical disabilities being prevalent among them. However, accessibility issues persist, especially with online platforms provided directly by the university. Curtin University students demonstrated a higher awareness of available accommodations, leading to more successful outcomes when utilized. Despite this, many students chose not to disclose their disabilities. The study also explores students' fields of study, retention rates, attitudes towards seeking accommodations,	accessibility of online learning resources, online learning platforms, university-provided platforms	https://doi.org/10.1007/s11528-018-0337-y

			and technology usage. Accessibility challenges were noted with university-provided platforms, such as Blackboard and Echo 360. The article underscores the importance of universal design in eLearning to accommodate diverse student needs effectively. Despite challenges, students at Curtin University generally showed positive attitudes towards their educational experience. The study concludes by emphasizing the need for ongoing research and improvement in eLearning accessibility, highlighting students' eagerness to contribute to this development.		
338	1	3	Increasing access to learning for the adult basic education learner with learning disabilities: Evidence-based accommodation research Accommodating adult basic education (ABE) learners with learning disabilities (LD) is common across various educational, testing, and work settings, yet empirical evidence supporting the effectiveness of these accommodations is limited. The literature underscores the necessity of considering accessibility and accommodation in today's digital, networked, and multimodal world. Different types of accommodations, including alternative means of accessing and producing information, adjusting time and	Barriers to accommodation access	https://doi.org/10.1177/0022219411426855

			settings, and using assistive technologies, are discussed. However, research specific to ABE learners with LD is lacking, particularly concerning workplace accommodations. Universal Design for Learning (UDL) and Universal Design Tests (UDT) are proposed as solutions to provide equal opportunities without the need for individual accommodations. Technology plays a crucial role, but many ABE learners lack training in utilizing available tools. Barriers to accommodation access include a lack of research, difficulty obtaining evaluations, and inadequate training in using accommodations strategically. Future research and national initiatives are needed to address these challenges and ensure accessibility and equal opportunities for ABE learners with LD.		
339	1	3	Access to music education: Nebraska band directors' experiences and attitudes regarding students with physical disabilities This study investigates the challenges faced by band directors in integrating students with physical disabilities into instrumental music programs. Through a survey of 221 Nebraska high school music programs, concerns were identified, including the awareness of options for accommodating students with disabilities, availability of	Awareness of options for accommodating students with disabilities, availability of adapted instruments, and the associated cost	https://doi.org/10.1177/0022429409353142

			adapted instruments, and the associated costs. Findings reveal that a significant percentage of respondents had encountered students with physical disabilities in their schools, yet many directors lacked awareness of available options for inclusion. Concerns regarding instrument availability, cost, and financing were prevalent. Despite these challenges, respondents acknowledged the potential benefits of integrating students with disabilities into music programs, highlighting the need for adapted instruments and increased awareness among educators. The study concludes by advocating for initiatives to inform music educators of available resources and encouraging instrument manufacturers to develop instruments tailored for individuals with disabilities, aiming to enhance educational opportunities for this underserved population.		
340	1	3	Student and Teacher Variables Contributing to Access to the General Education Curriculum for Students With Intellectual and Developmental Disabilities The study examines the influence of student and teacher variables on the access to the general education curriculum for 19 students with intellectual and developmental disabilities. Data from 1,140 minutes of observations were analyzed using multilevel	Curriculum access, student and teacher viewpoints	https://doi.org/10.1177/0022466907313449

		regression analyses. Results showed that both student and teacher variables significantly predict access to the curriculum, with complex relationships observed between them and environmental factors. Notably, teacher focus had a negative relationship with access, influenced by task difficulty. Teacher instructional behavior and student competing response exhibited positive cooperative suppression, indicating their combined impact on access. Additionally, correction of distortion was observed between teacher management behavior and student academic response. Findings emphasize the importance of appropriate curriculum modifications and teacher education in promoting access to the general education curriculum for students with disabilities. Future research should explore the interaction between student, teacher, and environmental variables in greater detail, examine the direct relationship between curriculum modifications and student behaviors, and compare variables based on disability type and severity. Intervention-based research is also recommended to assess the impact of various factors on improving student access.		

341	1	3	Using graduated guidance to teach iPad accessibility skills to high school students with severe intellectual disabilities The advancement and affordability of technology have led to increased integration of technology in education, including the widespread use of iPads. However, many students with moderate to severe disabilities lack the necessary skills to independently navigate these devices. This study examined the impact of graduated guidance on iPad accessibility skill development for three high school students with severe intellectual disabilities. The students were taught various skills such as swiping, dragging, and minimizing/maximizing images on iPads to access educational resources. Graduated guidance showed a significant improvement in the students' independent performance across multiple sessions. Results indicated a functional relationship between graduated guidance and iPad accessibility skills acquisition. The study highlights the importance of providing explicit instruction in physical access skills for technology use among students with disabilities. It suggests that educators should consider students' motor skills and provide tailored instruction to enhance technology accessibility. The findings	Digital devices accessibility skills	https://doi.org/10.1177/0162643418766293

			have implications for practice, emphasizing the effectiveness of systematic instruction in teaching technology accessibility skills to students with severe disabilities.		
342	1	3	Virtual manipulatives: A tool to support access and achievement with middle school students with disabilities The article discusses the use of virtual manipulatives as alternatives or supplements to concrete manipulatives in middle school settings for students with disabilities. It emphasizes the versatility of virtual manipulatives in supporting various instructional needs and mathematical concepts. Virtual manipulatives can be utilized alongside concrete manipulatives or independently during both group and individual instruction. The authors provide vignettes illustrating practical applications of virtual manipulatives in different classroom scenarios. While acknowledging the effectiveness of concrete manipulatives, the article advocates for the value-added benefits of virtual manipulatives, such as enhanced accessibility, age appropriateness, and engagement. However, it also recognizes that not all educators may have access to	Virtual manipulatives	https://doi.org/10.1177/0162643419882422

			technology or funding for virtual manipulatives, thus suggesting creative solutions like utilizing free virtual manipulative resources. Ultimately, the decision to use virtual manipulatives should be based on their added value compared to concrete manipulatives in enhancing accessibility and supporting students with disabilities.		
343	1	3	Access to Curricula in Three School Settings for Students with Severe Intellectual Disability Parents expressed varied levels of satisfaction with the educational advice received for their children, with confusion existing between special developmental schools and special schools. This confusion led to uninformed decisions, sometimes resulting in incorrect placements based on misinformation about eligibility for disability benefits. Despite minor concerns, the majority of parents were content with their child's educational setting. Communication between schools and parents varied, with post-primary schools rated poorly in this aspect. Teaching approaches differed across settings, with dissatisfaction over available resources. Gender disparities were observed, particularly in instructional time and support provision. Concerns about integrating students with severe disabilities	Educational settings, communication, challenges, teaching approaches, strategies for improvement	https://doi.org/10.1177/000494419203600307

			included lack of knowledge, academic progress, and timetable issues. While most students welcomed integration, some challenges included communication difficulties and behavioral differences. Recommendations include restructuring the education system for better inclusivity and providing comprehensive support services. Improved teacher education, in-service training, and collaboration among stakeholders are crucial for successful integration. Furthermore, vocational training and holistic education programs are essential for all students. Overall, addressing these issues is vital for ensuring equitable opportunities and support for students with disabilities in the education system. Further research is recommended to explore gender inequalities in more detail within this context.		
344	1	3	“As Long As You Are Willing To Wait”: Access and Equity in Universities for Students With Disabilities The article discusses the increasing demand for university education among people with disabilities and examines the equity profiles and practices of five universities regarding disabled students. It highlights resource challenges, bureaucratic conflicts, and limited planning by universities to support disabled students	Equity profiles and practices of universities, resource challenges, bureaucratic conflicts, and limited planning by universities, resource allocation, balancing	https://doi.org/10.1080/07294369.10100103

			effectively. Key issues include resource allocation, balancing welfare and rights, staff attitudes and awareness, and recruitment and post-graduation support. The conclusion compares Australia's approach to disability access in universities with that of other OECD countries, emphasizing the lack of federal guarantees for disabled students' rights to education in Australia. It calls for closer inter-university cooperation, better liaison with high schools, and improved relationships with disability organizations. State and Commonwealth governments are urged to provide better information and support programs for disabled students, emphasizing the need for government action to resolve conflicts between departments. The text underscores the necessity for universities to anticipate and accommodate changes in student demographics, including a growing population of disabled students, but notes significant challenges in achieving an effective response.	welfare and rights, staff attitudes and awareness, and recruitment and post-graduation support	
345	1	3	Middle school teams increasing access to general education for students with significant disabilities: Issues encountered and activities observed across contexts The study examines the experiences of three students with	Inclusive education practices, structural	https://doi.org/10.1177/0741932508327457

		significant disabilities and their educational teams during their first year in general education. Interviews and observations revealed issues in providing access to general education, particularly regarding philosophical differences and collaborative teamwork. Despite challenges, students in general education settings received more instruction, experienced less downtime, and showed improvements. However, no causal relationship was established between contexts, instruction, and performance improvements. The research underscores the gradual progress towards inclusive education practices in schools. It emphasizes continuous evaluation of collaborative teamwork and inclusion components. The study highlights structural barriers unique to secondary schools and compares student performance across different contexts throughout a school year, contributing valuable insights to inclusive education literature. Further research is recommended to address secondary education-specific issues and enhance best practices.	barriers to secondary schools	

346	1	3	Ecological factors affecting access to general education content and contexts for students with significant disabilities This review applied Bronfenbrenner's ecological systems theory to explore factors affecting access to the general curriculum for students with significant disabilities. The analysis categorized literature based on micro-, meso-, macro-, exo-, and chronosystems influencing decisions on access to the curriculum. It discussed factors related to placement, instructional contexts, and content. The discussion underscored the evolving nature of policies and research aimed at equitable access. Decision-making processes regarding placement, instructional configurations, and planning were influenced by institutional histories, policies, and interpersonal interactions. The study emphasized the importance of considering the ecological system's influence on access decisions and outlines implications for practice. It discussed the need for high expectations, flexible thinking, person-centered approaches, and ongoing professional development to support meaningful curriculum and instruction in inclusive environments. Furthermore, it addressed the importance of promoting pedagogy that supports teaching	Bronfenbrenner's ecological systems theory analyzing accessibility factors at micro-, meso-, macro-, and exo- systems	https://doi.org/10.1177/0741932516646856

			within general education contexts and transforming school cultures towards more equitable practices. The review concluded by highlighting the significance of recognizing and addressing barriers to access and advocating for positive action for students with significant disabilities.		
347	1	3	Self-advocacy instruction to teach high school seniors with mild disabilities to access accommodations in college This study investigates the effectiveness of Self-Advocacy and Conflict Resolution (SACR) instruction on the ability of four high school seniors with mild disabilities to request and negotiate academic accommodations as they transition to postsecondary education. Results demonstrate a functional relationship between SACR instruction and students' capability to request and negotiate accommodations both in role-play scenarios and real-life situations. Each student showed varying levels of improvement and generalization of skills. Social validity data from student questionnaires indicated positive perceptions of the instruction's impact on their ability to advocate for themselves. The study suggests that SACR instruction is a cost-effective and efficient method for enhancing self-advocacy skills in students with mild disabilities,	Self-Advocacy and Conflict Resolution (SACR)	https://doi.org/10.1177/0741932517752059

			preparing them for postsecondary education. While the study has limitations regarding participant diversity and probe question wording, it provides valuable insights into the potential of SACR instruction. Recommendations for future research include broader participant inclusion, authentic assessment methods, and exploring group instruction settings. Practitioners could adapt SACR techniques for various educational settings, such as IEP meetings and workshops with university professors, to support students in advocating for their needs. Overall, the findings underscore the importance of equipping students with mild disabilities with self-advocacy skills to access academic accommodations effectively in postsecondary education settings.		
348	1	3	Access and perceived ICT usability among students with disabilities attending higher education institutions. The study investigates the integration of Information and Communication Technologies (ICTs) in higher education, focusing on accessibility and perceptions among students, particularly those with disabilities. It emphasizes the significance of ICTs in providing adaptive learning methods for students with disabilities, aiming to improve their academic	usability of technological tools, use of ICTs in teaching, accessibility of ICTs in higher education learning environment, ICT training for professors	https://doi.org/10.1007/s10639-017-9623-0

		skills. Findings reveal that students in distance learning programs demonstrate greater ICT knowledge and access compared to those in traditional face-to-face classes. Additionally, professors in distance learning utilize more ICTs for teaching and assignments. Despite recommendations for professors to participate in ICT workshops, few volunteer for training, highlighting the need for increased awareness and usage of ICTs, particularly in traditional educational institutes. Gender differences in ICT usage are noted, with men typically exhibiting higher self-perceived knowledge. However, both genders acknowledge the importance of ICTs in academia. Furthermore, while students with and without learning disabilities utilize computers for assignments, there's a moderate to low correlation between ICT access and usage, particularly among students with disabilities, suggesting a need for improved access and training. Finally, the study underscores the importance of supporting professors in ICT integration and encouraging women to enhance their familiarity with various technologies.		

349	1	2,3	Providing Accessibility for Persons with Disabilities at the College of Staten Island Library. This article discusses best practices for providing inclusive resources and services to individuals with disabilities at a public university library, particularly in light of the 25th anniversary of the Americans with Disabilities Act (ADA). It examines past practices and future considerations, emphasizing the importance of consistent practices and policies to effectively serve students with disabilities. The article highlights the necessity of outreach to disability offices and communication among library professionals to accommodate the changing population of students with disabilities. It also emphasizes the need for library resources to conform to legal accessibility standards. Practical implications include the importance of institutional commitment to accessibility and the role of sensitivity training workshops for librarians. The College of Staten Island (CSI) Library serves as a case study, actively assessing accessibility and reviewing past practices to inform future initiatives. These include creating library guides on accessibility services, encouraging librarian participation in relevant groups, and ensuring ADA compliance across library committees. The	e-book platforms, e-readers, e-textbooks, e-readers, vendor products, accessibility in database products, webpages, library tools, sensitivity training workshops for faculty librarians, ADA-compliant print signage, checklists for material evaluation	https://doi.org/10.1108/s0065-283020150000040014

			article suggests future procurement practices should prioritize accessibility, with collection development policies and evaluation guidelines focusing on accessibility considerations. The CSI Library reaffirms its commitment to accessibility awareness in both procurement and service provision, striving to benefit individuals with disabilities continually.		
350	1	3	What Universal Design for Learning principles, guidelines, and checkpoints are evident in educators' descriptions of their practice when supporting students on the autism spectrum? The study investigates how educators in Australia implement Universal Design for Learning (UDL) principles to support students on the autism spectrum. Data from semi-structured interviews with 20 teaching and specialist personnel were analyzed. The findings reveal that educators employ various strategies aligned with UDL principles to engage students, represent information, and facilitate expression of knowledge. Under the principle of multiple means of engagement, educators appealed to students' interests/strengths, addressed sensory needs, and promoted self-regulation. Strategies included using structured teaching, sensory breaks, and facilitating coping skills. For multiple	Universal Design for Learning (UDL) / inclusive education for students on the autism spectrum	https://doi.org/10.1016/j.ijer.2020.101583

			means of representation, educators utilized visual systems, alternative teaching approaches, scaffolding activities, and adjusted teacher behavior/language to accommodate diverse learning styles. Under multiple means of action and expression, educators provided alternative assessment approaches, supported executive functions, and facilitated alternative communication methods such as visual schedules and PECS. While the study enriches understanding of UDL application for students with autism, limitations include a small sample size and reliance on self-reports. The findings underscore the importance of collaborative efforts among educators and specialists to create inclusive learning environments that meet diverse learning needs, emphasizing proactive planning and intentional support strategies.		
351	1	3	Ableism, Accessibility, and Educational Development: A Disability Studies Perspective The article introduces three educators, Emily, Daisy, and Matt, who work in educational development at a large public institution. They identify their positions and discuss their commitment to accessibility and inclusion, particularly in the context of disability studies. They emphasize the importance of recognizing ableism and	inclusive education / accessible environments	https://doi.org/10.1002/tl.20339

			promoting diverse perspectives. The discussion delves into disability studies, critiquing traditional models that pathologize disability and advocating for a social model that emphasizes the role of societal barriers. The authors share personal experiences highlighting barriers to accessibility in educational development, such as inaccessible texts and physical environments. Recommendations are provided for fostering inclusivity in educational development, ranging from language choices to structural changes. The conclusion emphasizes the ongoing process of creating accessible environments and the benefits of inclusion for all individuals.		
352	1	3	Universal Design: Online Educational Media for Students with Disabilities The report discusses the significance of universal design in creating accessible educational materials, particularly for students with disabilities and diverse learning needs. It emphasizes that traditional instructional materials often fail to address the specific needs of such students, leading to increased challenges in academic progress. By incorporating universal design features like captioning, audio description, and adjustable formats, educational materials become accessible to a wider range of learners, including	universal design in distance education / online educational tools	https://doi.org/10.1177/0145482X0910300807

			those with physical, sensory, and cognitive disabilities, as well as English language learners. The Universal eLearner project is highlighted as an example of implementing universal design principles to improve accessibility and comprehension. The text also introduces new features such as two tiers of captioning, two tiers of audio description, end-of-chapter summaries, and description-embedded language, aimed at enhancing comprehension for students with specialized learning needs. Future steps involve evaluating the effectiveness of these accessibility features through experimental studies to ensure that all users, with and without disabilities, benefit from universal design in educational software development.		
353	1	3	Evaluating the Accessibility of Special Education Cooperative Websites for Individuals with Disabilities Over the past two decades, there has been a push for increased accessibility to educational materials for individuals with disabilities. However, recent studies have shown that accessibility is still lacking in educational organizations and government agencies. This study examines the current accessibility requirements for schools under WCAG 2.0 and	accessibility in education / accessible websites / WCAG 2.0	https://doi.org/10.1007/s11528-019-00421-2

		Section 508 of the Rehabilitation Act of 1998. It evaluates 24 special education cooperative websites to assess their accessibility for individuals with disabilities. Findings indicate that only 25% of these websites meet minimum accessibility criteria. Notably, special education cooperatives generally performed better than institutions of higher education in meeting accessibility standards. The study identifies areas for improvement, emphasizing the need for further training and professional development in accessibility, especially for K-12 school leaders and educational technology staff. Recommendations include allocating time and resources for accessibility updates, monitoring compliance, and ensuring that digital materials adhere to accessibility guidelines. Additionally, the study suggests specific measures for improving website design, such as providing alt text for images, labeling online form inputs, and addressing contrast and visibility issues. Educators are urged to review the accessibility of their course materials, while educational institutions are encouraged to prioritize accessibility and provide training for staff. Pre-service educator preparation programs should also		

			include training on developing accessible materials and utilizing compliance evaluation tools.		
354	1	3	Academic accommodations for university students living with disability and the potential of universal design to address their needs This paper presents findings from a comprehensive study conducted at a leading Australian university, focusing on the experiences of students requiring academic accommodations due to disability. The study, guided by the social model of disability and the concept of universal design, examined various accommodations such as assignment extensions, special consideration, and academic adjustment plans. A mixed methods approach involving student surveys, interviews, and input from disability support staff was utilized. The majority of students seeking accommodations had 'hidden' disabilities, with accommodations primarily related to assessment tasks. While academic adjustment plans received the highest satisfaction	universal design in higher education / universal design of instruction (UDI)	https://doi.org/10.1007/s10734-021-00800-w

		ratings, concerns about stigma associated with disability negatively impacted interactions with peers and staff. The study also explored how the principles of universal design of instruction (UDI) were reflected in the experiences of students and staff. Key themes emerged, such as the need for equitable access, flexibility in instructional methods, and clarity in communication of information. Challenges related to physical effort, size and space considerations, and fostering a sense of community among learners were also discussed. Recommendations from the study include the adoption of institution-wide approaches to promote inclusivity, particularly in light of the COVID-19 pandemic. The integration of universal design principles into both physical and virtual learning environments is emphasized as a means to enhance accessibility and support diverse student needs. Overall, the study underscores the importance of proactive approaches to disability support and suggests that universal design principles offer a framework for reimagining education in a post-COVID world, aligning with ongoing efforts to address learning and teaching challenges.		

355	1	3	A Review of Research on Universal Design Educational Models The text discusses Universal Design for Learning (UDL) and its role in promoting inclusive education through access to the general curriculum. It also mentions two other universal design (UD) educational models: universal design of instruction (UDI) and universal instructional design (UID). The review of 13 research studies conducted across different educational settings explores the application and evaluation of UD in education. The studies employ various research designs to assess student outcomes and perceptions of UD-based curriculum and instruction. While the studies demonstrate the benefits of UD principles, there is a lack of standardization in reporting its application. Recommendations are provided to establish a more robust research base on the validity of UD in education.	Universal Design for Learning (UDL) / universal design of instruction (UDI) / universal instructional design (UID)	https://doi.org/10.1177/0741932513518980
356	1	3	Professional and social investment in universal design for learning in higher education: insights from a faculty development programme The study explores university instructors' engagement in professional learning about Universal Design for Learning (UDL) at a liberal arts university	Universal Design for Learning (UDL) / accessible syllabus	https://doi.org/10.1080/0309877X.2020.1827372

		in the Midwest United States. UDL aims to enhance student learning by offering choices in content, process, and product design. Through qualitative research, the study investigates how instructors invest socially and intellectually in UDL workshops, focusing on enhancing student engagement and building collegiality. Themes of improving student engagement include creating accessible syllabi, learning technology tools, meeting Section 508 requirements, and assessment practices. Instructors expressed interest in using UDL to improve student engagement and develop professional relationships. Additionally, they invested in learning about UDL to foster collegiality, seeking support for challenges and sharing successes. The study highlights the importance of professional learning in implementing UDL effectively and suggests strategies for future professional development practices.		

357	1	3	Digital assessment in higher education: Promoting universal usability through requirements specification and universal design quality (UD-Q) reviews This study examines the correlation between higher education and employment, particularly for individuals with disabilities, emphasizing the increasing use of digital assessment solutions in Norwegian higher education. Through a case study of Norwegian higher education practices, the article reviews existing requirements for universal design in digital assessment solutions, introduces a method called Universal Design Quality (UD-Q) evaluation, and compares providers' self-assessments with UD-Q evaluation scores. The study identifies areas for improvement in digital assessment solutions, particularly in ensuring accessibility for users with disabilities. It proposes revised requirements for procurement of digital assessment solutions, emphasizing universal usability and technical accessibility. The revised requirements aim to enhance flexibility and technical accessibility in user interfaces and features, promoting usability for all. Additionally, the study discusses the limitations of WCAG 2.0 guidelines in evaluating digital assessment solutions and proposes	accessible web / accessible digital education	https://doi.org/10.1007/s10209-016-0513-9

			adjustments to better ensure validity in assessments. It also explores the use of Safe Exam Browser and Bring Your Own Device (BYOD) policies to enhance accessibility and flexibility in digital assessments. Furthermore, the study highlights the importance of aligning provider self-assessments with actual universal design quality and recommends clearer requirements to guide providers in implementing universal design principles. In conclusion, the study proposes a revised set of requirements for digital assessment solutions procurement, aiming to ensure universal usability and accessibility. It advocates for increased awareness and efforts in implementing universal design principles in digital assessment solutions globally.		
358	1	3	The Accessibility of The Community College Classroom to Students With Disabilities Blue Ridge Community College (BRCC), situated in the Appalachian region of North Carolina, has implemented a comprehensive strategy to enhance accessibility for students with disabilities, particularly in the realm of educational technology. Facing challenges common to many community colleges, BRCC devised a multifaceted approach involving input from a student advisory board, faculty training initiatives, and upgrades to adaptive technology across	accessible higher education / Disability Services Handbook	https://go.gale.com/ps/i.do?id=GALE%7CA207644355&sid=googleScholar&v=2.1&it=r&linkaccess=fulltext&issn=

		its campuses. The project, conducted in collaboration with the Southeast Disability and Business Technical Assistance Center (DBTAC), aimed to address procurement policies, faculty training, and technological accessibility issues. Through initiatives such as faculty workshops and the development of a Faculty Disability Services Handbook, BRCC sought to foster an inclusive environment for its diverse student body. Key outcomes included heightened faculty awareness of accommodating students with disabilities, improved campus accessibility, and the establishment of procurement policies prioritizing accessibility. Despite initial challenges, BRCC's efforts resulted in tangible improvements, positioning the college as a model for accessibility practices in the Southeast region. Overall, BRCC's initiative underscores the importance of proactive measures to ensure equal access to education for students with disabilities, ultimately enhancing educational outcomes and fostering a more inclusive learning environment.		10735127&p=A ONE&sw=w

359	1	3	Universal Design for Learning and Differentiated Instruction in Physical Education The case study examines the diverse approaches adopted by physical education (PE) teachers to cater to students with disabilities (SWDs) in New York elementary school PE classes. Participants included an adapted PE specialist, five PE teachers, and five elementary students with various impairments. Thematic analysis of observations and interviews revealed three main approaches: normalized instruction, differentiated instruction, and universally designed instruction (UDI) based on Universal Design for Learning (UDL) principles. Normalized instruction entails offering the same curriculum with minimal differentiation, assuming SWDs can benefit from regular programming. Differentiated instruction involves tailored adaptations to meet individual SWDs' needs, encompassing modifications in the program and pedagogical accommodations. Universally designed instruction focuses on designing environments and curricula to accommodate diverse learners, regardless of ability level. Both differentiated instruction and UDI offer valuable resources for accommodating SWDs in PE, with UDI emphasizing proactive	Universal Design for Learning UDL / universally designed instruction (UDI)/ Differentiated Instruction in PE	https://doi.org/10.1123/apaq.2018-0145

			design for all students. The study highlights the importance of analyzing each learning context to determine the most suitable approach for accommodating SWDs effectively in PE classes.		
360	1	3	Universal Design for Learning across Formal School Structures in Europe—A Systematic Review The article explores the implementation of Universal Design for Learning (UDL) in formal school settings across Europe, with a focus on empirical research conducted in this context. The study identifies a growing interest in UDL within Europe, particularly in inclusive education. Researchers conducted a systematic literature review, selecting eight articles that specifically addressed UDL in formal school years. Most studies examined either student or teacher perceptions of various aspects of the learning process, with qualitative methods being predominant. The findings suggest that the first principle of UDL, which emphasizes providing multiple means of engagement, was the most prominent focus in the included articles. This contrasts with previous research, which highlighted the second principle. The results indicate positive impacts of UDL on student	accessible primary education / accessible secondary education / Universal Design for Learning (UDL)	https://doi.org/10.3390/educsci13090867

			engagement, attitudes, and learning processes. However, there's a need for further research, particularly focusing on explicit learning outcomes and implementation in preschool and early years education. Overall, UDL appears to hold promise as a framework for promoting inclusive education practices in European formal school settings.		
361	1	3	Aspirations and accommodations for students with disability to equitably access higher education: a systematic scoping review This paper provides a systematic scoping review of studies regarding the aspirations and access needs of students with disabilities, medical conditions, and mental health issues in tertiary education. The review identified three main themes: self-identity development, inclusion struggles within the university community, and the importance of individual accommodations. Students emphasized the necessity for transformative changes in physical, social, and learning environments within universities to ensure accessibility. They advocated for universal design principles and the use of digital technology to enhance inclusivity. Additionally, students highlighted the significance of supportive attitudes from lecturers and peers, as well as the need for	Physical accessibility to buildings and facilities / Universal Design for Learning (UDL) / educators' attitude	https://doi.org/10.3389/feduc.2023.1218120

			effective disability support services. Despite challenges, students found individual accommodations essential for their academic success, stressing the importance of personalized attention and flexible arrangements. The paper concludes by underscoring the need for both systemic reforms and individualized support to ensure equitable participation for students with disabilities in higher education.		
362	1	3	Universal Design and Its Applications in Educational Environments The text discusses the concept of Universal Design (UD) and its increasing relevance in enhancing educational access for students with disabilities. It explores emerging models of educational applications of UD, including Universal Design for Learning, Universal Design for Instruction, and Universal Instructional Design. These models emphasize the importance of collaborative approaches to examining the efficacy of UD in educational environments. Various critical areas for research agendas are identified to ensure the validity and effectiveness of UD applications. In examining specific examples, such as Universal Design for Learning (UDL) and Universal Design for Instruction (UDI), the text illustrates how these approaches promote inclusive curricula and instructional	Universal Design for Learning (UDL) / Universal Design for Instruction (UDI) / inclusive curriculum	https://doi.org/10.1177/07419325060270030501

			strategies. It highlights initiatives by organizations like the Center for Applied Special Technology (CAST) and the Center on Postsecondary Education and Disability (CPED) to develop tools, resources, and guidelines for implementing UD principles in educational settings. Furthermore, the text addresses the challenges surrounding the application of UD in education, emphasizing the need for rigorous research and realistic expectations. It calls for collaboration among stakeholders to develop a comprehensive research agenda, ensuring that UD can effectively address the diverse needs of students and contribute to educational reform.		
363	1	3	Policy of access, accessibility and educational inclusion for persons with disabilities: integrative review The literature review examines scientific production from 2015 to 2019 regarding inclusion of people with disabilities in educational institutions. The study identified themes such as access policies, quotas, curricula, barriers, and facilitators of inclusion. It emphasizes the need for political advancements to address obstacles like prejudice and discrimination. Methodologically, the review followed rigorous stages including theme identification, literature search, data extraction,	inclusive curriculum / teacher training for inclusive education	https://doi.org/10.12957/reuerj.2021.55486

			evaluation, interpretation, and synthesis. Findings revealed global efforts toward inclusive education, with various countries implementing laws and policies. However, challenges persist, including insufficient funding, curriculum gaps, stereotyping, and inadequate teacher training. The review stresses the importance of promoting genuine inclusion, beyond legal frameworks, to ensure meaningful access and support for individuals with disabilities. In the nursing context, the study highlights the relevance of disability and inclusion education for nurses to address the social determinants of health and contribute to rehabilitation efforts.		
364	1	3	Universal Design for Learning: Supporting College Inclusion for Students With Intellectual Disabilities As college becomes increasingly vital for employment, ensuring access to postsecondary education (PSE) for all students, including those with intellectual disabilities (ID), is crucial. While the Higher Education Opportunity Act has opened pathways for students with ID, barriers still exist. This article discusses strategies for supporting their inclusion in college courses, focusing on the Universal Design for Learning (UDL) framework. UDL promotes flexible methods of content	accessible postsecondary education / Universal Design for Learning (UDL)	https://doi.org/10.1177/2165143417722518

			presentation, engagement, and expression to reduce barriers and maintain high expectations for all students. Collaborative efforts between PSE staff and faculty are essential, with practical implementation strategies needed. Technology plays a crucial role, enabling accessible content delivery and engagement. Multimedia presentations, student response systems, and digital tools facilitate participation and comprehension. Additionally, fostering college awareness among students with ID and their families is vital for successful transition planning. By integrating UDL principles and fostering college readiness at the secondary level, the transition to college can be smoother, enhancing opportunities for students with ID. Collaboration between PSE programs, educators, and the community can further support inclusivity and success for students with ID in higher education.		
365	1	3	Current access and recruitment practices in nursing education institutions in KwaZulu-Natal: A case study of student nurses with disabilities The article investigates the current access and recruitment practices for student nurses with disabilities (SNWDs) in nursing education institutions in KwaZulu-Natal, South Africa. Despite the enactment of	accessible professional education / nursing education / clinical sites	https://doi.org/10.4102/ajod.v8i0.429

		disability policies in 2010, many SNWDs still face exclusion from nursing education activities. The study utilizes a mixed-method design, presenting quantitative survey data from 27 private nursing education institutions (NEIs) and qualitative insights from interviews with 10 SNWDs. Findings indicate that while NEIs express willingness to recruit SNWDs, challenges persist in accessing clinical sites, lectures, and support systems. Most NEIs lack policy guidelines for SNWD recruitment, relying on external references. SNWDs often hide disabilities due to fear of discrimination. Access to support systems and reasonable accommodations is limited, with financial barriers exacerbating challenges. Physical infrastructure access is hindered by escalator malfunctions and inaccessible lecture venues. Barriers include lack of policy guidelines, financial constraints, and inadequate educator training. Recommendations include collaborative planning between NEIs and disability support staff, educator training on inclusive practices, and development of policy guidelines to ensure equitable access for SNWDs.		

366	1	3	Convenience and accessibility of library services to students with disabilities at the University of Limpopo in South Africa The study evaluates the accessibility and convenience of library services for students with disabilities at the University of Limpopo in South Africa. Despite having a purpose-built library service unit, students expressed dissatisfaction due to limited access to materials in alternative formats. The study utilized quantitative data from questionnaires, interviews with the librarian, and observation using the IFLA checklist. It identified various services offered to students, including computer training, orientation, braille production, and accessible reading facilities. However, challenges persist, such as inadequate transcriptions of materials, insufficient staff, and limited Internet access. Recommendations include acquiring more accessible materials, improving training programs, involving students in collection development, and enhancing staff sensitivity and expertise. The study underscores the importance of addressing the diverse needs of students with disabilities and suggests further research focusing on specific disability groups to better tailor services.	accessible library	https://doi.org/10.1177/0961000616654959

367	1	3	The Picture Plus Discussion Intervention: Text Access for High School Students with Moderate Intellectual Disability The study investigates the effectiveness of the Picture Plus Discussion (PPD) intervention on the comprehension abilities of high school students with moderate intellectual disability when exposed to age-appropriate texts read aloud. The intervention was successful in increasing comprehension, as measured by story retell, across different types of texts, including leveled readers, newspaper stories, and sections from employee handbooks. Results indicated significant improvements in comprehension for all three students involved in the study: Heather, Leanne, and Celia. Heather demonstrated increased word count and relevant idea units, while Leanne and Celia also showed improvements in comprehension abilities from baseline to intervention and generalization conditions. Peer support was found to be beneficial, with positive feedback from both students with and without disabilities involved in the intervention process. The study suggests that the PPD intervention, delivered by peers, can effectively support comprehension in students with moderate intellectual disabilities when exposed to typical age-	accessible text / accessible literature	https://doi.org/10.1177/1088357615625056

			appropriate texts read aloud. Additionally, the study highlights the importance of peer involvement in literacy interventions for students with significant disabilities and calls for further research in this area.		
368	1	3	Disparate Access: The Disproportionality of African American Students With Disabilities Across Educational Environments This study examines the disproportionate representation of African American students in special education settings, particularly focusing on their overrepresentation in more restrictive environments. It investigates whether this overrepresentation is primarily due to their higher prevalence in specific disability categories. Findings reveal that African American students are overrepresented in categories such as emotional disturbance, mild mental retardation, and moderate mental retardation, while being underrepresented in categories like speech and language. Additionally, they are more likely to be placed in separate classrooms than their peers with the same disabilities. Discrepancies persist even in categories traditionally served in less restrictive settings. The study suggests that these disparities are not solely explained by	teacher training / legislation for inclusion	https://doi.org/10.1177/001440290607200402

			differences in disability categories, indicating systemic influences. Factors such as teacher perceptions and decision-making processes may contribute to these disparities. Despite legislative efforts promoting inclusion, African American students continue to face barriers to accessing less restrictive educational environments, highlighting the need for further research and intervention to address systemic inequities.		
369	1	3	Access to Educational Opportunities for Children with Learning Disabilities Access to educational opportunities for children with learning disabilities is multifaceted and varies depending on the context. While poverty and international debt are significant global barriers, local factors like physical accessibility, attitudes, curriculum, and individual disabilities also play crucial roles. The literature highlights the evolving focus on different aspects of access, emphasizing the importance of understanding and addressing barriers comprehensively. The debate over educability, particularly for children with severe disabilities, underscores the complexity of the issue. Some argue for enriched environments instead of traditional education, but challenges persist in identifying effective approaches. Curriculum development is central to	Inclusive school curriculum	https://doi.org/10.1108/13595474199800029

			access, with ongoing discussions about the suitability of mainstream versus special curricula. Pedagogical approaches, including behavioral methods, have evolved, with a growing emphasis on individualized strategies. Inclusion, while important, requires careful consideration of diverse learning needs and societal attitudes. Overall, progress in improving access requires a holistic approach that addresses various barriers comprehensively and acknowledges the diversity of learners.		
370	1	3	Universal Design: Implications for Computing Education Universal Design (UD) has evolved beyond architecture to encompass instructional methods, curriculum, and assessments, aiming to be inclusive and accessible to diverse student populations, including those with disabilities. This proactive approach not only enhances computing studies' inclusivity but also reduces the reliance on costly academic accommodations. The article traces UD's history, outlines its principles, and highlights its application to instruction and assessment. Unlike reactive accommodation approaches, UD proactively ensures access for all students, thus reducing the need for specific accommodations. The text emphasizes the	Inclusive Computing Education / UDL	https://doi.org/10.1145/2037276.2037283

			importance of providing multiple means of representation, action, and engagement in instruction. While research on UD's efficacy is still evolving, existing studies suggest its potential in enhancing learning outcomes for diverse learners. Federal legislation supports UD's adoption in education, emphasizing its role in reducing barriers and maintaining high achievement expectations for all students. Examples from computing education demonstrate how UD strategies can be implemented effectively, fostering inclusivity and benefiting students with diverse characteristics. The article underscores the need for further research to validate and refine UD practices in computing education, aiming to create truly inclusive learning environments.		
371	1	3	Guidelines for designing middle school transition using universal design for learning principles Transition from primary to secondary school can be both exciting and daunting for young adolescents, and schools implement transition programs to ensure students adapt smoothly. These programs, often starting a year before the move, aim to address the diverse needs of students and parents. The authors suggest Universal Design for Learning (UDL) principles as a basis for	school transition (primary to secondary) / UDL	https://doi.org/10.1177/1365480218817984

			these programs, focusing on engagement, representation, and action/expression. UDL originated from Universal Design (UD) in architecture and aims to make environments accessible to all. Application of UDL principles in transition programs involves providing multiple means of engagement, representation, and action/expression. For instance, offering various formats for information presentation, accommodating diverse learning styles, and providing options for expressing understanding. The article emphasizes the importance of ongoing support post-transition and suggests various ways to implement UDL principles during this phase, including providing multiple means of representation, action/expression, and engagement. The authors advocate for further research to assess the effectiveness of UDL-based transition programs across different cultural contexts and countries.		
372	1	3	Contributions of the Universal Design for Learning to Distance Education The study investigates the impact of Universal Design for Learning (UDL) framework on agency participation, permanence, and engagement in distance education. Based on Disability Studies, data collected from Personal Diaries, Behavioral Mapping, and Environmental	distance education / UDL	https://doi.org/10.1590/2175-623695398

		Traces revealed that UDL-based course plans effectively address diverse student needs and remove common barriers. Participants recognized proactive course design based on UDL, ensuring inclusivity from the outset. Results emphasized the importance of considering all UDL principles for effective accessibility. The principle of Representation highlighted the need for diverse sensory channels, with participants appreciating varied media formats for accessing information. The Principle of Action and Expression emphasized providing options for demonstrating learning, although participants primarily used written formats despite alternative resources. The Principle of Engagement stressed the importance of individual motivations and affective connections to learning. Participants valued relevant, authentic content and activities that catered to diverse needs and experiences. Additionally, the study highlighted the importance of providing flexible resources and strategies to support diverse learning styles and abilities. Overall, the findings underscored the significance of UDL in creating inclusive distance education environments that foster agency, engagement, and meaningful learning experiences.		

373	1	3	‘How does universal design for learning help me to learn?’: students with autism spectrum disorder voices in higher education The increasing number of students with Autism Spectrum Disorder (ASD) in universities poses challenges for higher education. To promote inclusivity, this article analyzes learning enablers for students with ASD, focusing on Universal Design for Learning (UDL) principles. Qualitative interviews with seven university students with ASD in Spain revealed several enablers. Providing multiple means of representation, such as combining oral and visual information, enhances attention and retention. Students appreciated clear communication and emphasized curriculum concepts. Information presented progressively allowed for better organization and understanding. Regarding action and expression, students valued diverse ways of demonstrating knowledge and personalized feedback. They also preferred visible goals and autonomy in task complexity. Engagement was enhanced when teachers considered student opinions and offered varied learning methods. The study emphasizes the importance of incorporating student voices into teaching practices aligned with UDL principles. Practical implications	accessible higher education / UDL	https://doi.org/10.1080/03075079.2023.2259932

			include diversifying information presentation, offering varied assessment methods, and fostering student engagement. Implementing inclusive practices benefits all students, highlighting the need for inclusive teaching programs and further research on inclusive curriculum in higher education. Incorporating student voices into teacher training is crucial for transforming teaching practices and promoting genuine inclusivity.		
374	1	3	Inclusion, universal design and universal design for learning in higher education: South Africa and the United States The article discusses the global efforts in higher education to achieve full inclusion of individuals with diverse needs and disabilities, focusing on frameworks like Universal Design (UD) and Universal Design for Learning (UDL). It presents the role of UD and UDL in enhancing inclusion in higher education, citing examples from South African and US institutions. The significance of online accessibility, environmental considerations, and professional development are discussed alongside barriers to inclusion and recommendations for future development. Inclusive education policies and challenges are examined worldwide, emphasizing	inclusive higher education / UDL / online accessibility	https://hdl.handle.net/10520/EJC-18cf594edf

			the need for equitable access and support for all students. The USA's approach to inclusion, South Africa's journey post-apartheid, and recent initiatives in higher education disability support are highlighted. The importance of implementing UD and UDL principles for creating universally accessible learning environments is underscored, with examples of challenges and solutions from various institutions. The text concludes by emphasizing the role of UD and UDL in promoting inclusive education and providing resources for further exploration and implementation.		
375	1	3	One State's Initiative to Increase Access to Higher Education for People With Intellectual Disabilities This article discusses a state-level initiative aimed at enhancing access to inclusive postsecondary education (PSE) for youth with intellectual disabilities (ID), involving various stakeholders such as families, universities, schools, agencies, and funders. The initiative seeks to address differing interpretations of federal and local policies guiding PSE initiatives, which impact the services and supports students receive. Through regional summits, stakeholders explored statewide policies, practices, and beliefs regarding access to higher education for students	accessible higher education /	https://doi.org/10.1111/jppi.12006

			with ID. Common themes among stakeholders include improving access to information for families, enhancing collaborations with agencies and schools, and advocating for access to college courses and academic supports. The article highlights the perspectives of different stakeholder groups—students, parents, higher educators, community-based and state agency personnel, and school district personnel—on inclusive higher education and identifies needs and barriers they face. Key findings include concerns about policy implementation, funding barriers, and the importance of self-advocacy for students with ID. The article discusses strategies for increasing access to information, developing model inclusive programs, and disseminating information and strategies for implementing inclusive PSE. It emphasizes the importance of collaborative efforts among stakeholders and advocates for policy and systems change to create sustainable and inclusive postsecondary options for students with ID.		
376	1	3	Reasonable accommodation and information accessibility by various formats: The difference between Braille, sign language, and speech format. The text discusses the importance of information accessibility for individuals with	information in braille format, speech format, information through sign language translation	https://scholarspace.manoa.hawaii.edu/bitstreams/8bfe8d8c-

		disabilities, focusing on formats such as braille, speech, and sign language. It introduces the 'Reasonable Accommodations of Reading Accessibility (RARA)' research project, aimed at evaluating the quality of academic content in different formats. The paper emphasizes the differences in comprehensibility between braille, speech, and sign language, particularly in the context of the Japanese language's unique features. It introduces concepts like Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP) as key factors. The challenges and potential biases in translating academic texts into braille and sign language are highlighted. Interviews with braille and sign language users reveal diverse approaches to understanding content. The main research project, RARA, is described as a longitudinal study aiming to compare comprehension levels between BICS and CALP texts across different transmission means. Challenges in conducting research with persons with disabilities are acknowledged, particularly regarding questionnaire design and translation into sign language.	services, closed captioning, notetaking services	9bb4-4145-9b86-4b983b1b3f50

377	1	3	Universal Design for Learning and elementary school science: Exploring the efficacy, use, and perceptions of a web-based science notebook. The study investigates the efficacy of a web-based science notebook, designed using the Universal Design for Learning (UDL) framework, in overcoming challenges associated with traditional science notebooks. Through a randomized controlled trial, the UDL science notebook demonstrated improved science content learning outcomes compared to traditional methods, benefiting students regardless of their reading and writing proficiency or motivation for science. Teachers with more experience using science notebooks and students utilizing contextual supports within the digital environment showed more positive outcomes. The UDL approach focuses on creating accessible options and contextual supports to enhance learning for all students. By reducing construct-irrelevant barriers and providing desirable difficulty, the UDL science notebook promoted deep engagement and ownership over science work. Teachers played a crucial role in guiding students to leverage the designed environment effectively. While technology alone doesn't guarantee improvement, when combined with strong	flexible learning environment, alternative methods for recording data and composing explanations, UDL science notebook, digital environment contextual supports	https://doi.org/10.1037/a003321

			teaching strategies and embedded supports, it can lead to consistent gains for diverse learners, fostering active science learning skills in a supported environment. The study highlights the importance of designing flexible, technology-enhanced learning environments based on UDL principles to accommodate the variability in student engagement and learning preferences.		
378	1	3	The effect of a disability-targeted cash transfer program on universal health coverage and universal access to education: a nationwide cohort study of Chinese children and adolescents with disabilities. The study examines the impact of a disability-targeted cash transfer (CT) program on healthcare and education accessibility for children and adolescents with disabilities. Using nationwide survey data of two million disabled individuals aged 8–15, the study employs a quasi-experimental design comparing CT beneficiaries to non-beneficiaries. Results indicate that CT beneficiaries had higher odds of utilizing rehabilitation services (2.27 times) and receiving medical treatment (1.34 times) compared to non-beneficiaries. Additionally, CT beneficiaries were less likely to report financial barriers to accessing these services. The	rehabilitation services, medical treatment accessibility, inclusivity of educational institutions	https://doi.org/10.1016/j.lanwpc.2022.100635

			program was also associated with increased school attendance and reduced financial difficulties in accessing education. Subgroup analyses showed varying effects based on disability severity, with severe disabilities showing greater impact. Spatial heterogeneity was observed, indicating regional disparities in program effectiveness. Despite limitations, the study underscores the importance of CT programs in promoting universal health coverage and education, particularly for disabled individuals, contributing to the global agenda of leaving no one behind during the Sustainable Development Goals era. Further subnational research is warranted to understand regional variations and inform localized policies and programs.		
379	1	3	Universal Design for Learning and Instruction: Perspectives of Students with Disabilities in Higher Education. This study utilized Universal Design for Learning (UDL) and Universal Design for Instruction (UDI) as frameworks to evaluate the perspectives of university students with disabilities on teaching methods and strategies conducive to their learning. Findings highlighted existing barriers to learning and the importance of aligning perspectives with	accessible learning environments, effective instructional strategies aligned with UDL/UDI principles, accessible electronic and information technologies	https://doi.org/10.5206/eei.v25i2.7723

		UDL/UDI principles. Students affirmed the usefulness of these principles in enhancing their learning experiences. Issues raised included concerns regarding accommodations, stigma associated with disability disclosure, and mismatches between accommodations and functional needs. UDL/UDI principles offer comprehensive solutions by integrating various accommodations into curriculum design, fostering inclusive instructional environments, and addressing concerns such as stigma and mismatched accommodations. Students emphasized the significance of flexibility in learning preferences and endorsed approaches aligned with UDL/UDI principles, such as providing diverse materials and assessment strategies. The study underscores the need for broader adoption of UDL/UDI principles in higher education curricula and support services to enhance accessibility and promote equitable learning environments. Implementation may require a phased approach, with emphasis on integrating UDL principles into instructional practices and ensuring accessibility across educational technologies. Overall, adopting UDL/UDI principles has the potential to mitigate learning barriers and		

			foster equitable educational opportunities for all students, regardless of ability.		
380	1	3	Universal Design on University Campuses: A Literature review. Disabled students encounter various barriers to accessing quality education, necessitating accommodations for their postsecondary studies. Universal Design (UD) has emerged as a solution, aiming to make resources and environments accessible to a wide range of individuals. A systematic review assessed the presence and implementation of UD in university settings. While universities express interest in UD, empirical research remains limited. However, it's acknowledged that UD reduces the need for individual accommodations, benefiting both students and institutions. Collaboration among departments and faculty training are crucial for successful UD implementation. Nonetheless, involving disabled students in decision-making processes remains underexplored. Dolmage advocates for placing disabled students at the forefront of design processes to ensure inclusivity. Further research is needed to identify UD gaps across campus facilities and departments, with a focus	faculty training in UD, assessment of campus facilities, flexible and accommodating learning environment	https://ojs.lib.uwo.ca/index.php/ei/article/view/11125

			on involving disabled students in the assessment and improvement of accessibility. Despite challenges, UD presents a promising framework for promoting inclusivity in higher education, fostering flexibility and accommodation. Continuous efforts are essential to create truly accessible learning environments for all students.		
381	1	3	Accessibility in online nursing education for persons with disability. The authors discuss the importance of web accessibility for persons with disabilities (PWD) in the context of online teaching, an area that has seen significant growth in literature but lacks focus on accessibility. They address challenges faced by PWD regarding web accessibility, including its evolution within universal design, application of accessible design principles, and evaluation tools for assessing online teaching accessibility. The discussion encompasses three phases: the legislative foundation of accessibility, the integration of universal design for instruction (UDI), and the application of UDI in the virtual classroom. Challenges include the absence of system-wide guidelines for higher education and limited resources for implementing accessible design principles. Specific web design issues such	web accessibility, virtual classroom, multimedia content	https://doi.org/10.1097/nne.0b013e3182333f9d

			as multimedia content and table usage are highlighted as barriers for PWD. The text also outlines principles of accessible design and evaluation tools for assessing web accessibility. The authors emphasize the importance of faculty involvement in assessing and improving web accessibility and recommend collaboration with campus resources and colleagues experienced in web accessibility. Overall, the discussion underscores the necessity of prioritizing web accessibility in online learning to accommodate the diverse needs of students, including those with disabilities.		
382	1	3	Providing Access to Academic Content for High-School Students With Significant Intellectual Disability Through Interactive Videos The article discusses a study examining the effectiveness of adapted videos in enhancing comprehension of non-fiction content for high school students with significant intellectual disabilities (ID), particularly in social studies. The study found that adapted videos, featuring picture/word-based closed captions and interactive searching for answers, led to improved factual comprehension among the students. Visual analyses indicated better performance with the adapted and interactive videos. Social validity interviews	Factor that affect factual comprehension, adapted and interactive videos	https://doi.org/10.1177/1088357615609307

			confirmed that students enjoyed and benefited from these adaptations. The findings suggest that adapted and interactive videos can effectively provide access to academic content for students with ID. The study highlights the importance of tailored interventions for students with significant ID and emphasizes the potential of adapted videos in making academic material more accessible.		
383	1	3	Acquired Severe Disabilities and Complex Health Care Needs: Access to Inclusive Education This study explores a high school student's access to inclusive education and his experiences in an inclusive English class following severe disabilities and complex health needs from a nontraumatic brain injury. Findings reveal minimal access to inclusive education due to delayed school reentry, incomplete assessment data, and limited professional knowledge of acquired brain injuries and inclusive education. The student faced challenges in communication, social inclusion, and curricular access. Specifically, barriers included inadequate assessment, lack of knowledge among school personnel, limited communication access, and insufficient psychosocial support. Recommendations include increased research on	Accessibility limitations and challenges, practices and suggestions	https://doi.org/10.1177/1540796915621190

			students with nontraumatic brain injuries, enhanced professional training, and strategies to prevent overreliance on adult support. Collaboration between schools, hospitals, and families is essential to coordinate timely reentry, comprehensive assessment, and individualized educational programming for students with acquired severe disabilities and complex health care needs. Additionally, there's a need for professional development to empower IEP teams to create inclusive educational environments and prevent dependency on adult support.		
384	1	3	Providing Students With Severe Disabilities Access to the General Education Curriculum This study examines how educational personnel at a Middle School implemented inclusive education practices to provide students with severe disabilities access to the general education curriculum. Data collected from 12 participants, including administrators, general education teachers, special education teachers, and paraprofessionals, revealed a commitment to shared responsibility, collaboration, and multi-faceted learning structures. Key components of access included instructional and social contexts, curriculum, instruction, and collaboration.	Education accessibility components	https://doi.org/10.1177/1540796916651975

			Findings emphasized the importance of general education settings for access, with students observed participating in various activities alongside peers without disabilities. The study highlights the significance of shared responsibility among educational personnel, with general education teachers playing active roles in providing access. Curriculum adaptation, IEP team collaboration, and peer support were identified as essential aspects of facilitating access. The study underscores the need for ongoing professional development and a clear vision of shared responsibility among educational personnel to promote access to the general education curriculum for students with severe disabilities in inclusive settings.		
385	1	3	Adaptations in General Education Classrooms for Students With Severe Disabilities: Access, Progress Assessment, and Sustained Use This study explores the use of material adaptations in general education elementary classrooms to support students with severe disabilities in language arts, social studies, and science. Through observations, interviews, and artifacts, themes emerged regarding how adaptations facilitate access to grade-level content and enable educators to assess student progress.	Practices to increase accessibility and sustainability in education, inclusive learning solutions	https://doi.org/10.1177/1540796919846424

			Accessibility is enhanced through tangible, student-centered adaptations blended with classroom materials. Progress assessment is supported by adaptations showing what students know, integrating peer learning, and fostering ownership of learning. Sustainability is achieved through team collaboration, resource availability, establishing rhythm and routine, and building momentum. Implications for practice include defining student needs, fostering collaborative teaming, and viewing adaptations as routine classroom tools. Educators perceive adaptations as enhancing learning potential rather than specialized equipment, aligning with universal design principles. This approach shifts focus from fixing disabilities to seeking inclusive learning solutions, ultimately benefiting all students in general education classrooms.		
386	1	3	Promoting Access, Accommodations, and Independence for College Students with Learning Disabilities This article delves into key issues affecting the delivery of education to students with learning disabilities in postsecondary settings. It examines differences between high school and postsecondary environments, the determination of eligibility and access, the	Accessibility concerns, such as modifying test formats, providing additional exam time, ensuring availability of	https://doi.org/10.1177/002221949202500702

			process of establishing reasonable accommodations, and strategies for fostering independence among college students with learning disabilities. These issues are discussed in the context of students transitioning from high school, governed by Public Law 94-142, to college, where Section 504 of the Rehabilitation Act of 1973 applies. Specific topics covered include modifying test formats, providing additional exam time, ensuring availability of auxiliary aids, and addressing behaviors that either foster dependence or independence. The article emphasizes the importance of educators understanding and addressing these nuances prior to students' high school graduation, to better prepare them for success in higher education and future employment. By establishing strong connections between high school and postsecondary service providers, students with learning disabilities can be equipped for greater independence both in the classroom and in the workforce.	auxiliary aids, and addressing behaviors	
387	1	2,3	Implications for improving access and outcomes for individuals with disabilities in postsecondary distance education The article investigates the impact of online distance education on accessibility for individuals with	Accessibility considerations in distance	https://doi.org/10.1080/08923640.109527072

			disabilities through individual and institutional case studies. It highlights findings on student characteristics, technological trends, institutional support, and overall implications for disabled individuals. Despite limited individual case examples, training courses for professionals serving individuals with disabilities were identified. The Open University and similar programs have significantly served students with disabilities, yet nationwide impact remains uncertain. Success factors include clear career goals, self-determination, prior technology experience, and individualized education plans. Advances in technology and assistive devices contribute to accessibility. Support services are crucial for program success, encompassing disability awareness, technology use, workload fairness, and more. However, there's a lack of clear data on necessary support services for individuals with disabilities. Ongoing studies aim to address this gap	education, technological considerations	
388	1	2,3	Adoption of Assistive Technology for computer access among college students with disabilities This study investigates the factors influencing the adoption or rejection of Assistive Technology (AT) for computer access among college students with disabilities. Fourteen students participated in a	Assistive technology for access educational material through digital devices	https://doi.org/10.1080/09638280.110066307

		course on adapted computer use, completing Q sorts and interviews over a year. Results indicated a positive experience for most students, with factors like training program quality, provided technology, and classmate characteristics contributing to success. 75% of students adopted some form of AT after the course, with common tools being readily available features like spelling checkers. However, challenges in accessing more specialized AT persisted due to financial constraints and bureaucratic obstacles. Factor analysis revealed themes like positive experience, frustration with systems, and the importance of support. The study underscores the need for tailored training programs for students with disabilities, highlighting personal characteristics and environmental support as crucial factors. The Modified Perceptual Control Theory (MPT) model, adapted to include training issues, proved effective in understanding adoption dynamics. This research provides a foundation for enhancing access and empowerment for students with disabilities, suggesting improvements such as expanded computer lab hours and ongoing training programs.		

389	1	3	A Survey of Accessibility to Secondary Vocational Education Programs and Transition Services for Students with Disabilities in Wisconsin The study aimed to assess the accessibility of vocational education programs for secondary students with disabilities in Wisconsin, focusing on program availability, enrollment, vocational assessment, and inclusion of vocational goals in Individualized Education Programs (IEPs). Results indicated that while most schools offered coursework in various clusters, smaller schools provided fewer options. Enrollment in vocational courses varied by disability, with students with mild disabilities primarily enrolled in Technology Education and Family and Consumer Education. Vocational assessment services were utilized by 37% of students with mild disabilities, with differences observed based on disability type and gender. Only 48% of students had vocational goals in their IEPs, with fewer having post-school transition goals. The study highlights disparities in access to vocational programs and services for students with disabilities, suggesting a need for improved assessment practices and collaboration between vocational and special educators. Additionally, the study underscores the importance of	Individualized Education Programs (IEPs), program availability, enrollment, vocational assessment, and inclusion of vocational goals	https://doi.org/10.1177/088572889201500203

			examining program placement and support services to ensure equitable access to vocational education for individuals with disabilities.		
390	1	3	Beyond Access: Ensuring Progress in the General Education Curriculum for Students With Severe Disabilities The article discusses efforts towards inclusive education, focusing on access to the general education curriculum for students with severe disabilities. The author reflects on their involvement in an expert panel convened by the U.S. Department of Education in 2000, which highlighted the need to promote access and progress in the general education curriculum for all students. The concept of "access" is scrutinized, emphasizing the importance of progress alongside access. Universal Design for Learning (UDL) is highlighted as a promising approach to ensure access, along with advancements like the National Instructional Materials Accessibility Standard (NIMAS). The article calls for a shift from solely focusing on access to prioritizing progress and student-directed learning strategies. It emphasizes the need for	Curriculum accessibility	https://doi.org/10.1177/154079690603100405

			research to inform effective instructional strategies and measures of progress, advocating for a comprehensive approach that supports high expectations for all students, including those with severe disabilities, within general education classrooms. Ultimately, the study urges a move beyond access towards ensuring meaningful progress and success for all students in the general education curriculum.		
391	1	3	Access, Participation, and Progress in the General Education Curriculum in the Least Restrictive Environment for Students with Significant Cognitive Disabilities This article explores the intricacies of implementing policies in school settings to ensure access, participation, and progress in the general education curriculum for students with significant cognitive disabilities. It reflects on collaborative efforts among various stakeholders including students, families, teachers, administrators, and researchers to establish inclusive educational environments. The narrative spans 50 years of litigation and legislation aimed at ensuring equitable educational opportunities for marginalized students, highlighting the pivotal role of initiatives like the Education for All Handicapped Children Act of 1975. The study underscores	Evolution of educational policies for accessibility	https://doi.org/10.1177/154079690603100407

			the importance of integrating students with disabilities into general education settings to foster social interaction and academic engagement. It discusses the evolution of education policies such as the Elementary and Secondary Education Act and the Individuals with Disabilities Education Act, emphasizing the alignment between federal policies and inclusive educational practices. The article concludes by advocating for a transformational approach to education that celebrates diversity, promotes inclusion, and challenges categorical labeling in favor of individualized support and equitable opportunities for all students.		
392	1	3	Access to the general education curriculum for preschoolers with disabilities: Children's school success The article discusses how the Children's School Success (CSS) curriculum, designed with principles of universal design for learning (UDL) and specific curriculum modifications, facilitates access to the general education curriculum for preschool children with disabilities. It emphasizes three UDL principles: multiple means of representation, engagement, and expression. Quantitative data analysis reveals significant improvements in academic and social skills among	Curriculum accessibility	https://doi.org/10.1080/09362830.701796776

			preschoolers using CSS. Descriptive information from case studies further illustrates how CSS, coupled with individualized modifications and peer support, enhances accessibility for children with diverse needs. The article concludes by highlighting the importance of integrating UDL principles and individualization into preschool curricula to ensure access for all children, in line with the Individuals with Disabilities Education Act (IDEA) mandates.		
393	1	3	Accessibility of inclusive higher education through the eyes of students with disabilities The study focuses on enhancing conditions for the creative and professional development of individuals with disabilities in higher education institutions in Kazakhstan. It examines the accessibility of higher education for students with disabilities and offers recommendations based on survey data from 52 students at Al-Farabi Kazakh National University. Analysis reveals increasing interest in university enrollment, with a majority selecting social sciences and humanities. While many aspire to high-level careers, motivations shift over time. Students see education as a pathway to employment, with a preference for quality education and career prospects. Challenges include	Educational challenges associated with entrance exam procedures, lack of psychological and social support, and insufficient infrastructure	https://www.ceeol.com/search/article-detail?id=667161

			entrance exam procedures, lack of psychological and social support, and insufficient infrastructure. Students emphasize the importance of accessible facilities, medical support, and inclusive curriculum. There's a need for staff trained to assist students with disabilities and for improving awareness programs. Overall, there's positive feedback on faculty tolerance but room for enhancing leisure activities and infrastructure accessibility.		
394	1	3	Achieving Universal Digital Literacy through Universal Design for Learning in Open Educational Resources The Spanish education system endeavors for inclusivity through Open Educational Resources (OERs), yet challenges persist in their accessibility. This study explores OERs' design for early education, employing Universal Design for Learning (UDL) principles. Findings reveal significant gaps: OERs lack options for text modification, synchronization adjustments, and alternative formats like Braille, hindering perception accessibility. Multilingual support is limited, impacting language comprehension. Moreover, OERs fail to activate prior knowledge, highlight key ideas, or provide gradual learning progression, impeding comprehension. Interaction options are	Accessibility limitations of OER, such as text modification, synchronization adjustments, and alternative formats like Braille, hindering perception accessibility	https://doi.org/10.25159/1947-9417/8712

			constrained, with inadequate keyboard interfaces and expression avenues, while feedback mechanisms are scarce. Engagement opportunities are minimal, lacking autonomy tasks and real-life contextualization. Self-regulation support is deficient, with absent activities and progress monitoring. These shortcomings pose barriers for visually impaired, non-native, and motor-impaired students, exacerbating educational inequalities. Recommendations include enhancing adaptability, multilingual support, and scaffolding to ensure comprehensive accessibility. Further research on different educational levels and teacher perspectives is crucial for advancing inclusive education practices in digital learning environments.		
395	1	2,3	Universal Design for Learning and ICT in the Physical Education Area: design and validation of an intervention proposal This study proposes an intervention program for Physical Education utilizing Information and Communication Technologies (ICT) and Universal Design for Learning (UDL) to promote the inclusion of fourth-year Primary Education students with intellectual functional diversity. Through evaluative research, the program is designed and validated.	Design considerations for accessible physical education through ICT	https://doi.org/10.30827/publicaciones.v53i3.23867

		Expert judgment validates the program, emphasizing the necessity of inclusive educational programs. The intervention program, developed through literature review and following established methodologies, targets cognitive, communication, and socio-affective areas of difficulty among students. It incorporates recommendations from existing literature and utilizes ICT as a crucial component. The program's effectiveness is statistically validated, showing improvements in various student capacities. The implementation process emphasizes resource availability and the utilization of UDL principles. The successful validation of the program suggests its potential viability for implementation. Conclusions highlight the program's contributions to educational quality, particularly in addressing the needs of diverse students, promoting health, and ensuring program quality through assessment. Future prospects include implementing the program in real educational settings, designing interventions for other types of diversity, and expanding ICT-related studies across different educational levels and subjects.		

396	1	3	Measuring the implementation of UDL in classrooms and schools: Initial field test results The article discusses the challenges in measuring Universal Design for Learning (UDL) due to its design flexibility and iterative nature. With federal encouragement for UDL implementation, there's a growing need to measure UDL reliably. The UDL Observation Measurement Tool (UDL-OMT) was developed to address this need. Results from initial field testing show good to excellent internal consistency of the UDL-OMT, indicating its potential as a formative evaluation tool for practitioners and school-based personnel. Classrooms were characterized based on UDL implementation levels: pre-emergent, emergent, and observed UDL. Further research is suggested to explore observer bias and interrater reliability, as well as fidelity of implementation. The UDL-OMT is seen as a valuable instrument for ongoing observation and improvement of UDL implementation. However, its application should consider contextual factors, and further research is needed to address procedural considerations and refine demarcation points for UDL levels. Overall, the UDL-OMT shows promise for promoting research and conversation in observing complex learning environments.	Observation Measurement Tool (UDL-OMT), pre-emergent, emergent, and observed UDL classrooms	https://doi.org/10.1177/0741932520908015

397	1	3	Learning starts with design: Using universal design for learning (UDL) in higher education course redesign The article delves into the escalating diversity of student requirements in higher education and the disparate levels of mandated support for students with disabilities. It introduces Universal Design for Learning (UDL), a framework drawing from architecture, neuroscience, and technology, aimed at fostering accessible learning environments for all learners. The literature review meticulously traces the evolution of Universal Design concepts, emphasizing their application in education, with insights derived from neuroscience and the learning preferences of Millennial students. Moreover, it illuminates faculty members' collaboration with development specialists to revamp courses using UDL principles, showcasing the UDL grant faculty consultation model as a potent professional development strategy. Noteworthy are the positive outcomes stemming from incorporating group work and deploying technologies like Blackboard and iClicker to engage large student cohorts, inclusive of those with disabilities. Testimonials from students, underscore the transformative impact of accessible course design on student experiences.	UDL design consideration for accessible education	https://doi.org/10.1108/S1479-3660(2012)0000016009

			Her comprehensive provision of campus support and supplemental resources via Blackboard, notably for crafting extensive research papers, stands out as exemplary practice. These insights hold significant implications for advancing faculty development endeavors, especially for instructors managing expansive enrollment courses.		
398	1	3	Applying Principles of Universal Design to Test Delivery: The Effect of Computer-based Read-aloud on Test Performance of High School Students with Learning Disabilities. The text discusses the importance of accurately assessing all students, particularly those with disabilities, within the context of standards-based reform efforts. It highlights challenges faced by current large-scale assessments, such as access barriers, especially for students with disabilities. Although testing accommodations like read-aloud have shown improvements, there's a call for more flexible approaches. The pilot study introduces a computer-based test tool applying Universal Design for Learning principles, offering a customizable environment with read-aloud options. Results indicate significant score increases, particularly for longer reading passages, with qualitative	flexible and customizable testing environments, inclusive learning environments	https://ejournals.bc.edu/index.php/jtla/article/view/1660

			findings supporting its effectiveness and student preference. Overall, the study suggests the potential benefits of digital technologies in creating universally designed assessments, enhancing fairness and accuracy for students with disabilities. Recommendations include further studies with larger sample sizes to generalize findings and explore factors like age, race, and socioeconomic status. The study also underscores the importance of matching instructional and testing technologies and ongoing research to enhance text-to-speech technology quality. Embracing assessment techniques that reduce construct irrelevancy is crucial for ensuring valid decisions based on test scores, supporting all students in effectively demonstrating their knowledge and skills.		
399	1	3	Students' attitudes to Universal Design in Architecture Education. The study explores the attitudes of architecture students towards universal design of built environments, with a focus on the impact of education on diversity and universal design. Two groups of students were compared, one having received education on these topics and the other not. Although no significant differences were found between the groups, insights emerged regarding student attitudes. Despite	design curriculum, accessibility in built environments, simulation activities, visitability requirements for private buildings, architectural education	https://doi.org/10.36251/josi.109

		generally positive attitudes towards universal design, challenges remain, particularly concerning the inclusion of vision impairment aspects. The study suggests continued education on universal design principles, emphasizing its importance in future professional careers. Students showed more positive attitudes towards the universal design of public spaces compared to private ones. Additionally, opinions varied on proposed visitability requirements for private buildings, indicating a need for further research on cost comparisons and client perspectives. The study highlights the importance of incorporating role-playing and collaborative projects with users to enhance students' awareness of universal design. While short-term educational programs showed effectiveness, long-term retention and application of knowledge require further investigation. Although no significant differences were found post-program completion, the study underscores the positive views of architecture students towards universal design and identifies areas for future research to improve training and education in this field.		

400	1	3	More than just a bus trip: School busing, disability and access to education in Toronto, Canada. The paper examines the accessibility of education for children with disabilities in Ontario, Canada, focusing on the excessive travel burden placed on them and their families. It highlights the legal protections for equal access to education and the shortcomings in achieving compliance, particularly concerning the travel distance and time for students with disabilities. The study analyzes data from the Toronto District School Board (TDSB) for the 2016–17 school year, revealing significant excess travel for students labeled with disabilities, such as deafness, physical disabilities, or behavioral exceptionalities. This excess travel can lead to missed classroom time and limited peer interaction opportunities. The paper also discusses the challenges faced by students during travel, including issues with transportation services, communication, and safety. Moreover, it addresses systemic inequalities, such as socioeconomic status and racial disparities, affecting the accessibility of education for disabled students. The authors advocate for policy changes to prioritize reducing travel times and distances for disabled students, emphasizing the need for	transportation services, busing services for students with disabilities, accessible school buildings, special education services	https://doi.org/10.1016/j.tra.2021.04.005

			a more inclusive approach in school planning and transportation initiatives. They argue for recognizing and valuing the diverse perspectives and contributions of disabled children in educational settings to mitigate the normalized excess school travel experienced by this group.		
401	1	3	Intersecting barriers to adolescents' educational access during COVID-19: Exploring the role of gender, disability and poverty. This article investigates the impact of the COVID-19 pandemic on adolescents' access to education across diverse urban settings in Bangladesh, Ethiopia, and Jordan. Utilizing data from the Gender and Adolescence: Global Evidence longitudinal study, which includes phone surveys, qualitative interviews, and key informant interviews, the study reveals that the pandemic exacerbates pre-existing vulnerabilities to educational disadvantage, particularly for marginalized groups. Gender, poverty, and disability intersect to deepen social inequalities in education. Access to distance education varied across contexts, with limited accessibility in urban areas of Bangladesh and Ethiopia but more accessible in Jordanian host communities. Gender disparities in access to education initiatives were evident, with differences observed	distance education, online education programs	https://doi.org/10.1016/j.ijedudev.2021.102428

			across the three contexts. In Bangladesh, school closures disproportionately affect marginalized girls, depriving them of learning space and support networks. Conversely, in Jordan, girls were more likely to access online education and receive support from schools. Additionally, adolescents with disabilities faced significant barriers to accessing distance education, emphasizing the need for inclusive programming. The study recommends gender- and disability-responsive approaches to distance education, tailored to address context-specific challenges and promote equitable access. Furthermore, stakeholders should prioritize strategies to encourage adolescents' return to school post-pandemic, considering the long-term economic impacts.		
402	2	3	UDL: A Blueprint for Learning Success. Educational architects, akin to building architects, approach classroom design by understanding individual student needs. This involves assessing academic, behavioral, and social aspects, along with cultural and linguistic backgrounds. Goals and learning objectives are then established, tailored to each student's requirements, such as IEPs for special education or language proficiency for English learners. The learning	educational activities, clear communication, physical accessibility, digital accessibility,	https://www.ascd.org/el/articles/udl-a-blueprint-for-learning-success

			environment is evaluated to identify factors impacting student performance, like classroom layout and available support personnel. Barriers to student success are identified, and Universal Design for Learning (UDL) solutions are implemented to address them, offering diverse means of representation, action, and engagement. Implementation fidelity is ensured through detailed planning and periodic evaluation. The efficacy, acceptability, and fidelity of UDL solutions are continuously evaluated, with adjustments made as necessary. Monitoring student progress through various assessments, including work samples and observations, informs ongoing improvements. By adopting UDL principles, educators can effectively address the diverse learning needs of students and promote overall success in the classroom.		
403	1	3	The Study of Spatial Safety and Social Psychological Health Features of Deaf Children and Children with an Intellectual Disability in the Public School Environment Based on the Visual Access and Exposure (VAE) Model. In the study, the authors propose using the Visual Access and Exposure (VAE) Model to assess the safety and social-psychological health of deaf children and children with	physical safety of vulnerable groups in schools, spatial design features, evaluation of architectural environments	https://doi.org/10.3390/ijerph18084322

		intellectual disabilities in public school environments. They conducted a preliminary study in a primary school in Deyang, finding certain spaces, like long corridors and areas behind elevators, less safe for these children. They observed a preference for low visual access areas, possibly due to their introverted nature and impaired social communication. The study suggests implications for architecture design to optimize environments for these groups, considering the VAE model's effectiveness in evaluating physical safety and social psychological health. Limitations include unequal population distribution, lack of consideration for vertical eyesight, and cultural factors. Future research aims to expand the model's application across diverse cultural contexts and collect larger samples for more accurate analysis. The VAE model is recommended for evaluating school architecture to enhance safety, monitor bullying, and identify students with psychological health issues. This approach could lead to improved public health environments and contribute to broader environmental optimization efforts.		

404	1	3	Access and Participation of Students with Disabilities: The Challenge for Higher Education. Access to higher education is considered a fundamental right for all individuals, yet students with disabilities encounter significant challenges in accessing and participating in university education. This systematic review of literature spanning from 2011 to 2021 highlights the various obstacles faced by these students and proposes strategies for ensuring their equal opportunities and success in higher education. The study reveals a predominant focus on qualitative research, particularly in institutions in Chile and Spain, reflecting active participation in international agendas promoting inclusive education. While publications in this field have increased over the years, 2021 witnessed a significant surge in interest. Challenges faced by students with disabilities encompass infrastructure, teaching-learning processes, and institutional management. Architectural barriers hinder mobility, while inadequate teacher preparation and lack of adapted resources impede learning. Moreover, universities often lack sufficient support services and funding for disabled students. To address these challenges, improvements in infrastructure, teacher training, and	campus infrastructure, teacher preparation in using inclusive methodologies, adapted material resources, availability and adequacy of support services for students with disabilities at the university level	https://doi.org/10.3390/ijerph191911918

			institutional support are crucial. This includes eliminating architectural barriers, implementing inclusive teaching methodologies, and establishing comprehensive support services. Transition strategies from secondary to higher education and clear educational policies are also necessary for successful inclusion. The implementation of Universal Design for Learning principles is emphasized as a means to not only facilitate access for disabled students but also enhance learning for all. By prioritizing accessibility and inclusive education, universities can ensure the success of students with disabilities and promote a more equitable educational environment.		
405	1	3	Podcasting in higher education as a component of Universal Design for Learning: A systematic review of the literature. The text discusses the increasing presence of students with disabilities in universities and the adoption of Universal Design for Learning (UDL) principles for accessible course design. Specifically, it examines the use of audio podcasting in higher education within the framework of UDL. A systematic review of 17 studies explores how podcasting aligns with the three principles of UDL—engagement,	delivering course content, providing additional explanations, aligning podcasting practices with UDL principles, podcasting as a learning tool	https://doi.org/10.1080/14703297.2022.2075430

			representation, and expression. While most studies used podcasting to engage students and represent information, fewer incorporated it for demonstration or assessment, and even fewer aligned it with all UDL principles. Students mainly listened to podcasts for content review or extension, with some creating podcasts for demonstration or assessment. Although students generally perceive podcasting positively and report increased knowledge and memory retention, evidence of its impact on learning is limited. The text encourages educators to consider podcasting as a means of disseminating information and extending knowledge, while also highlighting the need for further research to assess its efficacy as a teaching, learning, and assessment tool. It emphasizes the importance of aligning podcasting practices with UDL principles and provides recommendations for its implementation in university teaching.		
406	1	3	Students with Disabilities' Access to Distance Education: : A Case for Transformational Leadership within the Ambit of Ubuntu. The article discusses the role of distance education in addressing social justice, particularly for students with disabilities, within the South African Department of Higher Education and Training's framework. Despite policy efforts,	access to post-school education and training (PSET), inclusive leadership styles, training teachers in inclusive education practices,	https://doi.org/10.6017/ijahe.v9i1.15237

		challenges persist in integrating disabled students into post-school education. Transformational leadership, rooted in Ubuntu philosophy, is proposed as a solution due to its ability to influence organizational values and facilitate necessary changes. Transformational leaders can align organizational values, stimulate innovation, and promote inclusivity. However, effective leadership requires capacity-building among staff members and allocation of resources. Additionally, there's a need to bridge the gap between policy and practice, especially in teacher education, and ensure adequate resources for inclusive education. The article suggests further research on PSET leadership, development of transformational leadership programs aligned with Ubuntu values, and examination of the hosting of disabled students in higher education institutions to enhance their experience. Ultimately, transformational leadership supported by Ubuntu values is seen as essential for addressing disability issues in the PSET sector and fostering societal change.	physical, administrative, and pedagogical resources	

407	1	3	The Results of the First Half of the Implementation of Interdepartmental Comprehensive Plans for the Accessibility of all Levels of Education for People with Disabilities and Disorders. The conference proceedings published the outcomes of the first phase of executing two significant plans aimed at enhancing accessibility in education for individuals with disabilities and disorders. These plans, covering various educational tiers and social support, were discussed on July 29, 2022, in Moscow, Russia. Representatives from governmental bodies, educational institutions, and non-profit organizations convened, emphasizing the necessity of interdepartmental collaboration, regional engagement, and involvement of professional and public entities. Assessments highlighted regional variances and underscored the importance of specific actions for effective execution. Recommendations included interdepartmental oversight, strategic sessions, resource center establishment, and personnel training enhancements. Moreover, proposals addressed the development of inclusive educational models, standardization, and the potential formulation of a national strategy. Notably, contributions from	evaluation of the performance of educational institutions in providing inclusive education, Psychological, Medical, and Pedagogical Consulting Rooms (PMPK), interdepartmental comprehensive plans (ICP)	https://doi.org/10.17759/pse.2022270410

			professional and parental communities enriched the discourse, advocating for practical initiatives such as specialized educational programs and expert training. Future plans entail refining the interdepartmental comprehensive plans, organizing strategic sessions, and fostering ongoing collaboration among stakeholders, affirming the commitment to advancing inclusive education.		
408	1	3	Universal Design for Learning Infusion in online Higher education. This qualitative case study investigates the integration of the universal design for learning (UDL) framework into an online graduate program at a Canadian university. Participants were selected from various levels within the university: program, faculty, and institution. Through interviews and document analysis, four themes emerged: leadership, community of practice, educational development, and challenges. The study underscores the importance of leadership in fostering UDL adoption, emphasizing the need for clear vision, strategic planning, and tailored support. Communication and collaboration among leadership levels are crucial for providing adequate infrastructure and support. Faculty buy-in and pedagogical support are essential for	knowledge of online learning and UDL framework, technological skills, pedagogical support throughout the UDL incorporation process, UDL infusion across faculties and programs, Community of Practice (CoP)	https://doi.org/10.24059/olj.v27i1.3080

			successful UDL incorporation. Establishing a community of practice facilitates the process and promotes instructor satisfaction and development. Continuous educational development opportunities are necessary to build teaching capacity aligned with UDL principles. The study recommends further research on UDL adoption across various course formats and disciplines, as well as investigating institutional support and barriers. UDL implementation requires careful planning, ongoing support, and collaboration at all levels of the academic institution. This study contributes valuable insights into UDL integration and online teaching capacity development, offering concrete examples of best practices.		
409	1	3	The Promise of Universal Design in Postsecondary Education: A Literature Review. Institutions of higher education face challenges in meeting the needs of a diverse student population, particularly those with disabilities. Disability support services (DSS) offices are often overwhelmed with providing accommodations, prompting the need for a new approach. Universal Design (UD) frameworks offer promise but lack empirical evidence in postsecondary education. A systematic literature review examined the effectiveness of UD	Disability Support Services (DSS), inclusive teaching practices, accessibility in the classroom, Inclusive Teaching Strategies Inventory (ITSI), faculty training	https://teaching.uoregon.edu/sites/default/files/2023-03/reardon-bromely-unruh-2021.pdf

			in supporting students with disabilities, revealing positive outcomes in student and faculty attitudes. However, most studies were exploratory, lacking experimental designs. Moving forward, rigorous research is essential to assess the impact of UD on student outcomes. Faculty training on UD principles is crucial, with the Inclusive Teaching Strategies Inventory (ITSI) serving as a valuable tool. DSS practitioners can play a vital role in facilitating faculty training and fostering collaboration to promote inclusive practices. Future research should focus on developing UD training modules and employing experimental designs to measure student outcomes. Overall, UD frameworks hold promise for enhancing accessibility in postsecondary education, with DSS practitioners poised to lead the way in its implementation and research.		
410	1	3	Disabled student advocacy to enhance accessibility and disability inclusion in one School of Social Work. The article discusses the role of the Disability Action Group (DAG) in promoting accessibility and disability inclusion within a Canadian university's School of Social Work. It highlights the relative absence of disabled student voices in existing literature	support spaces for disabled students, inclusive learning environment	https://doi.org/10.1332/204986020x16031173597330

		and reflects on the successes and challenges faced by the DAG. The group, formed in 2008, focused on integrating disability into the curriculum and ensuring support for disabled students. They collaborated with the student union on disability awareness events and later established peer support spaces for disabled students. The DAG collected feedback and recommendations, leading to changes in policies and practices within the school, such as incorporating accessibility statements into course outlines and revising attendance policies. Despite challenges like short student tenure and the risk of backlash, the DAG facilitated community-building, policy changes, and increased faculty awareness of accessibility issues. The article emphasizes the importance of student-led advocacy and encourages the creation of caucus groups to amplify voices and foster educational change. It also underscores the need for documenting and sharing equity work to prevent erasure and promote inclusivity in social work education.		

411	1	3	Universal design for early childhood education: ensuring access and equity for all. The article introduces the Universal Design for Early Childhood Education (UDECE) framework, aiming to integrate best practices from early childhood and special education to ensure access and equity for all children. UDECE focuses on examining access issues, providing high-quality educational practices, and ensuring accountability for success and equity. Rooted in Urie Bronfenbrenner's Ecological Systems Theory, UDECE recognizes the bidirectional impact of children and their environments, emphasizing inclusivity and flexibility. The framework identifies four foundational components: diverse needs and goals of children, families, professionals, and communities; diverse classroom communities; diverse early childhood education field; and diverse societal needs and goals. It addresses limitations in current professional education practices and promotes the integration of early childhood and special education fields. UDECE emphasizes multiple means of access, representation, engagement, and expression for children, ensuring inclusive environments and equitable opportunities. It advocates for inclusive practices that support	Inclusive educational environment, flexible and diverse educational practices, multiple means of access to high-quality early childhood care and education, accountability for equity and success	https://doi.org/10.1007/s10643-007-0177-4

			children's unique developmental needs and societal goals. The framework also highlights the importance of accountability for equity and success, emphasizing respect for individual uniqueness and promoting fairness in opportunities and treatment. UDECE provides a template for synthesizing practices in early childhood and special education, fostering inclusion, and supporting cultural mandates for equity and full inclusion.		
412	1	3	Executive functions in universal design for learning: moving towards inclusive education. The study aims to explore how executive functions (EFs) are enhanced in students through the Universal Design for Learning (UDL) principles. By analyzing UDL guidelines, the study finds that more than half of the checkpoints address 12 considered EFs, including feedback response, planning, metacognition, and organization. Cognitive control, particularly in strategic and affective networks, receives emphasis, highlighting the importance of teachers facilitating students' ability to anticipate, structure, and reflect on their learning actions. UDL not only fosters barrier elimination in learning but also offers guidance for enhancing students' executive abilities, emphasizing the	practical guidelines for teachers to promote executive functions in the classroom, accessible teaching practices, recognition of cognitive performance imbalances with the use of UDL	https://doi.org/10.1080/13603116.2018.1474955

			affective dimension's internal management. Practical guidelines within UDL promote EFs, aiding students in managing attention, sustaining effort, and promoting metacognition. However, caution is advised to prevent instrumentalizing the affective component solely for cognitive success. UDL principles can identify and address cognitive performance imbalances, fostering inclusivity and accommodating diverse learning styles and paces. Implementation of UDL facilitates flexible curriculum design, promotes student engagement, and addresses various learning needs effectively. Training processes should emphasize collaboration, criticism, and reflection among educators to achieve a truly inclusive educational environment.		
413	1	3	Development of Vocational Maturity in University Students with Disabilities to Access, Obtain an Internship and Complete University Studies. The text discusses the increasing number of university students with disabilities in Spain and the challenges they face in completing their studies, particularly regarding internships. It presents the results of the Generating Professional Skills (GPS) program, emphasizing its role in enhancing vocational maturity and facilitating	accessible internship opportunities, educational inclusion, support services for students with disabilities, tutoring	https://doi.org/10.3390/educsci10120386

			educational inclusion. The study highlights the importance of tutoring and support services for students with disabilities, aligning with Sustainable Development Goal 4. It also addresses the lack of knowledge and development of generic competencies, hindering internship placement and future employment. Recommendations include integrating transversal skills into curricula, strengthening tutoring programs, and promoting vocational maturity through training. Additionally, the text underscores the crucial role of disability support offices in fostering inclusive higher education. Despite limitations in sample size and data comparison, the study acknowledges students' positive attitude towards training programs and disability support services.		
414	1	3	The universal genre sphere: A curricular model integrating GBA and UDL to promote equitable academic writing instruction for EAL university students. This paper introduces a novel instructional model called the universal genre sphere, aimed at teaching academic writing in a way that accommodates all learners, particularly English as an Additional Language (EAL) students, including those with diagnosed learning differences. It addresses the lack of	Inclusive education for EAL students	https://doi.org/10.25656/01:26091

			research exploring the intersection of second-language writing, EAL, learning differences, and inclusive education. The model is rooted in universal design for learning (UDL) and genre-based approach (GBA), particularly the teaching-learning cycle (TLC), to create equitable, inclusive, and effective learning environments. The universal genre sphere incorporates inclusive design principles, catering to students' interests, while breaking down learning into manageable segments. By combining GBA and UDL, the model aims to reduce barriers in the classroom and provide multiple pathways for student participation. The paper suggests that this model fills a gap in providing inclusive additional-language writing instruction and proposes further research and testing to validate its effectiveness. Collaborative efforts among researchers could significantly enhance understanding and implementation of inclusive, equitable, and effective writing instruction for all learners.		
415	1	3	Building Australian Tertiary Educator Knowledge and Skill in Universal Design for Learning. Students with disabilities in Australia face barriers in accessing tertiary education. Universal Design for Learning (UDL) principles can help	Universal Design for learning, e-learning programs	https://www.cjslp.a.ca/files/2016_CJSLPA_Vol_40/No_02/CJSLPA

			address these barriers by designing more inclusive educational experiences. However, UDL is not widely implemented in Australian educational policies or practices. To address this gap, a collaborative effort involving educators, learning designers, accessibility advocates, and people with disabilities across multiple institutions in Australia developed a free eLearning program on UDL. Preliminary survey data indicate that participants who completed the program showed improved understanding of UDL principles and increased confidence in applying UDL practices. The program's design promotes a bottom-up approach, encouraging individual educators to incorporate UDL into their practice and share their experiences to promote wider adoption.		2016 Vol 40 No 2 Campbell et al.pdf
416	1	3	Speech-language pathologists' role in inclusive education: A survey of clinicians' perceptions of universal design for learning. Canadian schools are increasingly implementing full inclusion, supported by the Universal Design for Learning (UDL) framework, aiming to integrate speech, language, and communication support into classrooms. A survey of 91 school-based Speech-Language Pathologists (S-LPs) revealed that while most were familiar with UDL concepts,	Universal Design and inclusivity in schools	https://www.cjslp.ca/files/2016_CJSLPA_Vol_40/No_02/CJSLPA_2016_Vol_40_No_2_Campbell_et al.pdf

			they lacked confidence in specific implementation skills. Barriers to UDL included limited time, collaboration opportunities, and administrative support. S-LPs felt competent in some areas but identified areas needing improvement, suggesting a need for professional development and systemic changes to support collaborative UDL implementation.		
417	1	3	Designing inclusive physical education with universal design for learning. The text underscores the importance of inclusion in education, especially for students with disabilities, highlighting current shortcomings, particularly in physical education classes. It suggests using tools like the Lieberman-Brian Inclusion Rating Scale for evaluation. Despite efforts to meet learning standards, students with disabilities often struggle with motor skills, impacting their long-term health. Successful inclusive environments benefit all students, but many physical education programs focus too much on gameplay. To enhance inclusion, teachers should employ strategies like universal design for assessments and lesson planning, ensuring all students can participate and succeed. Ultimately, the text advocates for true inclusion, emphasizing	Universal Design in Education, inclusive environments, Accessible physical education programs	https://doi.org/10.1080/07303084.2019.1637305

			the need for tailored approaches to meet the diverse needs of all learners.		
418	1	3	Universal design for learning in physical education: Overview and critical reflection. European Physical Education Review. The article critically examines the widespread advocacy for Universal Design for Learning (UDL) in adapted physical education (PE) as a solution to the challenges of teaching disabled and nondisabled students together, which has dominated scholarship and practice in the field. By scrutinizing existing theoretical and empirical research on UDL, the authors question the scientific basis for its use as an inclusive approach in PE. They highlight the absence of rigorous evidence supporting the efficacy of UDL and advocate for scholars to conduct theoretically-guided and empirically-informed research that aligns with established standards of research quality. The authors emphasize the need for a stronger evidence base to inform decisions regarding the implementation of UDL in PE, cautioning against premature adoption without sufficient empirical support. They call for a	Physical Education and Universal Design	- https://doi.org/10.1177/1356336X231202658

			reevaluation of the promotion of UDL within PE and suggest exploring alternative pedagogical practices until a more robust evidence base is established.		
419	2	7	Safe evacuation for all. This publication advocates for inclusive evacuation planning to ensure the safety of individuals with diverse abilities and disabilities during emergencies. It targets building management and safety personnel, stressing the importance of recognizing and addressing the needs of all individuals. The document highlights challenges various groups may encounter during evacuations, including those with sensory impairments, mobility issues, or cognitive disabilities. It discusses factors like response time, movement difficulties, and communication barriers. Emphasis is placed on risk assessments to ensure safe evacuations and compliance with legislation, such as the Safety, Health, and Welfare at Work Act (2005) and building regulations like Part M, which mandate accessibility standards. The publication underscores legal frameworks and standards to ensure accessibility and safety in public buildings and services, including compliance with the Disability Act (2005). It recommends considering accessibility needs, providing special	accessible entrances, evacuation routes, emergency communication systems, safe evacuation guidance, evacuation planning, risk assessments, compliance with legislation, disability access certification, alarm systems, emergency signage and lighting, evacuation lifts, evacuation chairs, refuge areas, staircases, Personal Emergency Evacuation Plans (PEEPs)	https://nda.ie/publications/safe-evacuation-for-all

			equipment, and utilizing alternative alarm systems for individuals with disabilities. Signage, emergency lighting, handrails, ramps, evacuation lifts, and evacuation chairs are highlighted as essential elements. Coordination with fire services, thorough communication systems, and well-trained staff are crucial for effective evacuations. Evacuation policies should involve reviewing safety measures, defining roles, and considering evacuation strategies tailored to building layouts and safety measures. Personal Emergency Evacuation Plans (PEEPs) and Generic Emergency Evacuation Plans (GEEPs) are recommended for individuals with disabilities. Training, drills, performance measurement, and continuous improvement are vital for maintaining effective evacuation plans.		
420	2	2	ETSI. Human Factors (HF); Guidelines for ICT products and services; "Design for All" The document outlines guidance for Information and Communication Technology (ICT) designers, emphasizing Human Factors considerations and international standards. It promotes a "Design for All" approach, ensuring accessibility for diverse users, including the elderly and people with disabilities, without specialized	inclusive interfaces, accessible and usable ICT products and services, assistive technology, error management, consistency and standardization,	https://standards.iteh.ai/catalog/standards/etsi/421c7ce0-28fa-4dfa-b1f2-6e082f3cbde6/et

		adaptations. It covers ICT products with user interfaces connectable to telecommunications networks, like telephones and multimedia terminals. Following the Human-Centred Design approach, it advocates active user involvement, iterative design, and multidisciplinary collaboration. Emphasizing user context definition, requirements specification, prototyping, and iterative evaluation, it highlights the benefits of Human-Centred Design, such as cost reduction and enhanced product quality. Prototyping is crucial for feature testing, reducing design rework costs. Evaluation methods, including usability testing, involve representative user samples, including those with special needs. The text discusses principles and guidelines for interface design, stressing understanding users' needs, consistency, and user-friendliness. It covers dialogue styles, interface metaphors, and assistive technology to enhance accessibility. Specific guidelines for input and output components, cables, casework, and various services ensure accessibility for all users. Overall, it underscores the importance of inclusive interface design for seamless interaction with ICT products and services.	adjustability, adaptability, interface design	si-eg-202-116-v1-2-2-2009-03

421	2	1	Guide for addressing accessibility in standards. ISO/IEC Guide 71:2014 replaces CEN-CENELEC Guide 6:2002 and offers guidance to standards developers regarding accessibility requirements in systems used by people. It summarizes accessibility terminology, integrates accessibility into standards development processes, sets accessibility goals, and addresses user needs strategies. It stresses accessibility importance at all standard development stages, including documentation accessibility and equitable access to meetings. Stakeholder participation, including older persons and individuals with disabilities, is encouraged. The guide outlines standard development process stages and corresponding actions for addressing accessibility. It proposes two approaches: defining accessibility goals and considering human abilities. Various sources, including regulations and research, identify accessibility needs. Verification and validation processes ensure meeting accessibility requirements. Training staff and improving organizational accessibility are highlighted. The text details an approach for identifying and developing accessibility-related requirements, called the accessibility goals approach. It comprises 11 goals	physical accessibility features, digital accessibility standards, documentation accessibility, equitable participation, approachability, perceivability, understandability, controllability, usability, error tolerance, equitable use, conformity with user expectations, steps and dangerous areas, stairs and crossings, traffic lights with auditory signals, emergency announcements, good acoustic environment, signals for activity start and termination, environments	https://www.cen-cenelec.eu/media/Guides/CEN-CLC/cenclcguid e6.pdf

			covering suitability, conformity, individualization support, approachability, perceivability, understandability, controllability, usability, error tolerance, and equitable use. Each goal addresses user accessibility needs with questions for developers. The aim is to enhance system accessibility for diverse users, minimizing access barriers. Design considerations span sight, hearing, touch, taste, smell, body size, movement, voice, speech, and cognitive abilities. They include multiple information presentation means, appropriate lighting, volume control, tactile indicators, alternative information presentation, labelling, and hazard warnings. Accommodating individual needs, simplifying language, providing adjustable parameters, and promoting compatibility with assistive technology are emphasized.	designed to minimize distractions	
422	2	6	The use of hoists in guest accommodation. In the hospitality industry, accessibility is crucial for hotels and guest accommodations. Ensuring inclusivity not only reduces legal risks under the Equality Act 2010 but also brings about moral, social, and business-related benefits. However, there's often a lack of detailed information regarding accessible facilities, particularly concerning hoists for people with disabilities. British	hoists, room layout, sanitary facilities, information accessibility, staff training	https://caeorg.b-cdn.net/wp-content/uploads/2018/10/181012-lhN-The-use-of-hoists-in-guest-

			Standard 8300-2:2018 offers recommendations for accessible accommodations, including guidance on hoists. This document aims to bridge the knowledge gap by providing guidance on the design, use, and management of hoist systems in hotel rooms. Hoists, powered devices used for lifting and transferring individuals, come in various types such as mobile, integrated, and gantry hoists. Each type has its advantages and disadvantages, impacting factors like space requirements, assembly, and visibility. The provision of clear information, appropriate slings, sanitary facilities, charging procedures, maintenance, staff training, and planning ahead are essential considerations for hotels aiming to provide inclusive accommodations. By addressing these factors, hotels can enhance the quality of service and ensure a welcoming environment for all guests, fulfilling their duties under accessibility regulations and promoting inclusivity.		accommodation.pdf
423	1	3	Assistive technologies for students with disabilities: A survey of access and use in Turkish universities. This study delves into the assistive technology requirements of university students with disabilities and the accessibility of such technologies. It investigates the students' attitudes towards	assistive technology, support for assistive technologies, faculty training, turkish legal	https://www.tojet.net/articles/v9i2/925.pdf

		computers and their utilization among this demographic. Data was gathered via a questionnaire from 22 university students across private and public institutions in Ankara, Turkey. The findings revealed that students with disabilities utilized assistive technology, particularly for writing and research, given adequate resources and support. The study also examined the interplay between student knowledge, skills, attitudes, social norms, and beliefs. Notably, social support and exposure to technology positively influenced students' beliefs in their technological capabilities. However, accessibility barriers persist, necessitating universities to provide suitable environments and necessary software/hardware. Additionally, there's a need for trained staff, awareness of assistive technologies, and administrative support to ensure accessible education. Unfortunately, the lack of awareness and skills among faculty regarding electronic course materials accessibility remains a challenge. Hence, faculty training is crucial to meet the academic needs of students with disabilities, aligning with the principles of accessibility and inclusive education.	frameworks and policy implementation	

424	1	3	The Three-Block model of universal design for learning (UDL): Engaging students in inclusive education. The study investigates the implementation of the Three Block Model of Universal Design for Learning (UDL) and its effects on student academic and social engagement. Conducted in Manitoba across ten schools with 631 students from Grades 1 to 12, the study compared intervention and control groups pre-and during intervention. Measures included assessments of classroom climate, belongingness, autonomy, and inclusivity. Results showed significant increases in student engagement, particularly active engagement, and enhanced social engagement through increased peer interactions and inclusivity. While individual UDL practices have shown positive outcomes, this study examined the combined impact of the Three Block Model on academic and social engagement, addressing gaps in existing research. Findings suggest that UDL implementation positively affects engagement across diverse learners. The study's research questions focus on the impact of UDL on academic and social inclusion in inclusive classrooms, aiming to fill gaps in UDL research. Results indicate that UDL promotes academic and social inclusion,	instructional pedagogy based on the Three Block Model of UDL, classroom climate, learning environment	https://journals.sfu.ca/cje/index.php/cje-rce/article/view/1159

			aligning with the model's goal of improving achievement for diverse learners. The study's findings suggest promising outcomes for UDL implementation, particularly in enhancing student engagement, with potential for significant educational change.		
425	1	3	School librarians as ambassadors of inclusive information access for students with disabilities. The study investigates the role of school library programs (SLPs) in empowering students with specific disabilities in special education (SPED) schools, focusing on aspects such as facilities, services, resources, and adherence to federal disability guidelines. It explores how SLPs provide physical and intellectual access, adopt federal guidelines, modify lending policies, and facilitate instruction. The findings reveal challenges faced by librarians in implementing accessible practices due to factors like building age, budget constraints, and limited consultation in renovations. Despite challenges, librarians adapt policies, provide diverse materials, and seek specialized training to support students effectively. Recommendations include staying updated on disability guidelines, advocating for library involvement in design and technology acquisition, and	Adaptive Technologies (AT), intellectual access, dual-encoded signage, large-font materials, talking signage, access to online collections, physical access, accessible entrances, adjustable workspace heights, signage	https://files.eric.ed.gov/fulltext/EJ1012827.pdf

			ensuring diverse and accessible collections. The study suggests that SLPs not only benefit students in SPED schools but also offer valuable insights applicable to inclusive education environments, promoting equity and inclusion for all students.		
426	1	3	Assistive technology in special education and the universal design for learning. The text discusses the significant role of technology in enhancing the independence and academic performance of students with disabilities. It emphasizes the integration of assistive technology within the Universal Design for Learning (UDL) framework, academic skills development, and transition services. Various examples illustrate how accessible technologies, such as web pages, instructional software, and communication devices, facilitate learning and participation for students with disabilities. Studies demonstrate the effectiveness of technology, such as talking word processors and pentop computers, in improving writing skills and academic outcomes. Additionally, technology aids in transition services by supporting learning, behavior, and preparation for life after school. The text stresses the importance of teachers' familiarity with available technologies	accessible web pages, instructional software, accessible telephones, text highlighting and supportive captions, low-tech solutions	https://www.tojet.net/articles/v13i2/1322.pdf

			and their inclusion in special education training programs. Course management systems and collaborative projects further highlight the practical application of technology in education. Moreover, the text lists various technologies, from word processors to speech synthesis, that assist students with disabilities in overcoming academic challenges. Finally, examples showcase the diverse advantages technology offers, including maximizing independence, participation in classroom discussions, access to educational options, and success in work-based learning experiences.		
427	1	3	A conceptual framework for building UDL in a special education distance education course. The text discusses the importance of maintaining the quality of teacher preparation programs in the increasing landscape of online graduate education. By reviewing pedagogies in special education and online learning, the text advocates for implementing the Universal Design for Learning (UDL) framework in developing a new graduate online course. This framework aims to ensure accessibility and inclusivity in distance learning programs. The research emphasizes the need to embed UDL principles in the course design, enhancing	design and delivery of online courses, UDL-designed courses, accessibility in online education platforms	https://www.thejeo.com/archive/2017_14_1/scott_temple

			accessibility for special education teachers. While the study shows promise, further exploration is required to assess the long-term impact of such designs on teacher preparation. Future investigations should consider factors like the choice of learning management systems and engagement from various stakeholders. The text concludes that effective design and delivery of online courses, particularly in special education, are crucial for maintaining preparation standards and fostering positive outcomes for students. It encourages continued discussion and research in this area to ensure the success of distance education programs.		
428	1	3	Supporting literacy with accessibility: Virtual school course designers' planning for students with disabilities. The increasing enrollment of K-12 students with disabilities in online courses has prompted virtual schools to focus on enhancing accessibility through improved course design. This study explores strategies employed by course designers to meet accessibility standards and promote literacy online, especially for students with disabilities. Three key strategies emerged: clear articulation of learning objectives, personalized and contextualized learning, and visual and audio	visual and audio elements to supplement textual content, instructional materials, online courses, virtual schools, clear articulation of learning objectives, personalized and contextualized learning	https://doi.org/10.24059/olj.v22i4.1508

		representation of concepts. However, while designers demonstrated an understanding of accessibility, they struggled to integrate literacy promotion effectively. The study underscores the importance of explicit consideration of accessibility and literacy support in designer preparation and professional development. It suggests that each element of instructional materials design should contribute to literacy and accessibility. Additionally, the study highlights the need for more research on the outcomes of courses designed with attention to vocabulary support, text complexity, personalization, and sophisticated audio-visual support. Policy implications include the necessity for greater vigilance in ensuring Section 508 compliance and the alignment of online course quality requirements with the goals of the Individuals with Disabilities Education Act (IDEA). Virtual schools should balance external evaluation guidelines with user empathy and consider embedding literacy support to ensure equitable access and effective literacy promotion for all learners.		

429	1	3	Disability- and Accessibility-Related Library Graduate-School Education from the Student Perspective. This study investigates the perspectives of library graduate students regarding their preparedness and comfort levels in dealing with accessibility and disability-related activities. Conducted through a survey with both quantitative and qualitative components, the research aimed to identify training needs within library graduate programs. Findings suggest that students generally feel ill-equipped to assist patrons with disabilities or address accessibility issues. Recommendations for improvement include enhancing curriculum content to incorporate accessibility and disability topics more comprehensively, developing training programs focusing on practical skills such as troubleshooting assistive technologies, and promoting diversity among students and faculty with disabilities. Three significant trends emerged from the survey responses: the need for practical education, empathy development, and the promotion of inclusion. Practical education entails integrating experiential learning opportunities into curricula to align with employment needs. Empathy building involves teaching perspective-taking skills and	accessibility training, preparedness for handling accessibility and disability-related tasks, experiential learning programs, inclusive curriculum	https://doi.org/10.3138/jelis.2019-0036

			emotional intelligence, essential for understanding and connecting with diverse patrons. Valuing inclusion emphasizes the importance of diversity, equity, and inclusion throughout library education and profession. Addressing these needs requires concerted efforts in curriculum development, faculty training, and recruitment practices to create a more inclusive and prepared workforce capable of serving diverse communities effectively. Further research avenues include examining hiring and retention practices, course content analysis, and assessing faculty attitudes toward diversity and inclusion topics within library graduate programs.		
430	1	3	Toward an inclusive pedagogy through Universal Design for Learning in higher education: A review of the literature. This paper explores the implementation and conceptualization of Universal Design for Learning (UDL) in higher education. Over the past two decades, UDL has gained momentum as educators seek to transform traditional teaching methods. However, research on UDL in higher education is somewhat limited due to conflicting definitions and aims. The review focuses on how faculty and researchers perceive and apply UDL, emphasizing its role as an intervention or framework.	implementation of UDL in higher education, UDL research, representation of scholars and students with disabilities in research	https://eric.ed.gov/?id=EJ127367

		While UDL is often viewed as a means to create inclusive pedagogy, there remains ambiguity regarding its application and effectiveness. Some see UDL as a response to specific challenges, potentially overlooking systemic barriers. The paper advocates for a shift towards viewing disability as a product of the environment rather than individual deficits. It highlights the need for UDL to challenge normative concepts of ability and promote inclusive practices. Moreover, it calls for consistency in defining UDL principles and emphasizes the importance of incorporating diverse perspectives, particularly those of students with disabilities, into UDL research and practice. The paper also suggests expanding UDL research beyond education departments and exploring its application in various instructional settings and disciplines. Finally, it advocates for a broader adoption of UDL principles beyond the classroom, into institutional practices and societal norms, to foster truly inclusive pedagogies.		

431	1	3	Opportunity in Crisis: The Role of Universal Design for Learning in Educational Redesign. The COVID-19 pandemic prompted an unprecedented shift in special education, moving from traditional in-person instruction to online learning. This shift has presented challenges but also opportunities for systemic educational reform. The manuscript explores this shift and advocates for the Universal Design for Learning (UDL) framework as a proactive approach to cater to diverse learner needs, especially those with learning disabilities. It addresses issues such as Free and Appropriate Public Education (FAPE) in online instruction, digital inequity, and socioeconomic status. The article emphasizes the importance of incorporating affective and metacognitive skills in online learning environments, particularly for students with LD. Challenges in current digital and online environments are discussed, including technology design and educators' preparedness. The UDL framework is proposed as a solution to address these challenges and support inclusive education. The text also illustrates potential future learning experiences using virtual reality and emphasizes the need for comprehensive educational redesign. Overall, it calls for	FAPE (Free and Appropriate Public Education), access to individual education programs (IEP), access to digital resources, sensory accessibility, communication accessibility, support services in online settings, curricular accessibility	https://files.eric.ed.gov/fulltext/EJ1264277.pdf

			proactive and iterative approaches to redesign education, prioritizing equity and catering to diverse learner needs, including students with LD.		
432	1	3	Gamification of an Educational environment in Software Engineering: Case study for digital accessibility of people with Disabilities. The paper discusses the importance of motivation and team productivity in software engineering education and proposes gamification as a strategy to enhance learning experiences. It introduces a software tool designed to create gamified classroom environments tailored specifically for software engineering education. The tool's effectiveness is demonstrated through a case study conducted in a course where students develop software products for non-profit organizations supporting people with disabilities. Results from the case study are presented across four categories: course outcomes, deliverable product, teaching strategy effectiveness, and tool usability. The gamified environment resulted in successful software products aimed at assisting the hearing-impaired community. The tool's strengths include its	software products for the hearing impaired population, Chilean Sign Language (ChSL) integration, interface design, security enhancements, gamified educational environments in software engineering education	https://doi.org/10.1109/rita.2021.3137372

			flexible architecture and design, but improvements are identified, particularly in security and usability aspects. The proposal also includes a methodological structure for integrating gamification into teaching, emphasizing phases like facilitation, core design, and evaluation. Future work includes refining the tool, enhancing methodological structures, and validating results through experimentation and formal analysis methods. Overall, the paper underscores the potential of gamification in software engineering education and outlines avenues for further research and development.		
433	1	3	Higher Education Opportunities for Students with Disabilities. Since the end of apartheid in South Africa, efforts have been made to integrate previously disadvantaged individuals into higher education and professional employment. Despite these efforts, students with disabilities still face exclusion due to underlying colonial structures. While surface-level opportunities exist, students with disabilities are often only superficially included, leading to high dropout rates. This chapter examines the accessibility of professional learning for students with disabilities in South African institutions. Although accommodations such as disability support services, assistive	adaptations in the built environment, adapted forms of transport, classroom teaching, disability support services, assistive devices, accessibility in evaluation processes, accessibility principles	https://doi.org/10.1163/9789004468443_012

			devices, and funding are provided, students still encounter obstacles that hinder their progress. Decolonial theory highlights the persisting effects of coloniality, which perpetuate exclusionary practices. To address this, Universal Design for Learning (UDL) is proposed as a means to incorporate diverse learning needs from the outset, facilitating genuine inclusion. Exposing and dismantling the hidden structures of coloniality are essential steps toward creating an inclusive educational system. The ongoing struggle for decolonization necessitates long-term commitment and the adoption of approaches like UDL to ensure equitable access to professional education for all students, including those with disabilities.		
434	1	3	Access to post-secondary Education in Canada for students with disabilities. In Canada, access to post-secondary education is supported by various legal instruments including statutory human rights legislation, constitutional law, and accessibility legislation, as well as by Article 24 of the United Nations Convention on the Rights of Persons with Disabilities (CRPD). A review of decisions by human rights tribunals from 2014 to 2021 identified barriers faced by disabled individuals in admissions and accommodations.	accessibility legislation, post-secondary education accessibility standards, access to post-secondary education for disabled students	https://doi.org/10.1177/13582291231174156

			Accessibility legislation, exemplified by Ontario's standards, aims to improve access. However, further alignment with CRPD principles is necessary to ensure equality in education. The study suggests drawing inspiration from Article 24, emphasizing development to the fullest potential, educating students on legal concepts, providing funding for test case litigation, and implementing proactive accessibility legislation. These measures can enhance access and uphold the rights of students with disabilities in post-secondary education, promoting dignity, self-worth, and human potential development. Ultimately, meaningful access requires synchronization of these steps while valuing the aspirations of disabled students within legal, policy, and practical frameworks.		
435	1	3	The limits of inclusion in open access: accessible access, universal design, and open educational resources. The text critiques the assumption that open educational resources (OER) inherently guarantee accessibility and goodness. It scrutinizes the UCLA Library's Writing Instruction + Research Education (WI+RE) initiative through the lens of antiracist, feminist disability research. The discussion emphasizes the	Open Access initiatives, UDL principles into resource design, staff training and education	https://doi.org/10.31274/jlsc.14399

		need to move beyond mere open access (OA) and to prioritize disability justice within OA efforts. It outlines strategies to center accessibility in OER design, such as expanding definitions of OERs and cautioning against evangelizing OERs without addressing structural factors contributing to inaccessibility. The WI+RE team advocates for incorporating principles of universal design and disability justice into the design process, promoting iterative improvement and ongoing dialogue. Specifically, the text proposes four strategies: embedding accessibility as a foundational framework for design, integrating accessibility into staff training, conceiving accessibility as an iterative process for continuous improvement, and resisting the uncritical evangelization of OA. The WI+RE team aims to reframe their design process, ensuring accessibility from the outset, and engaging in ongoing assessment and improvement. They advocate for collective responsibility in addressing accessibility and emphasize the importance of structural transformation beyond mere provision of open resources.		

436	1	3	Engaging Clinicians and Graduate Students in the Design and Evaluation of Educational Resources About Universal Design for Learning. The article discusses the imperative for speech-language pathologists (S-LPs) to be proficient in frameworks like Universal Design for Learning (UDL) to support diverse student abilities in Canadian schools. It highlights the need for educational resources to train S-LP graduate students in UDL principles, aiming to enhance their knowledge and application abilities. The study outlines the development of such resources using an instructional design model (ADDIE) and knowledge translation theory (Diffusion of Innovations), involving experienced school S-LPs. Delivery of these resources to 19 S-LP students showed positive perceptions and increased perceived knowledge of UDL. Findings suggest a gap between students' awareness and confidence in applying UDL, emphasizing the need for targeted education. The study also underscores the effectiveness of theory-driven approaches in resource development, advocating for collaborations between researchers and clinicians. The methodology presents a systematic process beneficial for educators and researchers in creating high-	teaching UDL to speech-language pathology students, applying UDL principles, educational interventions in promoting accessibility	https://www.cjslp.ca/detail.php?ID=1273&lang=en

			quality educational resources. Given the emphasis on inclusive education in Canada, the study addresses a crucial need for S-LPs to effectively implement UDL practices, thus bridging the UDL knowledge gap within the S-LP community.		
437	1	3	Special education teachers' perceptions of linking academics with transition goals and the Universal Design for Transition framework. The study examines the concept of Universal Design for Transition (UDT), which aims to integrate academic and transition goals for students with disabilities. Through focus groups, observations, and interviews with 9 special education teachers, perceptions and challenges regarding UDT implementation were explored. Data analysis revealed themes such as teachers' perceptions, strategies, influencing factors, and obstacles to UDT. Teachers acknowledged the importance of linking academic and transition goals but faced complexities in execution due to lack of support and resources. Previous studies corroborate these challenges. The study emphasizes the need for training and support for teachers and stakeholders to effectively implement UDT in inclusive classrooms. Opportunities such as	transition services for students with disabilities, Individualized Education Programs (IEP), Student-Directed Learning and Monitoring (SDLMI), inclusive classroom environments	https://doi.org/10.3233/jvr-180974

			Individualized Education Programs (IEP) and Student-Directed Learning and Monitoring (SDLMI) were identified as avenues for discussion and collaboration. Although definitions of good instructional practice varied, teachers expressed willingness to utilize evidence-based strategies. This underscores the importance of addressing teachers' beliefs and attitudes in promoting inclusive instructional methods. Overall, the study highlights the necessity of bridging theory to practice and providing adequate support to enhance the implementation of UDT for improved student outcomes.		
438	1	3	Making space for the misfit. The text delves into the author's transition from feeling like an outsider in graduate school to exploring accessibility and inclusion in academia. Through the lens of disability studies, they introduce the concept of "literate misfitting" to describe conflicts faced by individuals whose experiences don't align with academic norms. They advocate for attentive listening to reshape academia's norms, emphasizing disability as a generative identity. Utilizing disability studies methodology, they stress the interconnectedness of access, misfitting, and wonder, urging for a collective responsibility towards accessibility. The text	disability studies methodology, liberatory access, pedagogical approaches and accessibility in graduate education, english graduate programs	https://www.jstor.org/stable/10.2307/26870403

			discusses a survey designed to explore graduate student experiences, highlighting the complexities of disability disclosure and the need for diverse pedagogical approaches. It critiques traditional methods like class discussions and essays for their dominance and lack of adaptability, proposing a reevaluation to accommodate diverse learning styles. The term "reverse accommodation" is introduced, highlighting students' adaptation to existing structures rather than meaningful changes. Faculty are urged to engage in discussions about access and inclusion, challenging the notion that rigor and accessibility are opposing values. The text concludes by advocating for a more inclusive approach to graduate education in English, emphasizing ongoing collaboration and reflection with graduate students. It explores the impact of disability on future teachers and calls for a deeper integration of disability and access to promote social justice.		
439	1	3	Universal design for learning and multimedia technology: Supporting culturally and linguistically diverse students. The paper discusses the implementation of Universal Design for Learning (UDL) principles in three classroom projects aimed at supporting culturally and linguistically diverse (CLD) K-12	multiple means of access to learning materials, flexible curriculum, use of	https://www.researchgate.net/publication/283133330_Universal_design_for_learning

		students. UDL offers flexible options in curriculum and instruction to cater to diverse learner needs. Each project utilized readily-available software to create multimedia projects aligned with instructional goals and tailored to the needs of CLD students. The projects demonstrate how UDL checkpoints were addressed, emphasizing the use of digital media to enhance learning. Teachers are encouraged to design multimedia projects that incorporate scaffolds and supports for CLD students, fostering skill acquisition through creative processes. UDL offers a menu of options for lesson planning, allowing teachers to accommodate diverse learners' needs in objectives, strategies, and assessments. For instance, multimedia projects provide alternative assessment methods, such as oral narration for English language learners. The paper highlights the effectiveness of Video Self-Modeling (VSM) projects in improving reading fluency for ELL students and enhancing engagement through culturally-relevant texts. Research on UDL-based interventions indicates positive outcomes in various academic and affective domains, suggesting the potential of UDL to address the needs of CLD students. Further research is needed to explore how UDL-	digital media, alternative assessment methods	ing and multimedia technology Supporting culturally and linguistically diverse students

			based lessons can effectively meet specific learning outcomes for diverse learners.		
440	4	1	National accessibility requirements and standards for products and services in the European single market: overview and examples. The European Disability Strategy 2010-2020 emphasizes the importance of accessibility to goods, services, and assistive devices for people with disabilities as a fundamental aspect of societal and economic participation. ANED's Accessibility reports in 2012 provided crucial evidence regarding the current policy and legal landscape, aiding the European Commission in advocating for measures to enhance accessibility across the single market. While some European regulations address accessibility for certain products and services, significant disparities exist among countries, even regarding basic accessibility requirements. These differences extend to various essential services and products like telecommunication services, websites, and banking. Accessibility measures range from broad obligations to detailed technical specifications, impacting not only disabled individuals but also professionals, businesses, and public organizations involved in product	built environment, transport, information and communication technologies, e-commerce and banking, telephones, personal computers and software, e-books and digital publications, websites, self-service terminals and machines, banking services and ATMs, rail travel services, bus travel services, maritime travel services, air travel, broadcasting services, hospitality services	https://ec.europa.eu/social/BlobServlet?docId=14840&lang..

			design, manufacturing, and service provision. The absence of common accessibility standards poses challenges for manufacturers, suppliers, and consumers operating within the European single market, with implications for cross-border trade and distribution. The report underscores the need for clearer, more uniform accessibility guidelines and reference points to facilitate accessibility for all individuals across Europe.		
441	4	1	Mapping of accessibility and adoption of services and products. The document focuses on understanding factors affecting the accessibility and adoption of technological innovations, particularly emphasizing a Person-Centred Approach. This approach prioritizes meeting individual needs and involving them in decision-making regarding health or care. Activities such as focus groups, adoption case studies, and cross-border scalability assessments were conducted to map end-users' accessibility to technology and identify barriers and success factors. Findings highlight the influence of education, lifestyle, training, and environment on accessibility. Universal design, ensuring technologies are understandable and usable for all, is crucial. Barriers to adoption include technical issues and cultural factors. Case studies illustrate	ease of use, security, personalization understandable, usable and safe technologies	https://futurium.ec.europa.eu/it/active-and-healthy-living-digital-world/library/4-aha-deliverable-mapping-accessibility-and-adoption-services-and-products?language=it&check_log

		efforts to address challenges, such as virtual assistants for neurodegenerative diseases and wearable technology for monitoring muscle behavior. The document stresses the importance of person-centred design in increasing adoption and satisfaction. Various models, including the Web Accessibility Initiative (WAI) model, are discussed. The document also introduces a measurement tool for the person-centred approach, developed through a Design Thinking process, aiming to assess the impact on adoption. Validation of the tool was conducted, resulting in redesigns for simplicity and relevance. The completion of activities provides valuable insights for technology developers to achieve favorable accessibility and adoption outcomes. Empowering older people with necessary skills is crucial, despite ageism perpetuating negative stereotypes. The developed tool allows for predicting adoption levels, supporting scalability and sustainability efforts. The next step involves creating a scalability model based on insights gained, with the Person-Centred Approach remaining key.		ged in=1&title=&page=13

442	4	3	Needs and requirements of Students with Disabilities. The HEDforALL project endeavors to enhance the inclusion of Students with Disabilities (SwD) in Higher Education Institutes (HEI) by facilitating the development of digital competencies among academic personnel. This initiative addresses the diverse needs of SwD, including visual, hearing, physical/mobility impairments, and learning difficulties, particularly in the realm of accessible resources and the transition to digital education and e-Learning. The project aims to produce educational materials, development practices, and methodologies for distance education/e-Learning to be implemented in higher education settings. To achieve this, the project conducts comprehensive assessments to identify SwD's needs and requirements for accessible materials across various subjects/courses in higher education, as well as the specific demands posed by distance education. The report focuses on the activities and outcomes of the "Needs and requirements of Students with Disabilities" work package, which involves interviews and questionnaires with SwD groups. The qualitative analysis of interviews informs the design of questionnaires, which gather quantitative data on	accessible educational material, accessible printed material, accessible digital material, tactile material, audio tactile material, assistive technology devices, assistive technology software apps, mainstream technology, distance education, accessible platforms, examinations, lectures	https://hedforall.eu/wp-content/uploads/2023/10/hEDforALL-RES1_D.1.1-Needs_and_requirements_of_SwD_report_FINAL.pdf

			SwD's awareness of accessible materials, equipment needs, and preferences for educational formats. The findings underscore the importance of tailored approaches and assistive technologies in addressing SwD's educational needs, both in traditional and distance learning settings.		
443	4	3	Including Students with Impairments in Distance Education. Development of educational materials. The project aims to develop accessible Distance Education (DE) programs for individuals with Visual, Hearing, and Motor (ViHeMo) impairments. The objectives include creating inclusive DE models, fostering cooperation between organizations with expertise in accessibility and higher education (HE) modernization, and expanding HE's international reach through DE programs. Specific goals involve developing innovative DE programs, upgrading facilities for accessibility, enhancing staff capacity, involving ViHeMo individuals in program design, and ensuring effective course delivery. Regarding accessibility indices and standards, the project prioritizes meeting the needs of students with ViHeMo impairments in HE. It emphasizes web accessibility guidelines like WCAG 2.0 and ISO standards. Challenges	website accessibility, online courses, e-learning materials, e-learning systems in higher education, computer laboratory, library services, software, inclusive curriculum in DE, accessible books, powerpoint presentations, mathematical and chemical content, audio-visual-tactile content, video	https://www.inside-project.org/wp-content/uploads/2023/11/DEV2.1-Development-of-Educational-Materials.pdf

		include website inaccessibility in HEIs, especially for visually impaired students due to visual-centric designs. Recommendations include implementing assistive technologies, training staff, and designing accessible web content. The document discusses the pedagogical approaches for accessibility, accessible educational materials, recommended software, the availability of accessible books, accessibility of powerpoint presentations, the creation of accessible mathematical and chemical content, the production of tactile graphics, the creation of audio-visual-tactile content and video accessibility. Overall, the text provides a comprehensive overview of strategies and considerations for ensuring accessibility and inclusivity in educational materials, particularly in the context of distance education programs. It emphasizes the importance of leveraging technology and adopting appropriate tools to accommodate diverse learning needs.		

444	4	3	Including Students with Impairments in Distance Education. Guide on educational material in fully accessible form. The project aims to develop accessible Distance Education (DE) programs for individuals with Visual, Hearing, and Mobility (ViHeMo) impairments. Specific objectives include creating an inclusive DE model to address limited access and high dropout rates in Higher Education (HE), fostering collaboration between organizations experienced in inclusive HE and those modernizing HE for individuals with disabilities, and internationalizing local HE through DE programs. The Guide on Educational Material in Fully Accessible Form is the culmination of efforts within the InSIDE project, particularly in Work Package 2 (WP2). This guide provides comprehensive instructions for developing adapted educational material for individuals with visual, hearing, or mobility impairments. It outlines guidelines for various types of materials, including accessible e-books, presentations, PDFs, videos, mathematical and chemical equations, verbal descriptions of pictures, tactile pictures, and audio-tactile pictures. Additionally, the guide offers insights into tailoring educational material according to specific	texts/e-books, PowerPoint presentations, PDF documents, video, mathematical equations, chemical equations, verbal descriptions, tactile graphics, audio-tactile graphics	https://www.inside-project.org/wp-content/uploads/2023/11/DEV2.4-Guide-on-educational-material-in-fully-accessible-form.pdf

			impairments, such as blindness, residual vision, mobility impairments, and hearing impairments.		
445	4	1	Analysis of the results of the SME Panel consultation on the socio-economic impact of new measures to improve the accessibility of goods and services for people with disabilities. The European Commission, Directorate-General Justice conducted a survey through the Enterprise Europe Network from April to July 2012, focusing on mainstream accessible goods and services, aiming to understand industry perspectives on accessibility regulation and market issues. European SMEs providing accessible goods and services primarily cite corporate social responsibility, compliance with legislation, and potential for increased clientele and profitability as motivations. Challenges include understanding regulations, standards, and legislation, with training costs being a concern. Simplifying regulatory environments and standardizing accessibility requirements across the EU are crucial for market growth. Many SMEs perceive low additional production costs	mainstream accessible goods and services, corporate social responsibility/corporate image	https://ec.europa.eu/social/BlobServlet?docId=14843&langId=en

			for accessibility, offset by increased clientele and economic benefits. Lack of information, knowledge, and complexity of legislation are major obstacles. Confidence in the market potential for accessible goods and services varies, influenced by experience and knowledge of accessibility. Financial support, EU-funded training programs, and adoption of common standards are seen as vital for encouraging accessibility provision. Additionally, EU legislation mandating accessibility in public procurement and supporting self-regulation by the industry are considered important measures. These actions are viewed as complementary and necessary for improving SMEs' ability to provide accessible goods and services.		
446	4	1	Study on the socio-economic impact of new measures to improve accessibility of goods and services for people with disabilities. Public Consultation Analysis. The European Commission conducted a Public Consultation for the European Accessibility Act to improve goods and services accessibility. Citizens and organizations provided contrasting views on priority areas and barriers. Citizens highlighted transport, information, and the built environment as	accessible goods and services, effectiveness and success of accessibility legislation	https://ec.europa.eu/social/BlobServlet?docId=14841&langId=en

			problematic, while organizations focused on transport, ICT, and the built environment. Both groups agreed on the importance of involving disabled individuals in policymaking and enforcing legislation. Suggestions included policy measures, enforcement, and financial incentives, with emphasis on SME support. EU authorities were deemed crucial for setting standards and practices. Prioritized goods and services for accessibility included public buildings, websites, and transportation. Stakeholders called for unified EU criteria and enforcement mechanisms.		
447	4	1	Study on the socio-economic impact of new measures to improve accessibility of goods and services for people with disabilities. Final Report. The Final Report discusses the socio-economic impact of potential measures to enhance accessibility of goods and services for people with disabilities, commissioned by the European Commission. The report aims to inform the Impact Assessment for a European Accessibility Act. It identifies barriers in the Internal Market for accessible goods and services, emphasizing diverging regulatory obligations among Member States. Key areas like built environment, transport, and information technology are	goods and services, regulatory measures, national technical accessibility requirements, cross-border trade, built environment, transport, information technology	https://ec.europa.eu/social/BlobServlet?docId=14841&langId=en

			highlighted as crucial for accessibility. The report outlines four policy options, ranging from maintaining the status quo to implementing a Directive with full EU coverage. It evaluates their impacts on businesses, cross-border trade, competition, and societal groups. Policy Option 4, a Directive with full EU coverage, is deemed most favorable for societal benefits and competition, despite potential additional costs. The report underscores the importance of harmonizing accessibility requirements to unlock the full potential of the Internal Market and ensure equal participation for all.		
448	4	4	The road to inclusion. Integrating people with disabilities into the workplace. The document discusses the prevalence of disabilities in Canada, highlighting that about 13-14% of the population faces various disabilities. It emphasizes the importance of accessibility and inclusion in the workforce, noting the underrepresentation of people with disabilities and the need for practical solutions to integrate them. Various barriers and challenges are identified, including attitudinal, organizational, and physical barriers. The business case for diversity and inclusion is outlined, citing benefits such as addressing talent shortages and better reflecting the market.	inclusive workplaces, training programs	https://accessibilitycanada.ca/wp-content/uploads/2016/01/The-Road-to-Inclusion-Integrating-people-with-disabilities-into-

			Recommendations are provided for organizations to promote inclusivity, such as revising recruitment processes, providing accommodations, and fostering open dialogue. The goal is to create a workplace culture that values and supports all employees, including those with disabilities, ultimately contributing to a more diverse and productive workforce.		the-workplace-Deloitte.pdf
449	4	4	How can banks better serve people with disabilities, and why the time is now. The Deloitte Center for Financial Services conducted a survey of 1,000 people with disabilities and 1,000 caregivers to understand the challenges faced by people with disabilities in banking experiences. The survey, conducted in May and June 2022, aimed to highlight basic struggles faced by people with disabilities and opportunities for banks to provide more equitable experiences. The results indicated that while some progress has been made, there is room for improvement. Banks like Capital One, M&T Bank, Citibank, and Goldman Sachs have been recognized for their efforts in hiring and supporting employees with disabilities. However, more can be done to meet the needs of customers with disabilities. Banks have made physical banking facilities more accessible, but there is a need for more inclusive design	financial inclusion initiatives, workplace diversity, equity, and inclusion (DEI) programs, accessible financing, banking facilities, equity-centered design	https://www2.deloitte.com/us/en/insights/industry/financial-services/accessible-banking-for-disabled.html

			in digital channels. Suggestions include tailored financial products, improved financial literacy programs, and innovative credit options. Banks should also focus on redesigning physical spaces and digital interfaces to enhance accessibility. Emerging technologies like generative AI and the metaverse hold promise but require careful consideration to avoid perpetuating biases. Self-identification programs and training for staff to recognize and accommodate the needs of people with disabilities are also recommended. Overall, a multifaceted strategy, including organizational commitment and learning from the experiences of employees with disabilities, is essential for banks to better serve this growing market.		
450	4	3	Activet. Resource Pack Toolkit. Intellectual Output Two. The ACTI-VET toolkit provides VET educators of people with disabilities with guidelines for training methods, objectives, learner typology, and evaluation criteria. It aims to equip educators with non-formal education tools to enhance teaching, showcasing national best practices. The toolkit focuses on developing pedagogical and personal skills, including digital skills, through interactive activities. Based on a competencies framework, it covers nine competency areas.	inclusive work environments, training methods for VET educators, non-formal education tools for VET educators, employment integration	https://www.acti-veterasmusplus.org/files/ugd/979ad2_430fd830acf943e5bef3af8e54b558dd.pdf

			The manual aims to aid trainers in adapting workplaces to existing disabilities, matching job requirements with developed competences. It emphasizes the need for personalized adaptation techniques considering the benefits for both trainees and employers. Different disabilities require tailored training approaches to meet job objectives while considering personal limitations. The document identifies five main types of learners based on disability type, providing examples of adaptation techniques like pictograms or reminders. Best practices from Belgium, Bulgaria, Italy, and Poland highlight initiatives promoting diversity, inclusivity, and employment opportunities for individuals with disabilities. These practices underscore collaborative efforts among governments, organizations, and employers to create inclusive work environments, recognizing the unique talents and skills of people with disabilities.		
451	4	3	ACTINBOOK. Recognition and validation of informal and non-formal learning within work-based learning schemes. ACTINBOOK was developed to enhance Work-Based Learning (WBL) programs for disabled individuals, aiming to improve their quality and effectiveness. The project aims to	Work-Based Learning (WBL) Programs, lifelong learning activities based on WBL schemes, apprenticeships/traineeshi	https://www.acti veterasmusplus.org/files/ugd/979ad2_c88f6f2ac

			promote lifelong learning through WBL schemes, facilitating the recognition of non-formal/informal learning at a European level. This handbook intends to support VET organizations in reflecting on current recognition/validation practices, enabling vocational counselors to deliver a quality recognition service. By measuring learning outcomes, the toolkit seeks to enhance the employability of young disabled individuals. WBL programs offer opportunities for hands-on work experience, skills training, and soft skill development such as communication and teamwork. They empower disabled individuals to make informed career decisions and succeed in the workforce. Additionally, mentoring and coaching provided through WBL programs contribute to personal and professional growth. The second chapter discusses national strategies in countries like Portugal, Italy, Bulgaria, Belgium, Poland, and Spain to improve disabled individuals' access to employment and skills development. These strategies vary across Europe, reflecting different approaches to skills recognition and validation.	ps, recognition/validation practices of non-formal /informal learning, hands-on work experience	bf14b8aa5b1999a69aa7194.pdf
452	4	5	Development of a Relief Printer Medium. Part I: Theoretical Considerations. The text describes a new method for producing reliefs that combines virtual and physical elements.	physical reliefs, tactile artifacts	https://ec.europa.eu/programmes/erasmus-

			Unlike traditional methods involving sculptors or CNC milling machines, this method is faster and more cost-efficient. It utilizes a medium that can be erased and rewritten, allowing for multiple prints without material waste. The process can also create durable copies if needed. The proposed method is suitable for on-demand printing, making it useful for museums, schools, and individuals. It aims to produce tactile outputs quickly, catering to both visually impaired and sighted individuals for tasks like 3D design previews and topographical map work. Inspired by pin-screen toys, the design features rods arranged in a grid, with adjustable framing structures to fix the rods in place. The initial prototype, created in 2010, demonstrated the feasibility of the concept and led to further development. The next prototype aims for a rectangular shape, which is more practical for printing various images.		plus/project-result-content/05f0e494-7b96-4df7-b1b2-631e41413e48/Development_of_a_Relief_Printer_Medium_part_I_final_disclaimer.pdf
453	4	5	Development of a relief printer medium - Part II: Prototyping phase. The document outlines the practical part of AMBAVis project, the prototyping phase. The prototypes, six in total, progressively increased in size and pin count, with five still in existence. Notably, the new medium outperforms existing ones in various aspects. Material properties of the	physical reliefs, tactile artifacts, relief materials	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/58fb51a

			pins, particularly weight, are emphasized, with spaghetti noodles identified as a viable option despite some brittleness. A hexagonal grid structure was selected for optimal information density. A robust framing structure meeting all requirements was developed, with plans for further improvements utilizing custom components and different force application methods. Precision cutting methods, including laser cutting and sanding, ensure uniformity in pin size. The final prototype demonstrates exceptional performance, enabling detailed reliefs and stability comparable to solid materials. Positive feedback from initial testing underscores the concept's promise, with future work focusing on refining the frame and printing mechanics.		<u>e-721e-4e62-b583-23aea759c2eb/Development of a Relief Printer Medium part II final disclaimer.pdf</u>
454	4	1,2	Design for Participation and Inclusion will Follow: Disabled People and the Digital Society. The author's thesis explores the critical role of design processes in fostering equal participation in the digital society, particularly for marginalized groups such as those with cognitive impairments, mental health issues, and homelessness. Through collaborative research with these communities, the author investigates the challenges they face in accessing and utilizing digital resources, aiming to understand the prerequisites for their	Digital Accessibility, User-centered methodology, Participatory design, Value sensitive design, Co-creation	<u>https://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A1362526&dswid=-6415</u>

			participation in the digital realm. Drawing on a dialectic interplay between empirical data and interpretation, the author employs adapted versions of participatory research methods to ensure accessibility and empowerment. The research identifies fourteen prerequisites for participation and proposes a framework comprising Guidelines, Ethics, and Statistics to guide future investigations. Ultimately, the author advocates for inclusive design practices and emphasizes the importance of planning for participation to achieve true digital inclusion.		
455	1	1,2	Co-Designing with Extreme Users: A Framework for User Participation in Design Processes. This study addresses the growing demand for user participation in design processes, particularly focusing on involving disabled users and their representative organizations. Grounded in participatory design and value-sensitive design theories, the study aims to develop a framework for user participation in co-design processes, incorporating a diverse range of user characteristics. Through online workshops and iterative data collection and analysis using an online Miro-board, participants collaboratively identify themes and formulate guiding principles for the framework. The proposed framework comprises three themes: participation	Digital Accessibility, User-centered methodology, Participatory design, Value sensitive design, Co-creation	https://doi.org/10.16993/sjdr.952

			fundamentals, participation ethics, and participation practicalities, encompassing 11 guiding principles. By applying this framework, design processes can become more accessible, transparent, and equitable, enabling all users, including those with disabilities, to contribute effectively to designs usable by a broad spectrum of people.		
456	1	1,2	User Participation When Users have Mental and Cognitive Disabilities. This paper addresses the challenges faced by individuals with cognitive or mental disabilities in participating in IT development and assessment exercises, often due to difficulties in collaborating on equal terms. Collaborating closely with individuals who have mental and cognitive disabilities, the study involved over 100 participants with diagnoses such as depression, anxiety disorder, bipolarity, and schizophrenia. The aim was to explore methods for enabling more equitable and fair participation in the development of Information and Communication Technology (ICT) products and services. Through a combination of scientific research methods and established empowerment and participation approaches, the study developed cost-effective methods that could easily integrate into existing processes. The approach	Digital Accessibility, User-centered methodology, Participatory design, Value sensitive design, Co-creation	https://doi.org/10.1145/2700648.2809849

			aimed not only to prevent discrimination and exclusion but also to enhance the overall quality of the end result. The results demonstrate the feasibility of including individuals with mental and cognitive disabilities in participatory processes, thus paving the way for greater inclusivity and improved outcomes.		
457	1	1	Including intellectual disability in participatory design processes: Methodological adaptations and supports. This paper advocates for the meaningful inclusion of people with intellectual disabilities in design processes aimed at enhancing their independent living. They propose extending and adapting existing co-design methods to fully incorporate this community into user-centered design processes. Over a three-year period, the study presents a series of methods and adaptations conducted within the context of inclusive research. The co-design process is structured into four phases: preparation, fieldwork, ideation, and validation. Throughout these phases, the authors identify and implement adaptations and supports to facilitate the participation of people with intellectual disabilities in research and design processes. These adaptations encompass modifications in content, structure, and operation. The paper represents an initial but	Participatory design, User-centered methodology, Value sensitive design, Co-creation	https://doi.org/10.1145/3385010.3385023

			comprehensive effort to distill transferable knowledge for effectively involving people with intellectual disabilities as valuable members of design teams.		
458	1	1	Participatory Design in Human-Robot Collaboration for People with Motor Disabilities: Challenges and Lessons Learned. In this paper, the potential of human-robot technology is highlighted to positively impact the lives of people with motor disabilities, while underscoring the current lack of emphasis on incorporating user input in the development process. They advocate for a holistic perspective that centers on participatory design in Human-Robot Collaboration (HRC) for People with Motor Disabilities (PWMD). Drawing from their involvement in multiyear projects focused on HRC for PWMD, the authors identify various challenges related to planning, stakeholder preferences, participatory design techniques, technology exposure, and ethical considerations. From these challenges, they distill five key lessons learned, which they propose as guidelines for researchers, especially early-career researchers venturing into HRC research for individuals with disabilities. This paper aims to bridge the gap between technological advancements and user needs, emphasizing the	User-centered methodology, Motor disabilities, Participatory design, Human-robot technology, Holistic perspective, Ethical considerations.	https://doi.org/10.1145/3453892.3458044

			importance of inclusive design practices in improving the efficacy and usability of human-robot technologies for people with motor disabilities.		
459	1	1	Participatory design with individuals who have amnesia. The authors share their experiences and insights gained from participatory design sessions with individuals suffering from anterograde amnesia, which severely impairs their ability to form new memories. They discuss their approach to designing the design process itself and introduce a set of techniques aimed at supporting memory during and between design sessions. Through this process, they identify cognitive assumptions inherent in participatory design that prove challenging when working with individuals with amnesia. Drawing from their experiences, the authors develop an analytical framework applicable to researchers and practitioners intending to engage in participatory design with individuals with various cognitive impairments. They illustrate the framework by analyzing a cognitive deficit unrelated to memory encountered during their work and highlight unexpected benefits stemming from apparent liabilities in collaborating with this specific design team. This paper offers	Participatory design, User-centered methodology, Anterograde amnesia, Memory impairment, Cognitive impairments, Design process	https://doi.org/10.1145/1011870.1011895

			valuable insights into adapting participatory design methodologies to cater to the needs of individuals with cognitive impairments, ultimately enhancing inclusivity in design processes.		
460	1	2	Co-design process of a smart phone app to help people with down syndrome manage their nutritional habits. This article details the user-centered design process for creating a smartphone app aimed at assisting people with Down syndrome (DS) in making healthier food choices while dining out. The development draws from various fields including human-computer interaction (HCI), interface accessibility for individuals with DS, persuasive computing, and nutrition. Through two focus groups and three design workshops involving 10 adults with DS and their caregivers, data was collected to inform the app's design. Feedback from a multidisciplinary team, including computer scientists, medical professionals, geneticists, neuropsychologists, and dietitians, further refined the conceptual design. The article discusses key features and areas of concern identified during the process and presents implications for user-centered design, interface designers, and dietitians. Overall, the app aims to empower	User-centered methodology, Design process, User-centered design, Smartphone app, Down syndrome (DS), Food, Human-computer interaction (HCI)	-

			individuals with DS to make informed nutritional decisions while dining out, bridging the gap between HCI and healthcare expertise.		
461	1	1	Co-designing with Adolescents with Autism Spectrum Disorder: From Ideation to Implementation. This study examines the involvement of adolescents with Autism Spectrum Disorder (ASD) as co-designers in an iterative software design process. Through seven co-design workshops conducted over eight months, six adolescents with ASD participated in exchanging ideas and communicating through group discussions and drawings. The study reveals the pivotal role of parents, community groups, and fellow participants in supporting longitudinal ASD co-design studies. Furthermore, it indicates that adolescents with ASD can make significant contributions to design decisions over the course of an iterative software design process. These findings underscore the importance of considering various support mechanisms and recognizing the capabilities of adolescents with ASD when involving them as co-designers in software design processes.	User-centered methodology, Co-design, Autism Spectrum Disorder (ASD), Adolescents, Design process, Iterative design	https://doi.org/10.1145/3369457.3370914

462	1	1,2	Designing technology for children with special needs: bridging perspectives through participatory design. This article presents and discusses co-creation techniques for involving children in the design of a technologically enhanced learning environment. The ECHOES project, which involves both typically developing children and children with autism spectrum conditions, aims to create an environment that scaffolds the development of children's social skills. The authors draw attention to the constraints and limitations of co-designing new technologies, which are by necessity interdisciplinary, and describe experiments with sensory interest and storytelling to bridge tensions between system design and the imaginary worlds of young children. Related work is reviewed, where children with special needs have been included in the design process, and a series of design activities implemented in ECHOES is described. Reflecting on these experiences, key themes are identified that may be of interest to practitioners and researchers who work with children in inclusive design contexts. These themes address the role of theory, the impact of technology, the support of creativity, the	User-centered methodology, Participatory design, Technologically enhanced learning environments, Autism spectrum conditions, Children, Co-creation	https://doi.org/10.1080/15710882.2011.587013

			validity of inspiration and the design of non-digital generative tools to harness children's imagination.		
463	1	1,2	Thinking OutsideTheBox - Designing Smart Things with Autistic Children. This article provides an overview and critical reflection on the OutsideTheBox research project, which aimed to develop digital technology that could comprehensively address the diverse life experiences of autistic children, fostering positive shared experiences. Over a 3-year period, smart objects were individually developed with nine children through extensive participatory design processes. Various methods such as Co-operative Inquiry, Future Workshops, Fictional Inquiry, Magic Workshops, Drama, and Making & Digital Fabrication were employed. The article presents case studies of each child involved and connects them through a critical reflection. The discussion highlights insights across three main themes: advocating for a theoretical shift in conceptualizing the roles of technology in the lives of disabled individuals, methodological contributions in	User-centered methodology, Assistive technology, Autistic children, Digital technology, Participatory design, Co-creation	https://doi.org/10.1080/10447318.2018.1550177

			participatory design processes, and proposing alternative, participatory approaches for evaluating outcomes.		
464	1	1	Co-Designing Assistive Tools to Support Social Interactions by Individuals Living with Deafblindness. This work focuses on addressing the challenges faced by individuals living with deafblindness, a dual sensory impairment that significantly impacts various aspects of life, including mobility, access to information, communication, and social interactions. The study identifies opportunities for leveraging assistive tools to support social interactions through collaborative ideation activities with members of the deafblind community. The paper outlines the co-design approach employed, highlights lessons learned from the process, and proposes directions for designing assistive tools that meaningfully address the needs of individuals with dual sensory loss.	User-centered methodology, Deafblindness, Dual sensory impairment, Assistive tools, Social interactions, Participatory design, Co-creation	https://doi.org/10.1145/3393914.3395869
465	1	1	ID4IDS Methodology: Toward Inclusive Design for Individuals with Down Syndrome. This paper discusses the challenges faced by a research group working with a local NGO to improve expressive language, reading, and writing	User-centered methodology, Inclusive design, Down Syndrome (DS), Reading skills,	https://doi.org/10.1145/3240925.3240952

			skills among children with Down Syndrome (DS) from low-income families in Mexico. The group has encountered difficulties in finding an appropriate design methodology that can effectively incorporate the input of parents, therapists, and children with DS. In response, they introduce the ID4IDS Methodology, an inclusive design methodology aimed at developing technology-driven prototypes to support children with DS, their parents, and therapists. This methodology is expected to facilitate the creation of tailored solutions that address the diverse needs of all stakeholders involved.	Writing skills, Design process, Stakeholder involvement	
466	1	1	EAST: Early Autism Screening Tool for Preschoolers. The paper outlines the development and evaluation of EAST, an early autism screening tool designed for preschoolers in Pakistan. Utilizing an iterative co-design process, EAST is an interactive tablet app aimed at detecting Autism Spectrum Disorder (ASD) through play-based activities. Medical professionals, parents of autistic children, and teachers were consulted via focus groups to identify factors contributing to missed early detections and misdiagnoses. The tool's acceptability, usability, and validity were evaluated through testing with both typically developing and autistic children,	User-centered methodology, Early autism screening, Co-design, Interactive tablet app, Autism Spectrum Disorder (ASD), Preschoolers, Pakistan, Play-based activities, Focus groups	https://doi.org/10.1145/3313831.3376164

			assessing various aspects of their behavior and responses. The paper emphasizes EAST's potential to provide valuable insights into child behavior and foster collaboration among parents, teachers, and medical professionals.		
467	4	1,3	ToMtool: An Interactive Multimedia Application to Support Training of Emotion Recognition and Theory of Mind Skills to Children with Autism Spectrum Disorder. This paper introduces ToMtool, a software designed to aid special education practitioners in assisting individuals with Autism Spectrum Disorder (ASD) to enhance their recognition and expression of emotions, as well as their Theory of Mind (ToM) skills. ToMtool focuses on playful learning and personalized instruction tailored to the specific needs of each child, targeting basic emotions initially and with potential for expansion to more complex ones. Developed through a user-centered design approach involving speech and language therapists, psychologists, and special educators, ToMtool underwent iterative improvements based on semi-structured interviews and formative usability evaluations. A preliminary evaluation	User-centered methodology, Assistive technology, Autism Spectrum Disorder (ASD), Theory of Mind (ToM), Emotions, Education, Assistive tool, User-centered design, Playful learning, Usability evaluation	https://doi.org/10.1145/3575879.3575997

			study of the final version indicated positive user feedback and identified areas for further enhancement.		
468	1	1,2, 3,4	Digital Accessibility Education in Context: Expert Perspectives on Building Capacity in Academia and the Workplace. This paper investigates the intersection of the social model of disability, accessibility legislation, and the digital transformation catalyzed by COVID-19, revealing gaps in accessibility capacity within the workforce. Through a socio-cultural lens, it explores how the educational and training contexts impact teaching and learning in both university and workplace settings, particularly regarding accessibility. Qualitative research involving 55 experienced educators through expert panels and focus groups uncovers challenges such as cultural disconnects, individualized responsibility, disciplinary silos, and role-based limitations. The analysis suggests that fostering centers of excellence and communities of practice can bridge gaps, promote interdisciplinary learning, and cultivate a shared understanding of accessibility as a collective effort between academia and industry.	Digital accessibility, Social model of disability, Accessibility legislation, Digital transformation, Work, Socio-cultural lens, Education	https://doi.org/10.1145/3649508

469	1	1,2	Digital Accessibility at the Brazilian Symposium on Human Factors in Computing Systems (IHC): An Updated Systematic Literature Review. Brazil's enactment of Law No. 13,146 in 2015, known as the Statute of Persons with Disabilities, expanded rights for individuals with disabilities, including in digital accessibility. This paper presents findings from a Systematic Literature Review of papers from the Brazilian Symposium on Human Factors in Computing Systems (2016-2022) to assess the impact of digital accessibility initiatives post-law. Out of 406 papers analyzed, 91 (22.4%) were selected. Visual impairment emerged as the most addressed theme (present in 33 papers), with 254 researchers working on this topic across Brazil and other countries. Notably, only 23% of the papers mentioned any laws, indicating potential neglect or lack of awareness regarding Brazilian accessibility legislation.	Legislation effect, systematic literature review, Digital Accessibility, Brazil	https://doi.org/10.1145/3638067.3638075
470	1	2	An Overview of Researches on Digital Accessibility before and after the Great Challenges of SBC 2006-2016: A Systematic Literature Review. The Brazilian Computer Society (SBC) identified digital accessibility as a crucial	Digital Accessibility, Progression assessment	https://doi.org/10.1145/3160504.3160537

			challenge for computing in Brazil between 2006 and 2016. They aimed to promote universal access to knowledge for Brazilian citizens through participative means. A decade later, there's a need to assess the progress made in digital accessibility research in Brazil. This assessment serves to showcase investments and advancements in this field, highlighting its significance for social inclusion and technological development. This work provides a comparative analysis of digital accessibility research conducted in Brazil over the past twenty years, focusing on the period before and after SBC's challenge. By examining the evolution of research initiatives, it aims to underscore the importance of continued investment in digital accessibility in Brazil.		
471	1	1	What Do We Mean by “Accessibility Research”?: A Literature Survey of Accessibility Papers in CHI and ASSETS from 1994 to 2019. This study examines the growth and trends in accessibility research by analyzing papers presented at CHI (Computer-Human Interaction) and ASSETS (The ACM SIGACCESS Conference on Computers and Accessibility) conferences since ASSETS' inception in 1994. The analysis focuses on papers published over the past	Accessibility research, Trends Analysis, Visual impairment, Accessibility for Blind and Low Vision	https://doi.org/10.1145/3411764.3445412

			decade (2010-2019) and encompasses a total of 506 papers, with additional insights drawn from a dataset covering 26 years and 836 papers in total. Through qualitative coding, the study identifies areas of emphasis, methodological approaches, and common characteristics in accessibility research. Key findings include the disproportionate attention given to certain accessibility issues, such as those affecting blind and low vision individuals, and common study characteristics like participant demographics and sample sizes. The study concludes with a critical reflection on gaps in the literature and provides guidance for future research directions in the field of accessibility.		
472	1	1,2	Developer Assistance Tools for Creating Native Mobile Applications Accessible to Visually Impaired People: A Systematic Review. This systematic review explores the current state of tools available to assist developers in creating mobile applications that are accessible to people with visual impairments. Despite the existence of guidelines and standards for accessibility, there are still challenges in ensuring mobile app accessibility. The review aims to identify tools that can automate the process of integrating accessibility features	Digital accessibility, Visual impairment, mobile applications, development tools, guidelines, standards, systematic review, automation	https://doi.org/10.1145/3274192.3274208

			into mobile apps, and to characterize their usefulness and technological maturity within the development process.		
473	1	1,2	Accessible Web Development: Opportunities to Improve the Education and Practice of web Development with a Screen Reader. This article presents research exploring accessibility issues in web development for individuals using screen readers, particularly focusing on blind learners and programmers. Through a Comprehensive Literature Review (CLR) and interviews with blind programmers, the study identifies five issue categories: visual information without an accessible equivalent, orienting, navigating, lack of support, and knowledge and use of supportive technologies. Blind web developers face challenges in accessing educational materials, wireframing software, verifying CSS, and navigating developer tools. Strategies include seeking alternative materials, using CSS frameworks, collaborating with sighted colleagues, and avoiding certain tasks. The research emphasizes the need for greater awareness and application of accessibility best practices in web education, dissemination of screen reader strategies and accessible tools, and	Digital accessibility, Accessible web development, accessibility, screen readers, blind learners, programmers, literature review	https://doi.org/10.1145/3458024

			development of new tools supporting web design and CSS validation.		
474	1	1,2,3	Online learning accessibility during the COVID-19 pandemic. Amid the COVID-19 pandemic, schools swiftly transitioned to online learning, raising concerns about accessibility for students with disabilities. This paper reviews 14 studies spanning 11 years on e-learning accessibility to glean insights applicable to improving online platforms during crises like COVID-19. Recommendations include fostering accessibility cultures, supporting educators as content creators, and raising awareness of diverse disabilities to mitigate opportunity gaps. The lessons learned should inform ongoing efforts to enhance accessible education beyond the pandemic.	COVID-19, Online learning, Digital accessibility, Students with disabilities, Elementary education, Middle school, high school, E-learning	https://doi.org/10.1145/3430263.3452445
475	1	1	The purpose of play: How HCI Games Research Fails Neurodivergent Populations. This review examines 66 publications in Human-Computer Interaction Games research, informed by Disability Studies and Self-Determination Theory,	Play, Human-Computer Interaction (HCI), User-centeredness, Neurodivergence,	https://doi.org/10.1145/3432245

			to understand how games cater to neurodivergent players. The analysis reveals that existing games primarily target children in educational and medical contexts, following a top-down approach driven by factors external to neurodivergent interests. These games often adopt a medical model of disability, lacking support for the self-determination of neurodivergent players and limiting their immersion opportunities. The study aims to provide insights into current trends and opportunities for future research to better accommodate neurodivergent players without framing their differences as deficits.	Disability Studies, Social model of disability, Immersive experience, Self-Determination Theory, Educational setting	
476	1	2	Experiences of People with Visual Impairments in Accessing Online Information and Services: A Systematic Literature Review. This paper systematically reviews challenges faced by people with visual impairments in accessing online information and services, along with the role of accessibility technologies and guidelines in supporting them. It identifies three main categories: inaccessible content, improving website accessibility, and the benefits and limitations of accessibility technologies. Usability issues, mitigation attempts, guidelines, and tools for web designers are	Digital accessibility, Visual Impairments, Accessible Technologies, Web Designer Perceptions, Guidelines and Tools	https://doi.org/10.17705/1pais.11203

			discussed, emphasizing the need for designers to change perceptions and accommodate accessibility technologies. The study highlights gaps for future research, including digital exclusion issues, web designer reluctance, and improvements to accessibility technologies.		
477	1	2	Factors Affecting the Accessibility of IT Artifacts: A Systematic Review. This paper examines accessibility barriers encountered by users when interacting with information technology (IT) artifacts, despite improvements in awareness and development. Through a systematic literature review, it identifies management- and development-level factors, as well as user perspective factors, affecting accessibility for various populations. The study highlights the need for integrated solutions to address these barriers and synthesizes factors and solutions essential for creating accessible IT artifacts.	Digital accessibility, Accessible Information Technology (IT), Accessibility barriers, Management-Level, Development-Level,	https://doi.org/10.17705/1CAIS.05129
478	1	2	This systematic literature review of the application of information communication technology for visually impaired people. A systematic literature review examined the state of Information Communication Technology (ICT) projects	Digital accessibility, E-accessibility, Assistive tech adoption, ICT for Visually impaired,	https://doi.org/10.1017/idm.2016.6

			aimed at assisting the visually impaired (VI) community. Despite technological advancements offering promising solutions, there are fewer ICT projects for VI individuals compared to other groups. The review analyzed 37 articles published between 2010 and 2015, identifying three key areas: assistive technology, e-accessibility, and virtual interfaces. Collaboration among healthcare professionals, caregivers, programmers, engineers, and policymakers is recommended to address outstanding issues and develop future ICT projects for VI individuals.	Recommendation for collaboration	
479	1	2	Accessibility engineering in web evaluation process: a systematic literature review. This paper presents a systematic literature review (SLR) focused on web accessibility in the web evaluation process, covering the period from 2010 to 2021. Reviewing 92 primary studies, it highlights the contributions of literature to different phases of the web evaluation process, particularly in framework design and testing. It aims to offer new insights for web designers and developers, providing updated perspectives on methods,	Digital accessibility, Web Accessibility, Web Evaluation Process, Framework design, Accessibility testing	https://doi.org/10.1007/s10209-023-00967-2

			techniques, tools, and challenges to enhance accessibility in web-based solutions.		
480	1	2	Digital accessibility in the era of artificial intelligence—Bibliometric analysis and systematic review. This systematic review examines the role of artificial intelligence (AI) in improving digital accessibility for individuals with disabilities, focusing on academic articles from 2018 to 2023. Findings reveal a predominant focus on AI-driven accessibility for visual impairments, indicating a significant gap in addressing other disabilities, such as speech and hearing impairments. The study emphasizes the need for a broader research focus and improved data collection efforts to ensure equitable support for all disability communities. It also underscores the importance of adhering to accessibility standards in designing AI-driven solutions for individuals with disabilities.	Accessibility in Artificial Intelligence (AI), Digital Accessibility, Disability representation, Accessibility standards for AI development	https://doi.org/10.3389/frai.2024.1349668
481	1	1,2	Benefits and development of assistive technologies for Deaf people's communication: A systematic review. This systematic review aims to identify assistive technologies that enhance communication between Deaf and hearing individuals. Utilizing the PRISMA checklist, the study analyzed	Digital accessibility, Assistive Technologies, Deaf Communication, Sign Language, Automatic caption generators	https://doi.org/10.3389/feduc.2023.1121597

			492 documents from databases like Scopus, Web of Science, and PubMed, with 27 meeting inclusion criteria. Technologies identified include gesture recognition for sign language translation, sign language teaching tools, automatic caption generators, online content-based solutions, and text and illumination networks. Findings suggest a need for further research into the motivations behind developing sign language technologies, promoting inclusion of Deaf communities without linguistic impositions.		
482	1	2,3	Emerging Themes for Digital Accessibility in Education. This study aims to identify gaps in digital accessibility within education and explore emerging themes based on six dimensions of accessibility defined by previous literature. The paper also attempts to define the concept of digital accessibility within the context of education. Findings are discussed across six dimensions of accessibility presented in previous accessibility research, revealing gaps in research coverage, particularly regarding attitudinal dimensions. Additional search efforts were required to incorporate attitudinal dimensions,	Digital accessibility, Education, Digital accessibility definition, Attitudinal dimensions	https://doi.org/10.3390/su151411392

			addressing stigma and discrimination faced by individuals with disabilities in digital education.		
483	1	1,2	Methodology for heuristic evaluation of the accessibility of statistical charts for people with low vision and color vision deficiency. Statistical charts play a crucial role in various fields such as education, scientific research, and journalism, serving to convey, clarify, and simplify complex information. However, despite significant advancements in digital accessibility, these charts remain challenging for individuals with low vision and color vision deficiency (CVD). As a result, these individuals often encounter barriers that hinder their access to and understanding of charted data. This research aims to create a heuristic set of indicators for evaluating the accessibility of statistical charts, focusing on the needs of people with low vision and color vision deficiency (CVD). Based on a methodology by Quiñones et al., the study involves literature review, analysis, heuristic selection and refinement. The final set of 18 indicators addresses the needs of users with low vision and CVD, filling a gap in accessibility research for statistical charts.	Digital Accessibility, Statistical Charts, Visual impairment, Color Vision Deficiency (CVD), Heuristic Evaluation, Accessibility Indicators	https://doi.org/10.1007/s10209-021-00816-0

484	1	2	Interface Design for users with low scholar and low literacy: the ECHO Project. This study, conducted as part of the "ECHO: echoing the communal self" research project in Vila Nova de Gaia, Portugal, focuses on designing an interface for an online platform aimed at documenting and disseminating self-initiated practices in social housing neighborhoods. With a significant portion of the community having low education and digital literacy levels, the study aims to develop design guidelines to ensure a pleasant and effective user experience for everyone. Usability tests confirmed the efficacy of the proposed guidelines, contributing to addressing the accessibility challenges faced by low-literacy users. A reflection on recent literature regarding the identification and characterization of low literacy users underscores the complexity and lack of consensus in defining this target audience, stretching from low education, cognitive diagnosis, and lack of digital literacy, emphasizing the importance of considering various perspectives and definitions in interface design.	Digital accessibility, Digital literacy, Cognitive disability, Design for all, Neurodivergence, Accessible interface design, Accommodating “low-literacy” users	https://doi.org/10.53681/c1514225187514391s.32.229

485	4	5	Top-Down Finger Tracking on Relief Surfaces for Interactive Content Exploration. Evaluation of Existing Technology. The study discusses the development of a digital touch interface for physical objects, aimed at providing interactive experiences and information during haptic interactions with tactile materials. The proposed interface utilizes tracking sensors, such as Microsoft Kinect or Leap Motion, to detect hand and finger movements on exhibits without requiring any modifications to the objects themselves. Two main approaches are highlighted: Digital Touch Replicas, which integrate touch sensors into exhibits, and purely virtual haptic interaction devices like Probos. However, both approaches have limitations in terms of physical modifications and haptic qualities. The proposed solution aims to bridge this gap by leveraging emerging tracking sensors to enable precise hand and finger detection on physical objects. This would allow for interactive exploration through position-specific audio comments, triggered by touch events and gestures. The review evaluates various tracking cameras and software projects specialized in finger and hand tracking. It explores devices like Leap Motion, Microsoft Kinect, and Intel RealSense,	Digital touch interface, accessible exhibits, tracking cameras, software solutions for finger and hand tracking	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/0ce8b186-f2e2-46bd-817d-36b104af8419/Finger_Tracking_Evaluation_of_Device_final_disclaimer.pdf

			discussing their capabilities, advantages, and limitations for the intended application. Based on the evaluation, the Intel RealSense F200 is identified as the most suitable device for the project due to its high-quality depth measurements and suitable working range. However, existing software solutions for finger and hand tracking are found to be insufficient for surface interaction, necessitating the development of custom tracking software. In conclusion, while there is no optimal device or software solution available on the market, the review suggests that the proposed digital touch interface concept is feasible and promising, with the potential for further development and refinement in the future.		
486	4	3	Recommendations on the inclusion of accessibility in curricula for higher education programmes. The report discusses the ADORE project's findings and recommendations, focusing on integrating accessibility training into higher education curricula, particularly in communication studies. It outlines the project's efforts, connecting to its five Intellectual Outputs (IOs). The report emphasizes creating six tailored itineraries for different professional profiles within communication sciences to introduce accessibility concepts	Inclusive and accessible learning environment in communication sciences studies, accessibility training into higher education curricula	https://www.funka.com/contentassets/a59218f8cd1e4cc4bd4f89cfac8cae66/adore-io5---recommendation-s-on-the-inclusion-of-

			relevant to each profile's competencies and interests. It highlights accessibility's importance across eleven communication sciences disciplines and concludes with policy proposals for institutions and policymakers to include accessibility training in communication programs.		accessibility-in-curricula-for-higher-education-programmes.pdf
487	4	1	ADORE. Policy and legislation. The European Union (EU) bases its accessibility policies on the UN Convention on the Rights of Persons with Disabilities (UNCRPD), ratified by both member states and the EU itself. The European Commission develops strategies to implement activities supporting the UNCRPD, such as the Strategy for the rights of persons with disabilities 2021-2030. This strategy aims to ensure equal opportunities and rights for persons with disabilities, including freedom of movement and elimination of discrimination. Legal initiatives like the Marrakesh Treaty, Procurement Directive, Web Accessibility Directive, and upcoming European Accessibility Act enhance accessibility in various areas, from access to published works to digital accessibility standards for public sector websites and apps. These laws have minimum criteria defined in European standards to ensure accessibility. The Accessibility Act, effective from 2025, extends accessibility	Accessibility policies and legislation	https://www.funka.com/contentassets/45e776ac62e74dfc953d25fef66812f/adore-3-policy-and-legislation.pdf

			requirements to certain products and services throughout the value chain. National laws complement EU legislation, covering diverse areas relevant to accessibility. Accessibility statements accompanying these directives provide overviews of issues and mechanisms for user feedback, aiding in monitoring and compliance.		
488	4	1,2	ADORE. Accessibility standards. EN 301 549 Accessibility Requirements for ICT Products and Services is a European standard (EN 301 549) established by CEN/CENELEC/ETSI, ensuring accessibility in Information and Communication Technology (ICT). It presumes conformance with the latest version 3.2.1, updated in 2025. This standard, crucial for web accessibility, covers various aspects of ICT, aligning with European legislation such as the Web Accessibility Directive and the European Accessibility Directive. The standard encompasses functional performance, generic requirements, and specific guidelines for ICT components like hardware, web, software, and documentation. Annexes provide additional guidance, including relationships with directives, conformance determination, and resources for cognitive accessibility. Notably, it references the Web Content Accessibility	EN 301 549 and WCAG, web accessibility	https://www.funka.com/contentassets/45e776ac62e74dfc953d25fef66812f/adore-4-accessibility-standards.pdf

			Guidelines (WCAG) 2.1 by W3C, ensuring consistency with global standards. WCAG emphasizes four principles: perceivable, operable, understandable, and robust. Conformance levels—A, AA, and AAA—are defined, with EN 301 549 aligning with Level AA, which covers all Level A and AA requirements. WCAG principles address making content perceivable, operable, understandable, and robust for all users, focusing on technical, structural, and content-related aspects. Ensuring content accessibility involves compatibility with assistive technology, providing non-text options, structuring texts for readability, using plain language, and combining text with images for enhanced comprehension.		
489	4	2	ADORE. Web accessibility basics. Web accessibility is crucial for ensuring that all users, including those with disabilities, can easily access and navigate digital content. Basic recommendations for accessible communication are often common-sense practices that benefit all users. Key elements of accessibility include structure, providing alternatives, adhering to technical requirements, and maintaining consistency in design. Structure, such as using headings, dividing content into sections, and utilizing bullet	Web accessibility, alternative texts for images, captions for videos, transcripts for audio, website design	https://www.funka.com/contentassets/45e776ac62e74dfc953d25fef66812f/adore-5-web-accessibility-basics.pdf

			points, helps users navigate and understand content more easily. Consistency in design is essential for building trust and familiarity with users. Providing alternatives is essential for accommodating various needs and preferences. This includes adding alternative texts for images, illustrations for text, captions for videos, and transcripts for audio content. These alternatives ensure that individuals with visual, cognitive, or hearing impairments can access the same information as others. Incorporating these accessibility principles not only benefits users with disabilities but also enhances the overall usability and effectiveness of digital content for all users.		
490	4	2	ADORE. Requirements in practice. The text emphasizes creating accessible web content and documents, compatible to screen readers, essential for blind users. It advocates testing content with screen readers to ensure usability for blind individuals. Understandable communication is highlighted, promoting information clarity for everyone, especially those with reading or processing difficulties. Strategies include using plain language, avoiding jargon, providing background knowledge, and highlighting main ideas. Options for understanding are encouraged, such as combining text and	Accessible web content	https://www.funka.com/contentassets/45e776ac62e74dfc953d25fef66812f/adore-8-requirements-in-practice.pdf

			images, offering audio/video alternatives, and providing easy-to-read summaries.		
491	4	2	ADORE. Accessible content. The text emphasizes creating accessible web content and documents, compatible to screen readers, essential for blind users. It advocates testing content with screen readers to ensure usability for blind individuals. Understandable communication is highlighted, promoting information clarity for everyone, especially those with reading or processing difficulties. Strategies include using plain language, avoiding jargon, providing background knowledge, and highlighting main ideas. Options for understanding are encouraged, such as combining text and images, offering audio/video alternatives, and providing easy-to-read summaries.	Accessible web content and documents, Image Alt Text, text contrast, understandable links, captioning for audio/video, accessibility in Social Media	https://www.funka.com/contentassets/45e776ac62e74dfc953d25fef66812f/adore-11-accessible-content.pdf
492	4	1,2,6	ADORE. Accessible events. The document discusses accessibility considerations for event preparation. In terms of PowerPoint accessibility, it emphasizes the importance of creating presentations with alternative formats for users of assistive technology (AT). Suggestions include combining text and images, avoiding cluttered slides, and using large fonts for	Event preparation accessibility, powerpoint accessibility, audio and visual accessibility in events	https://www.funka.com/contentassets/45e776ac62e74dfc953d25fef66812f/adore-11-accessible-content.pdf

			better readability. Regarding event preparation, it highlights factors such as furniture arrangement, lighting, and acoustics to enhance accessibility. For visual accessibility during presentations, it recommends reading out content or describing images, encouraging introductions from all participants, and including accessible links and documentation. For audio accessibility, it suggests techniques like turning off microphones when not in use, using external microphones for clearer sound, providing captioning, speaking clearly and one at a time, and sharing materials effectively.		-12-accessible-events.pdf
493	1	1	Digital Accessibility For Persons with Disabilities: A Mixed Method Study of Websites of 15-top Ranked Universities of India. This study utilized a mixed-method sequential exploratory design to assess the accessibility features for individuals with disabilities on the homepages of the top 15 universities in India, ranked according to the National Institutional Ranking Framework. Initial manual observation revealed deficiencies in fundamental accessibility features. Subsequent evaluation using an automated web-accessibility tool indicated significant shortcomings, with a mean of 50 errors, 162 warnings, and 432 notices per university. Notably,	Web accessibility	https://doi.org/10.26220/aca.4092

			screen reader access, font size adjustments, and accessibility statements were lacking across most university websites.		
494	4	3	Universal teaching and learning practices: Highlights. This handbook serves as a guide for educational professionals aiming to create inclusive learning experiences for students with Special Educational Needs (SEN). It emphasizes the importance of clear conceptualizations and assistance in developing educational materials accessible to all learners, including those with special needs. The handbook covers various aspects of creating social and educational courses tailored to SEN learners, highlighting the similarities in their learning needs to those of mainstream students. It underscores the necessity of integrating universal design concepts from the outset of course development to ensure accessibility for all. The handbook addresses educational, pedagogical, and psychological aspects of learning, emphasizing competence-oriented approaches, student involvement in learning activities, and the importance of continuous feedback. It also delves into understanding and addressing SEN, advocating for differentiated approaches and the use of digital technologies to	Accessible design principles into learning environments, information in multiple formats, UDL in digital environments	https://en-abilities.eu/

			address diverse needs. Furthermore, the handbook discusses specific needs and interventions for individuals with cognitive or psycho-emotional disabilities, emphasizing training in social skills, coping abilities, and community participation. Universal Design principles are presented as a way forward in constructing inclusive educational programs, focusing on non-discrimination and accommodating all users. The handbook also identifies necessary accommodations for learners with specific educational support needs, emphasizing the importance of accessible environments and providing redundant information formats to cater to diverse learning styles. Overall, the handbook aims to provide practical guidance for creating educational materials and environments that cater to the needs of all learners, promoting inclusivity and accessibility in education.		
495	4	3	ICT and design practices for universal learning environments: highlights. This handbook emphasizes the importance of digital literacy and accessibility to web content in today's society, where the internet plays a crucial role in socialization, education, and work. It stresses that exclusion from online platforms can lead to social, educational, and	Learning Management Systems (LMS) platforms, diverse content formats, user-friendly interfaces, digital literacy practices,	https://en-abilities.eu/

		professional marginalization. The text advocates for universal design principles, ensuring that web content is accessible to all users, including those with special needs. It highlights the necessity of considering diverse users' perspectives and eliminating barriers for universal access. Furthermore, the handbook discusses the evolution of digital literacy practices and the need for educators to integrate new technologies into teaching methods. It emphasizes the importance of teacher training in digital literacy and inclusion practices, especially for learners with disabilities or special educational needs. Additionally, the text provides technical insights into designing accessible online courses and platforms, including the use of learning management systems (LMS) and assistive technologies. The Universal Design for Learning (UDL) framework is recommended for creating inclusive learning environments that accommodate diverse learners' needs and preferences. Throughout, the handbook emphasizes the collaborative approach of involving end-users in the design, development, and evaluation stages to ensure accessibility and usability.	online communication platforms, ICT platforms	

496	4	6	Accessible Tourism Promoter for Small and Medium Enterprises. Qualification Framework. The document serves as instructional material for trainers who are involved in the Accessible Tourism Promoter (ATP) training program. It provides guidance and resources for trainers to effectively educate ATPs on promoting accessibility in tourism establishments. Accessible tourism presents challenges and demands across various sectors like accommodation, dining, leisure, and wellness. However, numerous tourism businesses, particularly in Eastern Europe, lack comprehensive knowledge of making their establishments accessible to all, including wheelchair users, blind individuals, and those with allergies or asthma. An initiative seeks to address this gap by transferring best practices from Germany's Brandenburg region to train Accessible Tourism Promoters (ATPs) in small and medium-sized enterprises (SMEs). These ATPs are pivotal in making establishments barrier-free and offering new business prospects. Operating under the Erasmus+ project "Accessible Tourism Promoter for Small and Medium Enterprises," the initiative runs from September 1, 2014, to August 31, 2016. The consortium includes a social	Accessibility in SMEs, inclusive tourism facilities, inclusive tourism services	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/7983f388-31d8-47a3-9ab8-4ffa35ec8c47/Trainer_Package_EN.pdf

			service provider, three tourist associations, a chamber of commerce, and a university offering vocational training in tourism. By transferring best practices and providing standardized training, the project aims to enhance accessibility, fostering an inclusive society, benefiting SMEs and individuals. The ATP course includes a five-day workshop, a Moodle-based training platform, and a realization phase of six months or more, effectively equipping tourism enterprises with necessary accessibility knowledge and skills		
497	4	6	Accessible Tourism Promoter for Small and Medium Enterprises. Learners Package. The document serves as instructional material for learners who are involved in the Accessible Tourism Promoter (ATP) training program. It consists of 7 parts. The first four are about accessible tourism in general, a national and regional overview of accessible tourism in member countries, the target groups of the program and the enterprises involved in tourism. Next are two assessment tools. The tools focus on evaluating the overall perspective on accessibility rather than identifying physical barriers. They emphasize enhancing accessibility for customers and fostering an inclusive workplace environment.	Accessibility in SMEs, inclusive tourism facilities, inclusive tourism services	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/104b2df6-f8b3-42d2-a1c2-8656ce2e360f/Learner_Package_EN.pdf

			Continuous assessment, reflection, and adaptation are highlighted as essential for progress, with long-term goals and a commitment to improvement being key principles. Finally, a development plan is provided, which not only addresses specific accessibility concerns but also aims to cultivate an accessibility-friendly company culture. To establish this plan, the ATP is advised to follow a suggested procedure, taking the lead in its initiation and implementation.		
498	3	1	Κύρωση της Σύμβασης για τα δικαιώματα των ατόμων με αναπηρίες και του Προαιρετικού Πρωτοκόλλου στη Σύμβαση για τα δικαιώματα των ατόμων με αναπηρίες. Ratification of the Convention on the Rights of Persons with Disabilities and its Optional Protocol to the Convention on the Rights of Persons with Disabilities (in Greek). The Convention on the Rights of Persons with Disabilities (CRPD) does not specifically outline indicators for monitoring and evaluating its implementation. However, the CRPD does require states parties to submit comprehensive reports on the measures taken to fulfill their obligations under the Convention. These reports are considered by the Committee on the Rights of Persons with Disabilities, which	Physical accessibility, communication accessibility, digital accessibility, transportation accessibility, emergency preparedness, employment and economic accessibility, social inclusion and community accessibility	https://www.et.gr/api/DownloadSmall/?fek_pdf=20120100088

			may make suggestions and general recommendations based on the examination of the reports. Additionally, the Committee reports every two years to the General Assembly and the Economic and Social Council, providing updates on its activities and any suggestions or recommendations made. While the CRPD itself does not define specific indicators, the monitoring process involves reviewing these reports and considering the progress made in implementing the rights outlined in the Convention.		
499	3	1	Συνταξιοδοτικές ρυθμίσεις Δημοσίου και λοιπές ασφαλιστικές διατάξεις, ενίσχυση της προστασίας των εργαζομένων, δικαιώματα ατόμων με αναπηρίες και άλλες διατάξεις- Μέρος Δ΄. Guidelines-implementation provisions of the United Nations Convention on the Rights of Persons with Disabilities, Part D' (in Greek). Part D of the organizational directorates outlines the implementation provisions of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), aiming to remove obstacles for full PWDs participation. It mandates equal rights exercise, universal design adoption, reasonable adjustments provision, discrimination prevention, and equal participation	Physical environment, reasonable adjustments, communication accessibility, staff awareness and training	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20170100137

			promotion. Administrative planning ensures universal accessibility, while ensuring equal access to physical, structured, and electronic environments. It requires communication facilities and information access for PWDs, staff awareness on disability rights, and non-discrimination promotion in mass media.		
500	3	1	Νέος Οικοδομικός Κανονισμός (NOK). New Building Regulations (NBR) (in Greek). Article 26 of Law NO. 4067, New Building Regulations, outlines special provisions for accommodating individuals with disabilities. It mandates that all new buildings (excluding residential ones with permits issued before this law's enactment) ensure both horizontal and vertical autonomous access for disabled individuals, adhering to the Design Guidelines "Designing for All" set by the Ministry of Environment, Energy, and Climate Change. Additionally, buildings must allocate 5% of total hygiene spaces for public use, or at least one per sanitary complex, for disabled individuals. Residential buildings must guarantee autonomous and safe access for disabled individuals in common areas and ensure easy conversion of units for future disabled residents. Accessible routes, including ramps, escalators, and lifts, must	Autonomous and secure access in new buildings, hygiene spaces accessibility, residential building accessibility, accessible routes, emergency standby spaces, pathways in common usable areas, parking space accessibility, lifts, stairs, inclined levels (ramps), buttresses, terraces, plantings, cours anglaises, mechanical means for	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20120100079

			start from pedestrian levels and extend to building interiors and exteriors. Emergency standby spaces, proportionate to one wheelchair space per floor, are required. When configuring common usable areas, such as pedestrian zones or green spaces, pathways must accommodate disabled individuals without steps, with a maximum 5% slope or accessible machinery. Furthermore, a 5% allocation of parking spaces, or at least one, must be designated for disabled use, adhering to national road standards and regulations. In Law 4759/2020 the changes of interest are found mainly in Chapter I, Simplification and Rationalization of the New Building Regulation and in Law 4782/2021 the amendment of Article 26 of Law 4067/2012 and the amendment of paragraph 1 of Article 10 of Law 4067/2012.	height differences, sanitary facilities, conditions for easy conversion of residential buildings into residential buildings for future disabled/disabled users, protected accessible waiting areas	
501	3	1,2, 3	Provisions to facilitate access of disabled people to IT tools. This law recognizes the right to accessibility of information and services for all people. It defines the first formal requirements for public administration and education to always check accessibility of websites, and recognized the requirement to provide assistive technologies in the workplace based on the need of the individual. It also introduces the	Web accessibility, digital content accessibility, educational accessibility	https://www.gazzettaufficiale.it/eli/id/2004/01/17/004G0015/sg

			requirement for publishers for teaching to provide digital versions of textbooks.		
502	3	1,2	Reform of the implementation of Directive (EU) 2016/2102 on the accessibility of public sector bodies' websites and mobile applications. This law expands REF/1 based on the requirement of the EU directive, expanding the scope of accessibility to mobile applications and web platforms which are not publicly accessible. It also introduces the need for public institutions to provide and periodically update a publicly readable accessibility statement on the compliance of their systems with best practices. It also identifies a new public actor, AGID (Agenzia per l'Italia Digitale / Agency for Digital Italy) as responsible for monitoring overall state of compliance for the public sector.	Web accessibility, mobile accessibility	https://www.gazzettaufficiale.it/eli/id/2018/09/11/18G00133/sq
503	3	3	Urgent measures for simplification and digital innovation. This law was drafted during the COVID-19 pandemic outbreak. It contains multiple provisions to support innovation and accessibility during difficult times: - simplifications to adapt physical spaces in order to remove architectural barriers	Facilities accessibility, web accessibility, mobile accessibility, digital content accessibility	https://www.gazzettaufficiale.it/eli/id/2020/09/14/20A04921/sq

			- extension of accessibility requirements introduced by REF/1 for private companies having >500 Mln EUR of average revenue in the last 3 years - introduction of sanctions for subjects that do not fix issues highlighted by AGID		
504	3	1,2	Implementation of Directive EU 2019/882 of the European Parliament and of the Council on accessibility requirements for products and services. This law applies the provisions included in EU Directive 2019/882 to ensure that products and services in the European Union (EU) are accessible to all, including people with disabilities. The directive includes provisions and specifications regarding the design, production, and provision of products and services to make them accessible to individuals with disabilities. This involves considerations such as the design of user interfaces, the incorporation of assistive technologies, and other measures to enhance accessibility.	Accessibility in Services, web accessibility, mobile accessibility, digital content accessibility	https://www.gazzettaufficiale.it/eli/id/2022/07/01/2G00089/sg
505	3	1	Framework law for care, social integration and the rights of people with disabilities. This law is the main Italian law relating to assistance, social integration and the rights of	Accessibility in services, facilities accessibility	https://www.gazzettaufficiale.it/eli

			people with disabilities and their caregivers. This support is expressed in the form of personal or family help services, but also psychological, psycho pedagogical, technical.		i/id/1992/02/17/092G0108/sq
506	3	3	Amendments to Law no. 104 of 5 February 1992 on care, social integration and the rights of people with disabilities. This law expands REF/5 by recognizing the need for adoption of specific tools and procedures to support people with disability in their university studies. It also introduces the possibility of applying individualized treatment, guaranteeing the possibility of using assistive technologies during university exams and delegating individual teachers to personalize exam methods where necessary.	Educational accessibility	https://www.gazzettaufficiale.it/eli/id/1999/02/02/099G0057/sq
507	3	3	Regulations on the right to university education. This law delegates to regions the responsibility of introducing particular provisions for the access of students with disabilities to the benefits and services provided for by the relevant law, as well as the possibility, in relation to conditions of particular socio-economic or physical hardship, of increase in benefits.	Educational accessibility	https://www.gazzettaufficiale.it/eli/id/1991/12/12/091G0439/sq
508	3	3	Norms for equal opportunities with regard to the right to university education. This law contains multiple provisions to	Educational accessibility	https://www.gazzettaufficiale.it/eli

			support the right for university education. It recognizes differentiated merit requirements for students with respect to grants and housing support.		i/id/2001/07/26/001A7955/sg
509	3	3	Revision of legislation on the right to education and the promotion of university residences (dorms) recognised by the law. This law recognizes the right to university education for all students, defining tools to remove economic and social obstacles that limit citizens' equality in accessing higher education. It supports the right to higher education for Special Needs students by strengthening services aimed at facilitating access to and attendance of the university system. It also recognizes the right to a full scholarship for students with a disability greater than 66% according to the Italian scoring framework, and encourages public institutions to provide grants for all other Special Needs students.	Educational accessibility	https://www.gazzettaufficiale.it/eli/id/2012/05/31/012G0088/sg
510	2	3	CNUDD Guidelines. This guideline, drafted by the national conference for university delegates for disabilities, defines a series of good practices that universities can adopt to comply with national regulations and guarantee the social integration and rights of people with disabilities.	Educational accessibility	https://didattica.polito.it/zxd/cms_data/attachment/25/LINEE GUIDA CNUDD.pdf

			It defines the role of two distinct entities: - Delegates for disabilities, who coordinate efforts to improve inclusiveness and support awareness - Operational units for students with Specific Learning Disorder, who directly interact with students to support them during their journey It also defines the support Special Needs students should receive in terms of services: - 1:1 tutoring based on their learning needs - physical accessibility for all spaces - personalized teaching materials and assistive tools - support for international mobility - dedicated orientation at the beginning and at the end of their university career		
511	3	3	New norms on Specific Learning Disorders in schools. This law defines Specific Learning Disorder in the Italian legislation, identifying the requirements for a diagnosis and the educational and didactic support measures they should receive on all educational levels.	Educational accessibility	https://www.gazzettaufficiale.it/eli/id/2010/10/18/010G0192/sg

512	2	3	Ministerial decree no. 5669 of 12/07/2011. This decree gives practical applications to what is defined in REF/11, specifying how SLD students should be supported at different educational levels. It delegates to State exam commissions in lower education the definition of personalized learning assessment methodologies based on the disorder, while it recognizes additional time (up to 30% more) for university exams.	Educational accessibility	https://www.istruzione.it/esame_di_stato/Primo_Ciclo/normativa/allegati/prot5669_11.pdf
513	3	3	Guidelines for the right to education of pupils and students with specific learning disorders. This guideline was distributed as an attachment of REF/12: it describes in great detail Specific Learning Disorders and how they should be approached for each educational level, identifying best practices to be applied in classrooms and the role of all stakeholders to ensure equal education.	Educational accessibility, staff training	https://www.miur.gov.it/documenti/20182/187572/Linee+guida+per+il+diritto+allo+studio+degli+alunni+e+degli+studenti+con+disturbi+specifici+di+apprendimento.pdf/663faecd-cd6a-4fe0-84f8-6e716b45b37e

514	3	1	Σχεδιάζοντας για όλους. Designing for All (in Greek). The Ministry of Environment directives aim to eliminate architectural barriers hindering the autonomous movement and living of individuals with special needs, particularly disabled individuals, both indoors and outdoors. This includes removing obstacles such as stairs, steeply sloping floors, and cramped spaces. Additionally, the directives seek to create a built environment that is welcoming, accessible, and safe for all users. This involves incorporating features such as smooth floors, ramps instead of steps, mechanical aids, clear markings, and user-friendly control mechanisms like elevator buttons at reachable heights. These modifications aim to facilitate independent navigation and use of facilities for all users. These instructions are targeted towards those involved in the planning and decision-making processes for buildings and outdoor spaces, with some guidelines also applicable to the design of equipment and objects. By ensuring accessibility, these directives not only benefit individuals with disabilities but also make environments easier, more comfortable, and safer for all users.	Sidewalks, planting, markings, crossings, islands, covering height differences, parking lots, ramps, stairways, parapets, railings, handrails, balusters, stairs, elevators, elevators, signs, entrances, public restrooms, fire protection, public buildings, residences	https://ypen.gov.gr/chorikos-schediasmos/astikos-schediasmos/politikes-kai-protypa/

515	3	1	Προδιαγραφές, όροι και τεχνικές οδηγίες για την εκπόνηση «Σχεδίου Αστικής Προσβασιμότητας (Σ.Α.Π.) Specifications, terms, and technical guidelines for the preparation of the "Urban Accessibility Plan (UAP)" (in Greek). The legal framework for the Urban Accessibility Plan (UAP) outlines the objectives of the UAP, emphasizing the identification of necessary configurations, interventions, and constructions to establish accessible movement networks within municipalities. The plan aims to create a network of accessible pathways, serving as the initial link in the "accessible chain" to essential public amenities. Article 3, paragraph 1 cites Greek legislation as the foundation for UAPs, while also specifying that international standards such as ISO 21542, "Building construction - Accessibility and usability of the built environment," the "ADA Standards for accessible design," and EN 17210 may be employed in the absence of Greek regulations. Furthermore, Article 3, paragraph 2 delineates accessibility requirements for construction or reconstruction projects in outdoor public and private areas. Detailed instructions are provided for the creation of accessible infrastructure, including sidewalks, pedestrian paths, roads,	Accessible sidewalks, pedestrian paths, light traffic roads, squares, crossings, islands, green spaces and groves, parking areas	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20210205553

			squares, crossings, green spaces, groves, and parking areas, with adherence to established accessibility standards.		
516	3	1	Τεχνικές Προδιαγραφές Μελέτης Προσβασιμότητας. Technical Specifications for Accessibility Study (in Greek). The Ministerial Decision pertains to two main aspects: A. Technical Specifications for Accessibility Studies in Building Projects and B. Technical Specifications for Accessibility Studies in Outdoor Public Common Areas. These specifications are part of the Architectural Study for each new project or adaptation project. They encompass the resolution of operational, technical, and morphological aspects of the work, ensuring both horizontal and vertical movement for disabled individuals, including those in wheelchairs, as well as ensuring autonomous and safe mobility for people with disabilities in general. This information is also incorporated into the topographic study, architectural study, and technical report of the entire project study.	Access to the surrounding environment, entrances, circulation, vertical circulation, accessible escape routes and accessible waiting areas in case of emergencies, parking lots, sanitary facilities, crossings, signage, islands, green spaces	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20210205045

517	3	1	Τεχνικές οδηγίες προσαρμογής υφιστάμενων κτιρίων και υποδομών για την προσβασιμότητα αυτών σε άτομα με αναπηρία και εμποδιζόμενα άτομα σύμφωνα με την ισχύουσα νομοθεσία. Technical guidelines for adapting existing buildings and infrastructure for their accessibility to individuals with disabilities and impaired individuals, in accordance with current legislation (in Greek). The ministerial decision includes technical guidelines for adapting existing buildings and infrastructure to make them accessible. Article 3 describes the exceptions based on circular No 42382/16.7.2013, while Article 4 outlines the methodology for accessibility check of public services and infrastructure of 2009. Detailed instructions are provided for access in buildings, hygiene spaces accessibility, accessible routes, signage, lifts, stairs, inclined levels (ramps), mechanical means for height differences, accessible escape routes and accessible waiting areas in case of emergencies, access to the surrounding environment, access to preserved buildings, floor coverings, vertical surface claddings.	Access to preserved buildings, floor coverings, vertical surface claddings, access in buildings, hygiene spaces accessibility, accessible routes, signage, lifts, stairs, inclined levels (ramps), mechanical means for height differences, accessible escape routes and accessible waiting areas in case of emergencies, access to the surrounding environment.	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20200202998

518	3	1	Διευκρινίσεις για την εφαρμογή του άρθρου 16 του νέου οικοδομικού κανονισμού (Ν. 4067/2012), που αφορούν τις ειδικές ρυθμίσεις για την προσβασιμότητα ΑμΕΑ / εμποδιζόμενων ατόμων. Clarifications for the implementation of Article 16 of the new building regulations (Law 4067/2012), concerning the special provisions for accessibility of Persons with Disabilities / impaired individuals (in Greek). The circular provides supplementary guidelines concerning access to residential buildings that are not obligated to install an elevator and access to residential plots. Additionally, it defines the protected, accessible space in case of emergencies and provides clarifications on certain exemptions of the New Building Regulation.	Access to residential buildings that are not obligated to install an elevator, access to residential plots, easy conversion of residential buildings into residential buildings for future disabled users, accessible space in case of emergencies	https://www.elinyae.gr/ethniki-nomothesia/egk-oik-423822013-fek-1672013
519	3	1	Ειδικές ρυθμίσεις για την εξυπηρέτηση ατόμων με αναπηρία σε κοινόχρηστους χώρους των οικισμών που προορίζονται για την κυκλοφορία πεζών. Special provisions for serving persons with disabilities in common areas of residential complexes intended for pedestrian traffic (in Greek). The decision concerns	Squares, parks, sidewalks, pedestrian walkways, pedestrian zones, public transportation stops and platforms, elevators, stairs, free pedestrian walking	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20090202621

			accessibility to common areas for pedestrian traffic, such as squares, sidewalks, parks, etc. Guidelines are provided for creating a free pedestrian zone, as well as for guidance for blind pedestrians, ramps, flooring coverings, equipment for common areas, and parking lots.	zones, guide for blind pedestrians, ramps, flooring coverings, equipment for common areas, parking lots.	
520	3	1,6	Συμπλήρωση της υπ' αριθ. 1038460/2439/B0010/15-4-2009 (ΦΕΚ 792 Β') κοινής απόφασης των Υπουργών Οικονομίας και Οικονομικών και Εσωτερικών, Εφημερίδα της Κυβερνήσεως Supplement to the Joint Decision No. 1038460/2439/B0010/15-4-2009 (Government Gazette 792 B') of the Ministers of Economy and Finance and Interior (in Greek). The decision is a supplement to a previous ministerial decision regarding the concession of beach use to Local Government Organizations (OTA). The supplementary paragraphs concern access to the beach with a wheelchair, providing specific guidelines for the construction of wheelchair-accessible pathways. There is also a reference to the obligation to create accessible sanitary facilities, changing rooms, and parking.	Accessible beach, wheelchair-accessible pathway on the beach	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20120201411

521	3	1,6	Καθορισμός των προϋποθέσεων και των τεχνικών προδιαγραφών για την κατασκευή και τη λειτουργία των παιδικών χαρών των Δήμων και των Κοινοτήτων. Determination of the conditions and technical specifications for the construction and operation of municipal and community playgrounds (in Greek). Article 3 of the ministerial decision stipulates that for the design of accessibility for people with disabilities, the Guidelines for Design "Designing for All" of the Disability Studies Office of the Ministry of the Interior should be followed. It also specifies that in every playground, there must be at least one space for people with disabilities for every 10 user spaces, or spaces for people with disabilities must be provided in the total number of spaces in all playgrounds within the municipality or community's region.	Playgrounds	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20090200931
522	3	6	Καθορισμός τεχνικών προδιαγραφών χάραξης, σήμανσης, διάνοιξης και συντήρησης των ορειβατικών - πεζοπορικών μονοπατιών. Determination of technical specifications for the marking, signage, opening, and maintenance of mountain hiking trails (in Greek). Article 44	Accessible mountain hiking trails	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20170200206

			stipulates that paths accessible to people with disabilities (PWDs) may belong to one of the other categories of paths, but they may also be specifically constructed paths for PWDs and/or for therapeutic purposes. Paragraph 13 of Annex III describes the characteristics of an accessible route with a wheelchair as well as the minimum provisions to be taken for a path accessible to blind or visually impaired individuals.		
523	3	1,6	The rights of passengers in bus and coach transport and amending Regulation (EC) No 2006/2004. The regulation outlines the rights of disabled persons and those with reduced mobility regarding bus and coach travel in Europe. It emphasizes equal opportunities for accessing transportation services, in line with the United Nations Convention on the Rights of Persons with Disabilities. The regulation prohibits discrimination against such individuals and mandates assistance during their journey, except for justified safety reasons. Carriers must provide free assistance at terminals and on board, and establish access conditions following European standards. Terminal design and vehicle equipment should consider the needs of disabled persons. Member States are urged to improve infrastructure for accessibility and ensure	Bus accessibility, terminals, national qualifications of drivers, disability related training of drivers, accessible information provided to bus and coach passengers	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R0181&qid=1715420037814

			staff receive proper training. Information should be provided in alternative formats, and arrangements should be made for passengers with special needs in case of travel interruptions. Cooperation among stakeholders is encouraged to enhance passenger care and assistance, with national enforcement bodies overseeing compliance.		
524	3	1,6	Technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility. The Regulation establishes technical specifications for the interoperability (TSI) of the EU's rail system, ensuring accessibility for persons with disabilities and reduced mobility, detailed in the Annexes. It applies to infrastructure, operations, telematics, and rolling stock subsystems outlined in Directive 2008/57/EC (no longer in force) and the Regulation's Annexes. Member States must create and implement an asset inventory to identify accessibility barriers, provide user information, and monitor progress. Compliance with TSI is mandatory for projects receiving Union financial support for rolling stock or infrastructure renewal, including stations. The TSI encompasses all public station areas controlled by railway	Rail system accessibility, doors and entrances, vertical circulation, horizontal circulation, obstacle-free route, parking facilities, floor surfaces, toilets and baby nappy changing facilities, customer information, height changes, handrails, wheelchair accessible sleeping accommodation, boarding aids, wheelchair boarding aid operational zone, lighting, visual	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R1300&qid=1715425771043

			undertakings, infrastructure managers, or station managers, covering information provision, ticketing, waiting areas, and boarding. Its aim is to improve rail transport accessibility for these groups. Functional and technical infrastructure specifications include parking, obstacle-free routes, entrances, flooring, transparent obstacle markings, toilets, furniture, ticketing, lighting, visual and spoken information, platform dimensions and edges, boarding aids, and level track crossings, information, telematics etc.	information, telematics applications, ticketing for visually impaired passengers, spoken information	
525	3	1	Η Ελλάδα σε κίνηση: Βιώσιμη Αστική Κινητικότητα - Μικροκινητικότητα - Ρυθμίσεις για τον εκσυγχρονισμό, την απλούστευση και την ψηφιοποίηση διαδικασιών του Υπουργείου Υποδομών και Μεταφορών και άλλες διατάξεις. Greece in motion: Sustainable Urban Mobility - Micro-Mobility - Regulations for the modernization, simplification, and digitization of procedures of the Ministry of Infrastructure and Transport and other provisions (in Greek). The current law establishes a framework for crafting Sustainable Urban Mobility Plans (SUMP) and outlines procedures for their development, assessment, categorization, monitoring, and oversight. The	Parking and stopping, electric wheelchairs for people with disabilities, scooters, and handbikes for individuals with disabilities, driver training, Special Hire Passenger Public Transport for the transportation of people with disabilities, which are	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20210100040

			objective is to advance sustainable mobility by addressing the transportation needs of individuals and goods in urban and suburban settings, thereby enhancing overall quality of life. SUMP's aim to foster sustainable urban transport systems, prioritizing aspects such as accessibility, safety, and protection within transportation networks for all users, with particular attention to individuals with disabilities and those facing mobility challenges.	specifically adapted for this purpose.	
526	3	2	Νόμος 4727, Ψηφιακή Διακυβέρνηση. Law 4727, Digital Governance (in Greek). The document incorporates various European Union directives into Greek legislation (2016/2102, 2019/1024, 2018/1972). It covers topics such as digital transformation, electronic communications, and digital services within the public sector. The primary focus is on establishing a framework for digital governance, enhancing the accessibility of digital information, and ensuring the interoperability of public sector digital services. The document emphasizes the importance of making digital information and services accessible to all citizens, outlining specific indicators and	Websites of public authorities, Mobile Applications, Electronic Documents, digital forms of communication	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20200100184

			standards that public authorities must adhere to in order to ensure inclusivity and accessibility in the digital realm.		
527	3	2	Κύρωση Πλαισίου Παροχής Υπηρεσιών Ηλεκτρονικής Διακυβέρνησης. Ratification of the framework for the provision of e-government (in Greek). The document is focused on the guidelines and standards for e-government services, ensuring interoperability and accessibility within public sector information systems. It highlights the need for structured, transparent, and objective approaches in evaluating and selecting official specifications, aiming to make public administration services accessible to all users, including those with disabilities. Key points include ensuring seamless data exchange between public sector information systems through organizational, semantic, and technological levels and emphasizing user-friendly features and special provisions for accessibility to people with disabilities.	User interfaces, electronic documents, websites, service availability	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20120201301
528	2	2	Web Content Accessibility Guidelines (WCAG) 2.0. The document is a detailed guide on the Web Content Accessibility Guidelines (WCAG) 2.0, which offers extensive recommendations for making web content accessible to a	Web accessibility, text alternatives for non-text content, alternatives for audio and video content,	https://www.w3.org/WAI/WCAG20/versions/guidelines/wcag20-

			broader range of people with disabilities. It includes guidelines designed to improve accessibility for individuals with a wide array of disabilities, including visual, auditory, physical, speech, cognitive, language, learning, and neurological disabilities. The document discusses various components that contribute to web accessibility like text alternatives for non-text content, time-based media alternatives, adaptable and distinguishable content. The standards and guidelines laid out in WCAG 2.0 provide three levels of conformance (A, AA, AAA) to help organizations target varying degrees of accessibility. In essence, WCAG 2.0 acts as a comprehensive framework for addressing accessibility on the web.	alternatives for time-based media, compatibility with assistive technologies	guidelines-20081211-a4.pdf
529	2	2	Mobile Web Best Practices 1.0. The document is a detailed exposition on mobile web best practices as specified in the W3C Recommendations. It focuses on enhancing user experience by offering guidelines aimed at web content creators, maintainers, and operators for effective mobile device compatibility. The document specifies that web content should be organized to be navigable and comprehensible across different devices and should utilize the capabilities of each device optimally. It focuses on ensuring that web content is fully	Web accessibility via mobile devices, web content, links, images, navigation, page layout, page definition, user input	https://www.w3.org/TR/2008/REC-mobile-bp-20080729/

			consumable on a range of mobile devices with different capabilities and it emphasizes the need to adapt web content appropriately to fit the constraints and advantages of mobile devices, enhancing both accessibility and user experience.		
530	2	2	User Agent Accessibility Guidelines (UAAG) 2.0. The document "User Agent Accessibility Guidelines (UAAG) 2.0" provides a comprehensive framework for developing user agents—such as web browsers, media players, and applications—that enhance web accessibility for people with disabilities. These guidelines focus on making the web more accessible by ensuring user agents support adaptable, perceivable, operable, and understandable interfaces. The guidelines are organized into principles, guidelines, and detailed success criteria mapped to three levels of conformance: A (minimum conformance), AA (recommended conformance), and AAA (advanced conformance) and aim to equip user agent developers with the necessary guidance to create more accessible and inclusive web environments.	Browsers, browser extensions, media players, readers	https://www.w3.org/TR/2015/NOTE-UAAG20-20151215/
531	2	2	Authoring Tool Accessibility Guidelines (ATAG) 2.0. ATAG 2.0 serves as a comprehensive framework for developing and	Authoring tools, accessible web content, navigation,	https://www.w3.org/TR/ATAG20/

			refining authoring tools to promote the creation of accessible digital content, addressing the needs of individuals with various disabilities. The guidelines not only focus on making the tools themselves accessible but also ensure that the content produced with these tools is accessible, thus supporting a wider adoption of inclusive practices in digital content creation.	digital interfaces, templates	
532	3	1	Ρυθμίσεις για την αντιμετώπιση των πολυεπίπεδων επιπτώσεων της κλιματικής αλλαγής. Regulations for addressing the multifaceted impacts of climate change (in Greek). Law 5106/2024 outlines a multitude of regulations related to environmental management, water resources, forest protection, urban resilience, and energy security. The document emphasizes the importance of accessibility in urban development and infrastructure. Specific articles addressing accessibility issues are article 47 with a modification to the building code to ensure barrier-free access for disabled and impeded individuals, article 48 with amendments to regulations on the installation of elevators and lifting platforms to enhance accessibility and article 49 which introduces a national accessibility logo to signify compliance with accessibility standards. Additionally, the text outlines the creation of a	Barrier-free building access, elevators and lifting platforms	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20240100063

			Central Accessibility Committee under Article 50, tasked with overseeing and implementing accessibility standards across various sectors.		
533	3	2	Establishing the European electronic communications code. The document outlines the European Union's directives regarding electronic communications and emphasizes accessibility for all end-users, particularly those with disabilities. It mandates that Member States ensure access to emergency services through various forms of communication, including voice, SMS, and video, and make these services free of charge. It stresses the importance of accurate caller location information and the need for interoperability across Member States to ensure seamless access for travelers and individuals with disabilities. Accessibility indicators, such as interfaces, equipment, and services, must meet specific standards to ensure they are usable by all individuals, regardless of their abilities. This includes providing accessible formats for information and ensuring that emergency services can be accessed without additional registration processes. The directive also calls for regular assessments and reporting to	Emergency services access, caller location information, information accessibility, interpersonal communication services, special terminal devices, public warning systems	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L1972&qid=1716413944157

			ensure compliance and effectiveness in providing equal access to communication services.		
534	3	2	Open data and the re-use of public sector information. The Directive aims to promote the use of open data and stimulate innovation through the re-use of public sector information. The directive establishes a set of minimum rules to facilitate the re-use of existing documents held by public sector bodies, public undertakings, and research organizations. It emphasizes the importance of making public data available in open, machine-readable formats to enhance transparency, accountability, and economic growth. The directive highlights several elements that need to be made accessible, including public sector documents, dynamic data (frequently updated or real-time data), research data from publicly funded research, high-value datasets beneficial for society and the economy. Furthermore, the directive mandates that public sector bodies and public undertakings facilitate the re-use of their documents, with specific provisions for libraries, museums, and archives to charge above marginal costs where necessary. The directive	Public sector documents, dynamic data (real-time updates), research data, high-value datasets, open machine-readable formats, APIs for real-time data access	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L1024&qid=1716415460842

			also ensures that any charges for re-use are based on objective, transparent, and verifiable criteria.		
535	3	1	Special arrangements for serving Persons with Disabilities in existing buildings. The Ministerial Decision outlines accessibility regulations for public and common-use buildings. The decision mandates that spaces in these buildings ensure both horizontal and vertical access for individuals with disabilities. It discusses horizontal and vertical access, entrances, stairs, restrooms, service counters and signage. According to Ministerial Decision ΥΠΕΝ/ΔΕΣΕΔΠ/65826/699/2020, this decision is taken into account (the part that remains in effect) for the Accessibility Study. The second decision of this GG is no longer in effect.	Corridors, doors, maneuvering space, floors, ramps, vertical platform lifts, stairlifts, elevators, entrances, handrails, restrooms, service counters, signage	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20020200018
536	3	1	Control and Protection of the Built Environment and Other Provisions. The Law –among others- outlines regulations and responsibilities to ensure accessibility in public spaces. One of the key elements is the responsibility of the Directorate for the "Control of the Built Environment and Implementation of Planning - Observatory," which provides guidelines and	Elevators, minor internal repairs and adaptations	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20170100167

		suggestions to improve legislation related to the autonomous movement and living of people with disabilities. Additionally, a Central Committee on Accessibility is established within the Ministry of Environment and Energy, consisting of 14 members, including representatives from the National Confederation of Disabled Persons (ESAMEA). The law details specific procedures for small-scale construction, including the installation of elevators for persons with disabilities. These constructions must comply with ELOT EN 81-70 standards unless exceptions apply. Furthermore, certain minor internal repairs and modifications for the benefit of individuals with disabilities do not require building permits or small-scale work approvals. Applications for building permits must include accessibility studies for people with disabilities when necessary. The law also emphasizes environmental and urban restoration projects funded by the Green Fund, which aim to improve accessibility in public spaces, playgrounds, squares, green areas, and urban equipment. Specific conditions under which construction works, including the installation of elevators for persons with disabilities, are allowed on unauthorized structures are specified.		

537	3	1	Promotion of Electromobility and Other Provisions. The Law 4710/2020 mandates the strategic placement of EV charging stations and parking spaces by municipalities, especially in metropolitan and larger urban and insular areas. By June 30, 2021, these municipalities were required to develop an Electric Vehicle Charging Plan (EVCP) tailored to their specific urban and traffic characteristics, considering existing publicly accessible infrastructure. This plan can be integrated into broader strategic urban mobility and development initiatives. The EVCP must ensure a minimum provision of one charging point per 1,000 residents. Particularly significant is the stipulation for accessible EV parking and charging spots for people with disabilities (PWDs). At least 2% of all public EV parking spaces must be accessible to PWDs, marked specifically and equipped with charging facilities. This requirement extends to private parking areas, setting the minimum at 1% for PWD-accessible EV spaces. These standards are supported by a joint ministerial decision made in 2019, which underscores the government's commitment to both environmental sustainability and accessibility for all citizens.	Charging points and parking spaces	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20200100142

538	3	1	Obligations and Measures for the Safe Passage of Pedestrians During Construction Works in Public Urban Spaces Designated for Pedestrian Traffic. The Joint Ministerial Decision outlines detailed requirements and measures to ensure safe pedestrian passage during construction works in public urban spaces designated for pedestrian traffic, including sidewalks and squares, with special provisions for individuals with disabilities. The document specifies the minimum width and conditions for pedestrian pathways to accommodate pedestrian traffic and wheelchair access. Temporary paths must be free of obstructions and have a minimum width of 1.20 meters, or 0.90 meters where technical limitations exist. The document also mandates that guide paths for the visually impaired are temporarily rerouted and clearly marked during construction.	Pedestrian pathways, temporary paths, signage	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20110200420
539	3	1	Operational Specifications for Rehabilitation Centers Providing Medical and Other Care, as well as Overnight Stay for Individuals Described in Article 10 Paragraph 1 of Law 2072/1992. The document outlines operational specifications for rehabilitation centers designed to provide	Elevators, entrance access, parking, bathroom facilities, vehicles used by the center, restroom	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=19930200789

			medical and other care services, including overnight stays for individuals. Emphasis is placed on accessibility features and standards to accommodate patients, including those with special needs. The guidelines concern Rehabilitation Centers - Day Care Nursing, Minimum Medical Rehabilitation Units, Day Care Centers for Individuals with Mobility Disabilities, Day Care Centers for Individuals with Sensory Disabilities.	equipment, wheelchair storage	
540	3	1	Approval of the Technical Regulation for the Definition of National Requirements for Pedestrian Touch Devices and Their Use in Traffic Lights. The Decision concerns the adoption of a new Technical Regulation by the Greek Ministry of Infrastructure and Transport, aiming to standardize accessibility features for pedestrian touch devices used at traffic lights. It focuses on ensuring these devices meet both national and international standards, especially to aid individuals with vision impairments. Pedestrian touch devices integrated into traffic lights are categorized based on their functionality: Devices used as additional equipment in traffic lights that have pedestrian-activated phases and devices that additionally cater to individuals with visual impairments. The document details the requirements for these devices to be	Pedestrian touch devices for traffic lights	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20190201759

			installed across Greece, emphasizing uniformity in implementation to avoid discrepancies in accessibility across different regions.		
541	3	1,6	Καθορισμός όρων, προϋποθέσεων, τεχνικών θεμάτων, αναγκαίων λεπτομερειών και διαδικασίας για την παραχώρηση απλής χρήσης αιγιαλού, παραλίας, όχθης και παρόχθιας ζώνης μεγάλων λιμνών και πλεύσιμων ποταμών. Definition of terms, conditions, technical issues, necessary details, and procedures for the granting of simple use of coastlines, beaches, riverbanks, and adjacent zones of large lakes and navigable rivers (in Greek). The decision emphasizes accessibility for individuals with disabilities (ΑμεΑ), mandating the inclusion of accessible paths to the shoreline. Access pathways must be placed both parallel and perpendicular to the coast, with a maximum width of 1 meter, either on the sand or slightly elevated for easier walking. For every 30 meters of granted coastline, two perpendicular access paths are required, and for any additional length over 30 meters, an extra path for every 20 meters is mandated. Additionally, for coastline traffic, there is a	Accessible beach, access paths	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20170201636

			stipulation for one access pathway per two rows of beach umbrellas, linked transversely with the perpendicular paths.		
542	3	1,6	Καθορισμός όρων, προϋποθέσεων, τεχνικών θεμάτων, αναγκαίων λεπτομερειών και διαδικασίας για την παραχώρηση απλής χρήσης αιγιαλού, παραλίας, όχθης και παρόχθιας ζώνης μεγάλων λιμνών και πλεύσιμων ποταμών. Determination of terms, conditions, technical issues, necessary details, and procedures for the concession of simple use of the seashore, beaches, banks, and adjacent zones of large lakes and navigable rivers (in Greek). According to Article 16, based on paragraph 7 of Article 13 A of Law 2971/2001, as amended by Article 32 of Law 4607/2019, local municipalities can, without compensation, be granted portions of the coastline and beaches for constructing non-permanent structures that exclusively facilitate access for people with disabilities. These provisions may also apply for public order or safety reasons. Each municipality must ensure access for people with	Accessible beach	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20200201864

			disabilities to at least one beach under its jurisdiction. This process does not require adherence to the usual procedural steps outlined in paragraphs 6 to 10 of Article 14 of Law 2971/2001. The managing entity of the project must inform the Ministry of Culture and Sports for approval and oversight, especially if the project is within a declared archaeological site.		
543	3	5	Για την προστασία των Αρχαιοτήτων και εν γένει της Πολιτιστικής Κληρονομιάς. On the Protection of Antiquities and Cultural Heritage in General (in Greek). Article 46 from Greek Law 3028/2002 pertains to the legal provisions for the production, reproduction, and dissemination of images and replicas of antiquities. The law specifies that prior permission is required for using equipment that is complex or large, requiring special conditions for operation, or technologies such as laser scanning and photogrammetry to create three-dimensional models. Permission is also necessary in cases where the production process impacts the security, preservation, operating hours, public accessibility, or other exceptional conditions.	Replicas of antiquities	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20020100153

544	3	3,4	Σύστημα Πιστοποίησης Κέντρων Επαγγελματικής Κατάρτισης (Κ.Ε.Κ). Certification System for Vocational Training Centers (VTC) (in Greek). The Ministerial Decision outlines specific infrastructure and spatial requirements for Vocational Training Centers (VTCs) in Greece to be certified. It specifies the minimum area VTCs must have, varying based on whether the center spans multiple administrative regions or is confined to one. The minimum area requirements range from 200 square meters for single-region centers to 550 square meters for multi-region centers. Classrooms must have a minimum floor area and specific dimensions to accommodate both individuals and those with disabilities comfortably. The document also stipulates requirements for natural and artificial lighting, air quality, and door dimensions to ensure easy access and navigation. Additionally, parking spaces for the disabled must be marked with international symbols and located as close to the building as possible. Elevators and platforms should accommodate wheelchairs, featuring automatic doors or suitable mechanisms for easy operation by individuals with limited mobility. Teaching spaces, administration areas, and service zones must be accessible, with signage and escape	Classrooms, parking, elevator, lighting, signage, ramps	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20050200230

			plans clearly displayed and considerate of those with visual or physical impairments.		
545	3	1	Εθνική Αρχή Προσβασιμότητας, Εθνική Επιτροπή για τα δικαιώματα του Ανθρώπου και Εθνική Επιτροπή Βιοηθικής και Τεχνοηθικής. National Authority for Accessibility, National Commission for Human Rights, and National Commission for Bioethics and Technoethics (in Greek). The Greek Law 4780/2021 establishes the National Authority for Accessibility (NAA), which operates under the Prime Minister and aims to facilitate access for individuals with disabilities across all areas of human activity. The NAA is envisioned as a specialized, consultative body included in the government's budget, with a mandate to monitor issues related to accessibility rights and formulate public policy recommendations. The NAA's responsibilities include monitoring the implementation of international, EU, and national frameworks on accessibility; proposing comprehensive policy measures; and consulting with public	Policy measures, accessibility frameworks	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20210100030

			administration bodies, civil society, and the disability movement. The NAA is also charged with developing and updating accessibility standards for various sectors such as physical, structural, and digital environments, communications, transportation, products, and services.		
546	3	2	Οργανισμός του Υπουργείου Ψηφιακής Διακυβέρνησης. Organization of the Ministry of Digital Governance (in Greek). The Presidential Decree discusses the establishment and responsibilities of the Digital Accessibility and Social Affairs Department within the Ministry of Digital Governance. This department is dedicated to advancing digital accessibility standards and ensuring that digital transformation efforts across various sectors are inclusive, particularly for people with disabilities and other vulnerable groups.	Electronic accessibility in public services, websites, mobile applications, monitoring, certification	https://www.et.gr/api/DownloadFeksApi/?fek_pdf=20200100085
547	3	3	Certain permitted uses of certain works and other subject matter protected by copyright and related rights for the benefit of persons who are blind, visually impaired or otherwise print- disabled and amending Directive 2001/29/EC on the harmonisation of certain aspects of copyright and related rights in the information society. The	Accessible formats, Braille, large print, adapted e-books, audiobooks	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017L1564&

			Directive concerns the permitted uses of copyrighted works and related subject matter for the benefit of persons who are blind, visually impaired, or otherwise print-disabled. It includes provisions for creating and distributing accessible format copies of copyrighted materials and mandatory exceptions to copyright for the production and distribution of these accessible formats, ensuring such materials can be made available without requiring authorization from copyright holders. The directive mandates that these exceptions cannot be overridden by contractual agreements, emphasizing their compulsory nature.		qid=1716968773439
548	3	3	Αναπαραγωγή έργου πνευματικής ιδιοκτησίας προς όφελος τυφλών και κωφαλάλων, και επέκταση της ρύθμισης σε άλλες κατηγορίες ατόμων με αναπηρίες. Reproduction of copyright work for the benefit of the blind and deaf, and extension of the regulation to other categories of persons with disabilities. The Ministerial Decision is the legal framework allowing for the reproduction of copyrighted works to aid individuals with disabilities, particularly those with visual and hearing impairments. The framework, derived from Article 28A of Law 2121/1993, permits works previously published to	Accessible formats, Braille, Moon, Daisy, talking books	https://access.uoa.gr/wp-content/uploads/2021/04/Dikaiwmata_Prosbasi_mwn_Bibliwn_AmeA.pdf

			be reproduced in formats accessible to these individuals, provided the reproduction is for non-commercial use and directly related to the disability involved.		
549	4	6	Accessible Tourism. Accessibilities: infrastructures and destinations. The document focuses on the necessities of travelers with disabilities or special needs, emphasizing the importance of accessible infrastructure in tourism destinations and the crucial role of accessible infrastructures, such as airports, train stations, hotels, and tourist attractions, in providing a positive travel experience for this demographic. The document also covers comprehensive accessibility within destinations, ensuring that every aspect of a tourist's experience, from transportation to accommodation and public amenities, is accessible. Additionally, the unit emphasizes the need for legislative backing and staff training to fully implement these accessibility features. By adhering to these guidelines, tourism providers can cater effectively to travelers with disabilities.	Airports, train stations, hotels, tourist attractions, tactile signs, audio descriptions, accessible maps, parking, step-free access routes, restrooms, signage	https://tour4all.org/training-platform

550	4	6	Accessible Tourism. Good Practises. This unit is structured to provide theoretical knowledge, case studies, and activities aimed at fostering accessibility within tourism, particularly for people with disabilities. The document defines "good practices" in the context of tourism as proven, effective techniques or examples that have demonstrated success in enhancing accessibility. These practices are identified as being environmentally, economically, and socially sustainable, technically feasible, participatory, and replicable across different settings. Case studies from both the public and private sectors across Europe illustrate these good practices. For instance, Renfe in Spain provides specialized services for travelers with disabilities, and the Oporto Airport in Portugal offers tailored assistance for those with special needs. In the private sector, examples include the Prado Museum in Spain which offers tactile experiences of artworks for visually impaired visitors, and "Village for all" in Italy which specializes in providing accessible tourism information and services. This unit is designed not only to educate about current good practices but also to inspire new initiatives that improve accessibility in tourism, thereby fostering a more inclusive	Accessible tourism, accessible towns, artworks, train stations, airports, parks, hospitality	https://tour4all.org/training-platform

			environment. This involves creating policies, training professionals, and establishing collaborative efforts between public and private sectors to enhance overall accessibility.		
551	4	7	If accessible, I am safe. Technical guide for the design and standards of disabled friendly emergency sheltering solutions. The guide focuses on ensuring accessibility for disabled people in temporary sheltering environments, adhering to various standards to enhance the safety and usability of these facilities. Furthermore, the document elaborates on specific accessibility features required in various components of a temporary shelter. For instance, it discusses the dimensions and features of accessible ramps, the placement and specifics of handrails, the width and features of doors and staircases to accommodate wheelchairs, and the necessity for tactile feedback on surfaces to aid visually impaired individuals. Various standards are listed on the last page.	Temporary sheltering, container, outdoor accessibility, pavement, parking spaces, container landing, ramp and stair landing, container access ramp, ramp handrail and protection border, stairs, elevator/lift, entrance and doors, windows, floor, wall and ceiling covering, bathroom and toilet, kitchen	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/b6e35fc5-4058-4e6e-8bf5-72b0e84cadcc/O2-Technical_Guidebook_EN.pdf
552	4	7	If accessible, I am safe. Study of an analysis on accessibility requirements of sheltering and living areas.	Temporary sheltering, outdoor accessibility of	https://ec.europa.eu/programmes

		The document is a comprehensive research report focusing on the accessibility needs and evaluations of temporary sheltering solutions for disabled individuals, particularly in the context of disasters and emergencies. It involves a detailed field study conducted at Harran Temporary Housing Center, highlighting both the physical and visual impairments of residents. Key findings indicate significant challenges in accessibility within temporary shelter facilities. Physical barriers, such as narrow doors, lack of ramps, and inappropriate toilet and bathroom facilities, frequently hinder mobility for physically disabled individuals. For visually impaired residents, the absence of tactile indicators and audible warning systems poses major obstacles, compromising their ability to navigate spaces safely. The research employed various methodologies including document reviews, observations, and interviews with disabled residents to gather comprehensive data. The outcomes stress the urgent need for redesigning temporary housing solutions to meet accessibility standards, ensuring that disabled individuals can live safely and independently. This includes integrating features that cater specifically to the needs of those with	sheltering areas, indoor accessibility of sheltering areas	<u>/erasmus-plus/project-result-content/938dd0d2-70d0-4b42-94ef-39aa0620a02b/O5-Research_Analysis_Report_EN_V1 .pdf</u>

			mobility and sensory impairments, thereby fostering inclusivity and accessibility in emergency shelter environments.		
553	4	6	Innovation for Accessible Tourism in Natural and Rural Areas. How to address the requirements of the target customer segments.The document outlines strategies for enhancing accessible tourism in natural and rural areas, targeting businesses and institutions to better serve diverse customer groups, especially those with accessibility needs. It provides a comprehensive approach to identifying target markets, understanding specific needs, and implementing solutions for improved accessibility. The document covers strategies for physical, sensory, cognitive, and long-term health impairments. For physical impairments, it suggests accessible parking, doors, toilets, pathways, and supportive features like handles and automated doors, plus designated rest areas with appropriate seating. Sensory enhancements include communication tools for hearing impairments like induction loops and sign language resources, and for visual impairments, aids such as Braille and audio descriptions, with staff training in effective communication. Cognitive accessibility is addressed by presenting information in clear, simple formats	Parking, doors, toilets, pathways, rest areas, communication tools for the hearing impaired, visual aids, accessibility for long-term health conditions	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/7b3d80f2-7e71-4ce7-8184-479189a0236b/O3_Interactive_business_support_toolkit_How_to_address_the_requirements_of_the_target_customer_segments_full_version_ENG.pdf

			with graphic support and providing quiet spaces for stress-free interactions. For long-term health conditions, it recommends tailored dietary options, partnerships with health specialists, and smoke-free environments with high-quality indoor air systems to support respiratory conditions. These initiatives aim not only to make tourism more inclusive but also to enhance the attractiveness and competitiveness of destinations.		
554	4	6	Innovation for Accessible Tourism in Natural and Rural Areas. How to bring to market and promote an accessible product. The document offers a comprehensive guide on marketing and promoting accessible products in tourism, particularly focusing on inclusivity for people with disabilities. It outlines essential strategies for making marketing materials and platforms accessible, which includes websites, social media content, and live events. Key points include the necessity of providing detailed, accurate accessibility information on websites, using high contrast and simple language on social media, and ensuring live events are accessible to all potential visitors. The document stresses the importance of using various platforms such as TripAdvisor and Euan's Guide for sharing accessibility information and	Websites, social media content, channels, live events	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/3091397a-4d95-4b88-b934733426904e13/IO3_Interactive_business_support_toolkit_How_to_bring_to_market_and_promote_an_accessible_tourism_product.pdf

			receiving feedback. It also highlights the role of accessible web design, offering tips like providing content in multiple formats and ensuring compatibility with assistive technologies. Live events and social media are discussed as crucial channels for engaging with the community and enhancing brand visibility among travelers with special access needs.		sible product f ull version EN G.pdf
555	4	6	Innovation for Accessible Tourism in Natural and Rural Areas. How to develop a truly accessible tourism offer and meet demand. The document provides a detailed guideline for developing accessible tourism services that cater to the needs of all individuals, particularly those with specific access requirements. It emphasizes the importance of Universal Design, a principle that ensures environments and products are usable by everyone to the greatest extent possible without modification. The document outlines a six-step process for service development, including awareness, assessment, planning, implementation, marketing, and review. Each step is aimed at enhancing both the physical and service-oriented aspects of tourism facilities to accommodate a wide range of abilities, ensuring a high-quality, inclusive tourist experience.	Effective communication methods, accessible information, trained staff, accessibility of services, assessment of accessibility, activities, special diet	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/3a649f08-d4a0-40ad-b6fd2da6e70f36e2/IO3_Interactive_business_support_toolkit_How_to_develop_a_truly_accessible_tourism_offer_and_meet_de

					mand full versi on ENG.pdf
556	4	6	Innovation for Accessible Tourism in Natural and Rural Areas. How to assess accessibility of a tourism product/service. The ACCESS-IT toolkit provides comprehensive guidelines on assessing the accessibility of tourism products and services across various sectors within the tourism industry. It emphasizes the importance of a seamless, accessible visitor journey from planning and booking to actual experience and post-visit sharing. The document highlights key areas such as accommodation, transport, dining, and activities, ensuring that each touchpoint is accessible to all, particularly those with disabilities. It details the use of Universal Design principles to foster inclusivity without the need for special	Online booking platforms, websites, tourism venues, information in accessible formats, staff training	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/2d7bbadc-7a62-407e-bf68ccda646c7235/IO3_Interactive_business_support_toolkit_How_to_assess_ac

			adaptations. The toolkit stresses the implementation of continuous accessibility audits and updates to facilities and services based on direct feedback from visitors, ensuring compliance with international accessibility standards like the WCAG for digital platforms		cessibility of a tourism product - service full version ENG.pdf
557	4	6	Innovation for Accessible Tourism in Natural and Rural Areas. Recommendations Booklet. The "Recommendations Booklet" from the ACCESS-IT project compiles essential methodologies, educational tools, and pilot training outcomes to enhance accessibility in tourism, especially in natural and rural areas. It promotes the integration of Universal Design across the tourism supply chain to ensure comprehensive accessibility. The booklet reflects on the project's achievements in raising awareness and providing practical solutions through various multimedia tools, including videos and webinars, aimed at educating SMEs and local entities. Success stories and case studies illustrate the positive impact of implementing accessible practices in tourism settings. The guide also emphasizes continuous learning and adaptation through feedback and suggests employing accessible	Inclusive tourism products and services, accessible communication strategies	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/a419888b-403a-4cae-93b2-8a07d37be2de/O4_Recommendations_Booklet_ENG.pdf

			communication strategies to engage all stakeholders effectively in making tourism universally accessible.		
558	4	3	Accessibility of Higher Education for Students with Special Needs. Monitoring accessibility of Czech universities. The document discusses the accessibility of Czech universities, especially for students with special needs, under the "UNIALl: Accessibility of Higher Education for Students with Special Needs" project. It details the gradual progress since the early 1990s towards achieving accessibility at a level comparable to European standards. This includes both infrastructural adaptations and educational support systems tailored for various disabilities. Universities have developed specialized centers and service providers to assist students with specific needs, such as visual and hearing impairments, mobility challenges, and learning difficulties. Key initiatives have included the development of technologies like screen readers, specialized support centers like the Teiresias Centre at Masaryk University, and legislative supports like the Decree on Sign Language. There has been a notable emphasis on creating inclusive educational environments through both physical accessibility improvements and the	University buildings, dormitories, support services inside university, evaluation, educational materials	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/3c0bf08b-ed0b-46e0-81a5-6480fd4b66af/finUNIALl_01_CZ_accessibility_monitoring_of_HE_eng.pdf

			integration of digital tools to aid learning. The document also highlights the importance of ongoing monitoring and evaluation to ensure that the accessibility needs continue to be met efficiently. The AP3SP, an association of service providers for students with specific needs, plays a crucial role in this monitoring process, ensuring that universities remain compliant with legislative and educational standards.		
559	4	3	Accessibility of Higher Education for Students with Special Needs. Study and Guidance on the Web Accessibility and Academic Information System at the Slovak Technical University in Bratislava. The document provides an analysis of accessibility testing conducted at the Slovak University of Technology in Bratislava for both its academic information system (AIS) and its various websites. The testing aimed to assess how accessible the university's digital resources are for students with disabilities, using both automated tools and manual verification through assistive technologies like screen readers. The report identifies significant accessibility issues across the university's web applications, noting specific problems such as non-intuitive layouts, inadequate keyboard accessibility, and insufficiently	Web applications, web content, assistive technologies, keyboard accessibility	https://ec.europa.eu/programmes/erasmus-plus/project-result-content/4603490a-ca3c-44ca-b47d-f8c26b5449a2/UNIALLO4improvingaccessibilityofICTatSUTUeng.pdf

			labeled form elements and links. Recommendations include improving keyboard accessibility, assigning proper labels to all form elements, using hierarchical heading styles appropriately, and ensuring all images have descriptive alt texts. The overall findings suggest a pervasive need for enhancement to meet accessibility standards, reflecting a broader call for attention to inclusive design in educational technology.		
560	2	6	Tourism Access and Inclusion: Best Practice Guidelines for Tourism MSMEs in APEC. The document records the outputs of a webinar series organized by the APEC Tourism Working Group in cooperation with the Australian Department of Foreign Affairs and Trade in 2021. The main topic of the webinar is accessible tourism which is the application of universal design principles by the tourism professionals. Tourism experts are recognizing more and more that inclusive tourism is the new economic opportunity. Key elements for creating accessible businesses are access guides, accurate and accessible information, staff training and adherence to universal standards. The report provides numerous links and resources of inclusive tourism industry.	Physical accessibility in Transportation, Accommodation, Tourism Sites.	https://www.accessibletourism.org/resources/11_best_practices_tourism_apec_en.pdf

561	3	1	EN 17210:2021 Accessibility and usability of the built environment - Functional requirements	Signage, tactile guidance, audible guidance, resting places, entrances, parking, lightning, visual contrast, accessible approach to a building, doors, route to entrances and exits, tactile marking, manoeuvring space, routes in horizontal circulation, concept of tactile orientation in a building, level/ramp routes, acoustics, routes in vertical circulation, stairs, lifts, step nosings, handrails, controls, rooms, seating options, sound systems, equipment, route to equipment (ATM, vending machine etc.), toilets, sanitary facilities, floors,	-

				tap, flash buttons, sanitary equipment, evacuation routes, evacuation planning, alarms, areas of rescue assistance, separate fire compartments, information via multiple senses, standardized symbols, accessible formats, wayfinding, orientation, navigation, layouts, architectural features to facilitate accessibility, wayfinding information, wayfinding signage, safety information signage, safety marking, visual indicators for glazed surfaces, tactile floor surface, TWSI, tactile maps, tactile models and	

				floor plans, audible information, hearing enhancement, outdoors signage, indoor signage, information displays, graphical symbols, accessible routes, step- free routes, passing place, turning space for users of wheeled mobility devices, drainage grading, headroom on accessible route, guarding across accessible routes, trails, street furniture, outdoor refreshment areas, bollards, pedestrian crossings, pedestrian islands, vehicle entry/exit points, squares and plazas, "Shared Space",	

				planting, pedestrian bridges, pedestrian underpasses, arriving and departure areas, boarding points, parking, cycle parking, horizontal circulation in buildings, building entrances, entry systems (eg doorbells), turnstiles and gates, entrance lobbies and vestibules, building corridors, building doors, door hardware, viewing panels in doors, automatic doors, revolving doors, windows, window hardware, patios, balconies, terraces, surface finishes and materials, floor materials,	

				wall materials, carpets, mats, carpet tiles, vertical circulation, ramps, steps and stairs, handrails, lifts, vertical lifting platforms, inclined lifting platforms, escalators, moving walks, service counters for information etc., waiting areas, queuing/ticket systems, seating and resting areas, storage areas, lockers and baggage storage, kitchen areas, facilities for assistance dogs, toilets, urinals, baby changing facilities, toilets for children, toilets for children with disabilities, breast-feeding rooms, accessible	

				toilets and bathrooms for obese and bariatric people, public ICT information screens, ICT user interfaces, controls and switches, drinking fountains, waste containers, evacuation for All, areas of rescue assistance, evacuation chairs, rescue sheet, emerging fire evacuation technologies, fire defence plan, lifts for emergency evacuation, light warning signals, acoustic warning signals, emergency exit doors, outdoor artificial lightning, natural lightning, indoor artificial lightning, acoustics, indoor air	

				quality, hotels, guest rooms, en-suite bathrooms, student rooms, adaptable housing, parking in dwellings, stairs in dwellings, layout for dwellings, post boxes, auditoriums, concert halls, grandstands and viewing areas, seating areas, stage, backstage, libraries, fixed seating and tables in libraries, study carrels, book drop slots, museum displays, museum exhibition panels and captions, heritage buildings, sites, heritage sites in natural environments, gardens and landscapes, retail	

				premises, sport facilities, team player seating, spectators' seating areas, gymnasium areas, restaurants, bars and cafes, smoking area, swimming pools, saunas, spas, conference venues, offices, healthcare building, educational buildings, classrooms, lecture rooms, laboratories, banks, post offices, industrial buildings, courts, police stations, detection facilities, holding cells, religious buildings, worship areas, cemeteries and crematoria, playgrounds, parks, nature parks, picnic areas,	

				beaches, taxi facilities, bus and coach, rail facilities, metro/underground, tram and light rail, airports, ports, cable cars.	
562	3	1	EN 81-70:2021+A1:2022 Safety rules for the construction and installation of lifts - Particular applications for passenger and goods passenger lift - Part 70: Accessibility to lifts for persons including persons with disability	Entrances, door openings, car dimensions, handrails, control devices, signals, extra-large control devices for enhanced accessibility, touch screen devices, glass doors, transparent	-

				elements, walls, luminance contrast	
563	3	6	EN 17229:2019 Fitness centres - Requirements for centre amenities and operation - Operational and managerial requirements	Flooring, surfaces, hygiene, ventilation, temperature, lightning, noise level, training equipment All descriptions of the standard are general, they do not refer to accessibility for individuals with impairments.	-
564	3	1	CEN/TR 16427:2013 Intelligent transport systems - Public transport - Traveller Information for Visually Impaired People (TI-VIP)	Transport information, end-user devices, contents of transport information	-
565	3	1	CEN/TR 15894:2009 Building hardware - Door fittings for use by children, elderly and disabled people in domestic and public buildings - A guide for specifiers	Locks, bolts, cylinders, keys, door furniture, handles, handrails, door protection hardware, guard rails, grab rails, surface	-

				finishes, panic exit devices, emergency exit device, hinges and pivots, systems and devices for swing doors, door closing devices, electrically powered hold-open devices, powered pedestrian doors, door gear	
566	3	6	ISO 21902:2021 Tourism and related services — Accessible tourism for all — Requirements and recommendations	Accessible tourism for All, information, communication, written communication, face-to-face communication, telephone and video communication, tactile communication, acoustic communication, audiovisual panels, web-based communication, off-	-

				line documents, mobile-web content and apps, digital-text based communication, staff training, approach to a building, parking spaces, paths, ramps, entrances, reception areas, counters, desks, ticket offices, routes within buildings, floor and wall surfaces, windows, stairs, handrails, elevators, lifting platforms, escalators, moving walkways, toilets and sanitary rooms, lightning, controls and switches, furnishing, signage, fire safety and other emergencies, self-service machines (ticketing	

				machines, ATMS, ABMS, car parking machines), transport services information, assistance services in transport (AST), terminals, public address (PA) systems, panels, automatic queuing allocation services, security controls, stops, boarding and disembarking (aircrafts, train, metro, buses, ship, taxis), interior of vehicles, pedestrian tourist routes, crossings, bicycle lanes, stairs, ramps, lifts, sitting areas, public toilets, information points, urban wayfinding systems, routes in heritage sites, historic city centres,	

				archaeological sites, natural parks and historic gardens, routes in shopping streets, leisure and catering areas, leisure activities, museums, exhibition halls, buildings of cultural interest, cinemas, theatres, concert halls, auditoriums, monuments, sites, natural environments, protected natural spaces, wildlife observatories, viewpoints, educational camps, camping, beaches, adventure activities, retail businesses, meetings- incentives-conventions- exhibitions(MICE), accommodation, guest	

				rooms, en suite bathrooms, catering spaces	
567	3	2,4	ISO/IEC 10779:2020 Information technology — Office equipment — Accessibility guidelines for older persons and persons with disabilities	Copying machines, page printers, multi-function devices, information on screens, speech output, speech delivery, user control, audio output, private listening, non-private listening, display screens, presentation of information, masked entry, operable parts, physical	-

				operation, side reach, forward reach, visibility of display screens, software requirements for closed functionality	
568	3	2,3	ISO/IEC 24751-4:2023 Information technology — Individualized adaptability and accessibility in e-learning, education and training Part 4: "Access for all" framework for individualized accessibility and registry server application programming interface (API)	Access for All framework, application programming interface (API), concept registry, concept submission, HTTP methods, concept record	-
569	3	5	ISO/FDIS 5727 Accessibility and usability of the built environment — Accessibility of immovable cultural heritage — Principles and methodology for interventions	Accessibility of immovable cultural heritage, accessibility interventions	-
570	3	1	ISO/TR 25555:2024 Ageing societies — Accessibility and usability considerations for home healthcare products, related services and environments	Handling home healthcare products, operation, design of healthcare products, information and marking, visual information, auditory information, tactile	-

				information, contact information, services, lightning environment, sound environment, thermal and air quality environment, environmental factors	
571	3	1,2	ISO 21801-1:2020 Cognitive accessibility Part 1: General guidelines	Mainstream and assistive products for people with cognitive impairments, cognitively accessible systems (products, services, built environments), multiple means of representation, design, customizable media for information, expression and communication, access to system and interoperability, system	-

				flexibility and equality, adapting time demands, communication of time, strategic activities, multiple means of user interaction, sustained attention, means for avoiding mistakes, support functions, content- integrated contextual help	
572	3	1,2	ISO 21801-2:2022 Cognitive accessibility Part 2: Reporting	Reporting the cognitive accessibility of systems (assistive products, assistive technologies, consumer technologies, household appliances) according to ISO 21801- 1:2020	-
573	3	1	ISO 21856:2022 Assistive products — General requirements and test methods	Assistive products-medical devices with the exclusion of products that achieve	-

				their purpose with pharmaceutical substances Note: The indicators included are related to the technical characteristics and material technology of assistive products and not to accessibility in particular (flammability, electrical safety, mechanical safety etc.)	
574	3	6	ISO 13810:2022 Tourism and related services — Visits to industrial, natural, cultural and historical sites — Requirements and recommendations	Guided and self-guided tourist visits, information, booking process, parking, toilets, safety (it includes mainly general recommendations, not specific indicators for accessibility)	-

575	3	2	ISO 9241-920:2009 Ergonomics of human-system interaction Part 920: Guidance on tactile and haptic interactions	Tactile and haptic hardware and software interactions, design, evaluation, inputs, outputs, combinations of inputs and outputs, encoding of information, textual data, graphical data, controls, tactile objects. layout of tactile space, interaction techniques (does not provide specific recommendations for Braille but can be applied to interactions involving Braille)	-
576	3	2	ISO/IEC 23761:2021 Digital publishing — EPUB accessibility — Conformance and discoverability requirements for EPUB publications	EPUB publications, accessibility metadata, content, WCAG	-

				conformance, media overlay documents	
577	3	2	ISO 24552:2020 Ergonomics — Accessible design — Accessibility of information presented on visual displays of small consumer products	Visually presented information on small displays, display elements, alphanumeric characters, symbols, icons, luminance contrast, colour, blinking, time	-
578	3	2	ISO/IEC 29138-1:2018 Information technology — User interface accessibility Part 1: User accessibility needs	Visual information, auditory information, location of actionable components, perceiving status of controls and indicators, perceiving feedback, ability to complete actions, ability to recover from errors, security and privacy, safety, efficient operation, easy to use,	-

				understandable output, ability to use AT to control the ICT	
579	3	2	ISO/IEC 29138-3:2022 Information technology — User interface accessibility Part 3: Requirements and recommendations on user needs mapping	Design of user interface, mapping needs according to ISO/IEC 29138-1:2018	-
580	3	2	ISO/IEC 29136:2012 Information technology — User interfaces — Accessibility of personal computer hardware	Interoperability, functionality, readable labels, connections, audio port, authentication, user comfort, controls, keyboard, touch screen, visual display, speakers, volume, speech speed, data storage devices and removable drives, user support	-
581	3	1,2	ISO 21802:2019 Assistive products — Guidelines on cognitive accessibility — Daily time management	Cognitive assistive products supporting daily	-

				time management, time devices	
582	3	2	ISO/IEC TS 20071-15:2017 Information technology — User interface component accessibility Part 15: Guidance on scanning visual information for presentation as text in various modalities	Scanning, accessible presentation of information, applications with user-controlled scanning functionalities	-
583	3	2	ISO/IEC TS 20071-25:2017 Information technology — User interface component accessibility Part 25: Guidance on the audio presentation of text in videos, including captions, subtitles and other on-screen text	Audiovisual content, audio presentation of on-screen text, audio description, human voice narration, synthetic voice narration, volume, audio quality, synchronization, availability across technologies	-
584	3	2	ISO/IEC TS 20071-21:2015 Information technology — User interface component accessibility Part 21: Guidance on audio descriptions	Audiovisual material in auditory modality, audio description in: recorded videos, broadcast	-

				television, cinema, recorded or live drama, museum exhibits, heritage tours, news, comedies. Narration, volume, live narration, audio description, consistency across technologies, consistency within a program, placement, pauses, description of sounds, logos/credits/titles, on-screen text, identifying objects, describing colour, describing visual effects, identifying persons, describing physical appearance, describing facial expressions, describing clothing, identifying race/origin,,	

				identifying gendered expression,, identifying disabilities, age, relationships, place, setting, time of the day, interaction between real actors and animated characters	
585	3	2	ISO/IEC 20071-11:2019 Information technology — User interface component accessibility Part 11: Guidance on text alternatives for images	Image information in textual form, text alternatives for static images, images for: informative purposes, control purposes, decorative purposes, formatting purposes, identifying the purpose, identifying the image components, identifying the content, relationships, evaluating the importance	-

				of the information, significant information, helpful information, not important information, conflicting information, text alternatives in the main body, large amounts of information, flow with the content, style, conciseness and readability,	
586	3	2	ISO/IEC 20071-23:2018 Information technology — User interface component accessibility Part 23: Visual presentation of audio information (including captions and subtitles)	Visual alternatives for audio information, text presentation, figure presentation, essential information, significant information, helpful information, unhelpful information, matching the intended meaning, ease of understanding, visual design, design	-

				personalization, design engagement, synchronization, fonts, case letters, contrast and colour, spacing, punctuation, speed, lines, sentences, VAC, describing speech, non- speech information, describing music, describing emotions,, describing silence, identifying speakers, quality evaluation	
587	3	2	ISO/IEC 20071-5:2022 Information technology — User interface component accessibility Part 5: Accessible user interfaces for accessibility settings on information devices	Accessibility setting interface, accessibility setting mode, accessibility settings, saving settings, modifying settings, input, output, shortcuts,,	-

				accessibility setting mode before login	
588	3	1	ISO 15928-7:2021 Houses — Description of performance Part 7: Accessibility and usability	Performance description of houses, description of level differences, description of width (doors, corridors, stairs), description of operation methods for doors and windows, description of operation methods for lifts and stairs, description of reachability, description of major building appliances, description of features for safety evaluation	-
589	3	2	ISO/IEC 30071-1:2019 Information technology — Development of user interface accessibility Part 1: Code of practice for creating accessible ICT products and services	Organizational accessibility policy, ICT systems (programs and services), ICT systems within an	-

				organization, ICT systems at development levels, logs and statements, accessibility activities, testing methods, product documentation, suitability for the widest range of users, conformity with users' expectations, support for individualization, approachability, perceivability, understandability, controllability, usability, error tolerance, equitable use, compatibility with other systems	

590	3	1,2	EN ISO 9241-971:2022 Ergonomics of human-system interaction - Part 971: Accessibility of tactile/haptic interactive systems	Hardware accessibility, software accessibility, approachability of tactile/haptic interactive systems, size and space for approach and use of tactile/haptic interactive systems, reachability, reachability by remote control, stability, presentation of tactile/haptic information, encoding of tactile/haptic information, contextual interference with tactile/haptic presentations, perceivability of tactile/haptic information, tactile/haptic components and controls, pausing and	-

				repeating information, speed of tactile/haptic information, location and tactile output, controllability of tactile/haptic interactions, individualization of tactile/haptic interactions, error tolerance of tactile/haptic interactions, tactile/haptic safety, tactile/haptic authentication, keyboard specific guidance, pointing device specific guidance, single-switch specific guidance, vibration specific guidance, Braille specific guidance	

591	3	2	ISO/IEC 24786:2009 Information technology- User interfaces- Accessible user interface for accessibility settings	Accessibility setting mode, Accessibility setting mode before login, items of accessibility setting, Stickykeys, Slowkeys, Bouncekeys, filterkeys, mousekeys, repeatkeys, on-screen keyboard, voice operation, visual emphasis, screen reader, auditory feedback, visual feedback, shortcuts to access the accessibility features	-
592	3	2	ISO 14289-1:2014 Document management applications- Electronic document file format enhancement for accessibility Part 1: Use of ISO 32000-1 (PDF/UA-1)	Conformance requirements, File format requirements, Requirements about text, graphics, headings, tables, lists, mathematical	-

				expressions, page headers and footers, notes and references, optional content, embedded files, article threads, digital signatures, non-interactive forms, XFA, Security, navigation, Annotations, Actions, XObjects, fonts, Conforming reading requirements, AT requirements,	
593	3	2	EN ISO 9241-171:2008 Ergonomics of human-system interaction- Part 171: Guidance on software accessibility	Principles for designing accessible software, User preferring settings, procedures for accessing applicability and conformance	-
594	3	2	ISO/IEC TR 13066-3:2012 Information technology- Interoperability with Assistive Technology (AT) Part 3:	Introducing API, IAccessibility2	-

			IAccessible2 accessibility application programming interface (API)	Extensibility, IA2, IAccessibility2Proxy.dll	
595	3	2	ISO/IEC TR 13066-2:2016 Information technology- Interoperability with assistive technology (AT) Part 2: Windows accessibility application programming interface (API)	Microsoft Active Assistive API, accessible objects, WM_GETOBJECT message, UI Automation API/tree/model/control patterns/control types, IAccessibleEx interface implementation, Exposing UI Elements with Microsoft Active Accessibility, Accessible object structure, Microsoft Active Accessibility to Automation Proxy, UI Automation to Microsoft Active Accessible Bridge, UI Automation for W3C Accessible Rich Internet Applications, Other Useful	-

				APIs for Development and Support of Assistive Technologies	
596	3	1,2	EN ISO 9241-20:2021 Ergonomics of human-system interaction - Part 20: An ergonomic approach to accessibility within the ISO 9241 series	Guidance on developing accessible products and services, accessibility guidance for software, content and hardware, user accessibility needs, supporting diverse platforms and assistive technologies, personalization guidelines for individualized adaptability, common industry formats for reporting usability,	-
597	3	1,2	EN ISO 17651-1:2024 Simultaneous interpreting- Interpreters' working environment - Part 1: Requirements and recommendations for permanent booths	Quick, easy and safe access, technical control and technical support	-

				easily approachable, suitable design and specific dimensions, doors, windows, acoustics, heating, ventilation, soundproofing, cable ducts, electromagnetic radiation levels, language displays, colors, lightings, work surface,	
598	3	2	ISO/IEC/IEEE 23026:2023 Systems and software engineering- Engineering and management of websites for systems, software and services information	Planning websites, designing and engineering websites, testing and evaluating websites, sustaining websites, websites features, filtering, security, use of color, use of keywords, graphic images, user interaction, site navigation, website	-

				access and authentication, translation and localization	
599	3	1	ISO/TS 21054:2020 Ergonomics- Accessible design- Controls of consumer products	Operability, Controllability, Error tolerance, Availability, Predictability, Consistency, user compatibility, psychological approachability, equitability, responsiveness, feedback, flexibility, adequacy/reliability of control access, provision of reference point in a control, control- response ratio for self-adjustment, physical workload- posture, force, dexterity,	-

600	3	1	ISO 9241-500:2018 Ergonomics of human-system interaction Part 500: Ergonomic principles for the design and evaluation of environments of interactive systems	Versability- Flexibility, freedom from interference between task and environment, postural change, maintainability, adaptability, accessibility, user information	-
601	3	1	ISO/TS 20282-2:2013 Usability of consumer products and products for public use- Part2: Summative test method	Usability requirements, usability test procedure specification, accessible information, accessible products and services, ease of interaction, context of evaluation/use, efficiency and effectiveness, formative evaluation	-
602	3	1	ISO 24553:2023 Ergonomics- Accessible design- Ease of operation	Multiple means of operation, accessible layout of controls and	-

				control panels, accessibility related to human strength, Dexterity and provide a wide range of dexterity abilities, providing visual tools/indicators such as visual scales, guide operation, avoid simultaneous multiple operations, enable feedback, controls and lock mechanisms to avoid unintentional operation, holding, lifting, carrying, pushing or pulling with hands or feet operations, shape and size products, gripping grasping, rotating, twisting, pushing or pulling (with fingers), pinching,	

				sliding and touching-diameters for handrails,	
603	3	1,2	ISO/IEC 24714:2023 Biometrics-Cross-jurisdictional and societal aspects of biometrics- General guidance	Privacy principles for biometric applications, transparency, consent, preference for opt-in, limitation of purpose, limitation of period of retention, adherence to performance criteria, access rights of the data subject, protection of the data, secure audit, data transfer between jurisdictions, Accountability, anonymization, accuracy by biometric data, privacy by design, privacy by default, non-	-

				discrimination, biometrics in the workplace, altering data and unauthorized computer access, equitable in use for data subjects, inclusive in operation for data subjects, flexible in use, simple and intuitive, easy to understand with appropriate additional prompts, clearly indicated by signs, tolerant of error, usable with low physical effort, of a size and in a space that allows easy approach and use, using a range of tactile, audio and visual prompts in the user interface, principles for less able subjects,	

				accessible special cases, usability and context of use, data subject, function creep, proportionality, usability, personally identifiable information, cross- jurisdictional and societal considerations, cross- jurisdictional issues	
604	3	1	ISO 24495-1:2023 Plain language- Part1: Governing principles and guidelines	Simple text, clear sentences, clear and concise paragraphs, include images and multimedia, cohesive document, visual integration of text, visual representations of the information such as chart, diagram, drawing, map, picture, typography, provide text which is	-

				relevant to user's interests, findable text, usable, provide specific instructions, avoid false or misleading content, build up new information to what they already know, make information more visible using larger font, bold type, provide information in sequence, use headings to help readers predict what comes next, supplementary information separate, use familiar words, enable user's feedback	
605	3	2	ISO/IEC 24756:2009 Information technology- Framework for specifying a common access profile (CAP) of needs and capabilities of users, systems, and their environments	Common Access Profile, Describing overall CAPs, Describing Interactive Components, Describing	-

				IC Component Features, Modality- specific information, Media types such as Text written- Text spoken- Text Tactile- Visual Model ect, expanding the CAP, applying the CAP to selecting/managing ATs, alternative configurations including access needs, multi-user settings, adaptive profiles to user's access needs	
606	3	2	ISO/IEC TR 29194:2015 Information Technology- Biometrics- Guide on designing accessible and inclusive biometric systems	Authentication schemes that have information stored about the impairment of the user, Auditory and tactile feedback, feedback through visual aids,	-

				selection of the suitable colors to present the information for people with VI, color contrast, ridge around the scanner area to aid location, guiding the finger by recessing the scanner area, tactile marking on the scanning area, light turns on and flashing slowly providing guidance for the user, light on when the camera is awaiting input, audio feedback, vibration feedback, lighting signaling, adjustable sensor to heights of relevant physiological feature, biometric recognition using mobility	

				aids, suitable for right- and left-handed people, raised casing to allow the user to hold on the casing, sufficient support for the wrist and/or arm, readers, cameras and microphones suitable for a range of sizes of users and easily adjustable, signing area to be large and to accommodate all signature styles, reluctance in touching surfaces.	
607	3	2	ISO/IEC 11581-40: 2011 Information technology- User interface icons- Part 40: Management of icon registration	Represent graphics on a display, databases easily maintained and updated, description of its function, specific instance, graphic components, state variations, composed of	-

				the user's interface symbol representing a function of the computer system, task description, withdrawal or change of one or more icons in a database standard, web-accessible and electronic communication, automated database functions	
608	3	1	EN ISO 20109: 2016 Simultaneous interpreting-Equipment- Requirements	Hearing protection, level consistency across channels. Headphones, headset connector, console dimensions, indicator lights, buttons, visual displays, incoming channel pre-selection, incoming channel selection, tone controls, monitor loudspeakers,	

				volume control, microphone ON/Off button, Push to mute button, outgoing channel pre- selection, audience indicator, slow-down button, incoming message indicator, incoming call indicator, system clock, interpreter console microphone, interpreter microphone behavior, conference microphone, ambient microphone, system operation, accessible furniture and equipment, accessible and usable interpreters and consoles	

609	3	1	CEN ISO/TR 22411: 2021 Ergonomics data for use in the application of ISO/IEC Guide 71:2014	ISO/IEC Guide, Data selection and formats, Sensory characteristics and capabilities, Visual sensitivity to colour, color category, contrast sensitivity, contrast for legibility, visual acuity, minimum font size for legibility, disability glare, useful field of use, lighting level and visual performance, visibility of an indicator lamp, Hearing-sensitivity decrease as a function of age, tone perception in quiet conditions, sensitivity to low-frequency tones, equal- loudness-level contours, tone perception	-

				in noisy conditions, sound pressure level of spoken announcements in public space, audible conditions for speech communication in noisy environment, tactile pressure sense and spatial resolution, tactile spatial resolution (people with visual disabilities), tactile and spatial resolution (body location and aging effect), tactile temporal resolution (sensitivity to vibration, ageing effect), Legibility to tactile symbols and characters, Thermal sense, surface temperature, air temperature, thermal	

				comfort-physical disabilities, physical characteristics related to body size, basic body size, grip diameter, movement and hand steadiness, eye-hand coordination, - functions of upper body structure, reach range_grapsability, reach range in three dimensions of height, forward distance and left-right width for older people or people with disabilities, rotation-pronation and supination, movement functions of lower body structure, step height, tread depth of stairs, walking speed, slope of ramps and	

				wheelchair operation, muscle strength and muscle endurance, grip force of the hand, pressing force of the thumb, compressive force of the index finger, operating torque in four different conditions, grip strength, lifting strength, pushing force with two hands, pushing force with one hand, pushing force with the finger, static torque with two hands, torque and force for opening packages, jar opening, upper extremity muscle strength, cognitive characteristics and capabilities, selective	

				attention, dual task performance, memory under dual task conditions, information processing, processing speed and capacity, effects of ageing and cognitive disabilities on memory, language use	
610	3	1	EN ISO 9241-391: 2016 Ergonomics of human-system interaction - Part 391: Requirements, analysis and compliance test methods for the reduction of photosensitive seizures	Flashes, potentially harmful flashes, rapid changes of image sequences, potentially harmful red flashes, cumulative risk, prior warning, duration of flashing, clearly discernible stripes, number of stripes	-

				and area of visual field occupied, moving/stationary, luminance and contrast, duration of patterns, rapid changes of image sequences, software ergonomics, tactile and haptic interactions, control rooms, photic stimulation, screen size and viewing distance, environmental/screen luminance, coloring transition,	
611	3	1,6	ISO 23456-1: 2021 Dynamic signs in physical environments Part 1: General requirements	Graphical symbols and pictorial symbols in displays, font size, font style, presentation content and context, number of written characters, types of	-

				dynamic presentation incorporating movement, types of temporal variation in brightness, chromaticity or shape, visual requirements for dynamic signs to be presented, information volume. Colour, contrast and luminance, presentation time, lead time, display location, discomfort and annoyance from signs, combinations of symbols and characters, avoiding photosensitive seizures, avoiding visually induced motion sickness, avoiding visually induced balance disorder, restrict misuse,	

				diversity in context, use of multiple languages	
612	3	2	ISO/IEC 13066-1: 2011 Information technology- Interoperability with assistive technology (AT) Part 1: Requirements and recommendations for interoperability	Assistive technology, provision of AT- specific documentation, provision of accessible help, accessible platforms services, survey of accessible application programming interfaces, interoperability, operating system OS, information/communication technology ICT, software support, hardware connections- wireless connections, AT- IT connectivity, alternative and accessible platform	-

				services, alternative versions of application software, UI Automation (UIA) and accessibility API, Windows - Mozilla Firefox IAccessible2, Features of IAccessible2 such as text controls, accessible two-dimensional table, accessible hyperlinks and hypertext, accessible object relations, accessible roles, UNIX Accessibility Toolkit (ATK), Java Accessibility API (JAAPI)	
613	3	2,3	ISO/IEC TR 18121: 2015 Information technology- Learning, education and training- Virtual experiment framework	Virtual experiment components, reusable, low cost and broadly applicable IT systems, remote access laboratory, tracking learners' behavior,	-

				providing accurate feedback, virtual experiment standard system, accessible practice guideline, iLabs remote network laboratory	
614	3	1	ISO 8124-3: 2020 Safety of Toys Part3: Migration of certain elements	Test portion preparation, accessible material, alternative instrumentation, functional and intermediate checks, tasting of blind samples, interlaboratory comparisons, retesting of retained samples	-
615	3	1,3	ISO 8124-3: 2020 Safety of toys Part 3: Migration of certain elements Amendment 1: Limits for boron and other elements in slime, and barium in modeling clay	Flexible solid or semi-solid mixtures that retain their shape and form, easy hand manipulation, finger paint	-

616	3	1	EN ISO 24503:2011 Ergonomics- Accessible design- Tactile dots and bars on consumer products	Tactile dots and tactile bars, controls marked for identification of a function, controls for starting/stopping or canceling a function, recognizable shape or size through touch, tactile dots to represent the increasing and decreasing operation, controls marked for location information, joint use with Braille and/or other tactile symbols, dimension and shape of a tactile bar	-
617	3	1	EN ISO 9241-210:2019 Ergonomics of human-system interaction-Part 210: Human design for interactive systems	Context of use description, sufficient detail to support design, deriving user requirements, human	-

				centered design, user-based testing, user-centered evaluation methods, specifying the context of use, the goals and the tasks, identifying tasks and sub- tasks, concrete design solution giving many scenarios, altering the design solutions, make design proposals more explicit, evaluation and long-term monitoring, error tolerance	
618	3	1	ISO 19297-1:2019 Intelligent transport systems- Shareable geospatial databases for ITS applications- Part 1: Framework	ITS applications, Information provisioning, safe driving, multimodal and cross navigation services, transportation data content update, geospatial content	-

				mashups, real time data handling services	

PART B: User requirements specification

Qualitative research

1. Introduction

The present qualitative study focuses on investigating and defining user requirements. The research on the user requirements of end-users was carried out in two stages. The first stage presented in detail in the present chapter of this report, titled "Qualitative Research." This chapter introduces the qualitative research and its findings, involving people with disabilities and older people as participants. A semi-structured interview was employed with seven different groups of participants. The methodology followed is described in the "Instruments and Procedures" section below.

The initial intention was to conduct focus groups with representatives from these groups, but for practical reasons on recruitment obstacles related to the use of English by the research subjects, the study was decided to conduct individual semi-structured interviews. This decision, although it required a greater workload for the researchers and research participants, produced more and higher quality data.

This report contains all 56 interviews summarized in tables over the areas of accessibilities, and a list of accessibility problem areas and solutions highlighted by participants for each of the four countries. However, not all problem areas are covered with a direct solution, as interviewees did not always have a solution for the issue mentioned.

Based on the findings of the interviews a survey questionnaire was then developed (see Quantitative Research section in this report) to make the final assessment on the accessibility challenges and difficulties faced by individuals with disabilities and older people, as well as the extent of these challenges/ difficulties concerning all accessibility areas. The findings derived on the first stage (interviews) were used to develop the questionnaire.

2. Objective

The objective of the present study is to document the accessibility challenges and difficulties faced by individuals with disabilities and older people, as well as the solutions proposed by the subjects of research, for each of the following accessibility areas and the sub-areas (see Instruments and Procedures section) they include:

1. Core Accessibility,
2. Digital accessible transformation,
3. Educational Accessibility,
4. Employment Accessibility,
5. Cultural Heritage Accessibility,
6. Tourism Accessibility, and
7. Accessibility in Security and Evacuation Situations.

3. Participants

The research participants will be recruited from seven (7) different groups/categories of individuals:

- 1) individuals with learning disabilities,
- 2) individuals with visual impairments,
- 3) individuals with hearing impairments,
- 4) individuals with physical disabilities/ mobility impairments,
- 5) individuals with mild intellectual disability,
- 6) individuals with high functioning autism,
- and 7) older people.

The initial objective of the researchers was to include two (2) participants from each country for each of the seven (7) categories mentioned above. This goal was largely achieved, with a minor exception. From Italy, one participant from the "older people" category and three participants from the "physical/mobility impairments" category took part. As a result, a total of 56 participants from the four (4) different programme countries (Greece, Italy, Spain, and Sweden), with 14 participants from each country, participated in the survey.

4. Instruments and Procedures

A semi-structured interview was employed with seven different groups of participants. The following three prompts were addressed in each group, for each accessibility area separately. For each problem/difficulty mentioned by the participants, they were also asked to mention the solution they think is appropriate. The general prompt helped the interviewees to think of each area holistically and prioritize the sub-areas.

Prompts 1. Do you experience any problems/difficulties in ... (*accessibility area*) ... which includes ... (*sub-areas*) ...?

Prompts 2. Please elaborate on these difficulties focusing on possible solution(s).

General prompt: Please, mention the sub-areas or sections of them for which you think there should be accessibility consideration and prioritize them (for instance, in the accessibility area they can refer to educational material or – more specifically – in images, maps etc.)

The participants shared their opinions about problems and solutions that they identified in all accessibility areas and subareas presented below, and the researchers recorded their answers.

Areas and Sub-areas

“Core Accessibility”:

- Physical/Spatial Accessibility of indoor and outdoor spaces
- Mobility with the means of transportation
- Communication with and services of the public and private sectors
- Web Accessibility

“Accessible Digital transformation”:

- E-commerce
- Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)
- Digital customer communication
- Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)
- Digital libraries and repositories
- Digital devices and their software/apps (e.g. mobile phones, smart TV, home appliances)

“Educational Accessibility”:

- Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary),

- Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology
- Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)
- Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)
- Accessibility in distance education/online learning

“Employment Accessibility”

- Spatial/Physical Accessibility in the workplace
- Accessible services in the workplace (e.g. hiring processes, communication with different sectors),
- In-service training and career up-skilling
- Assistive Technology in the workplace and accessible material

“Cultural Heritage Accessibility”

- Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)
- Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)
- Accessibility in museum exhibits and works of art

“Tourism (including recreation and sports) Accessibility”

- Accessibility in Tourism Services
- Accessibility in accommodation (hotel units, camps, camping)
- Accessibility in transportation
- Accessibility in sports & recreational facilities
- Accessibility at beaches
- Accessible shows (theaters, cinemas, concerts...) & accessible movies

“Accessibility in Security and Evacuation Situations”

- Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)
- Accessibility in Evacuation Planning (e.g. accessible evacuation plan)
- Accessibility of emergency information (Multiple channels)

5. Results

In this section, the findings obtained from the analysis of the interviews are presented for each country separately. Also, for each participant, their demographic/individual characteristics are presented. The means of assistive technology mentioned by each survey participant are presented below, although some of them do not formally belong to assistive technology but are part of mainstream technology. However, these means are presented here in order to faithfully reflect the participants' responses.

5.1. Summary of interviews from Sweden - List of accessibility problem areas and solutions

a. Core accessibility

Physical/Spatial accessibility of indoor and outdoor spaces

- **Problem areas:**

- High thresholds in buildings, inconsistent sidewalk access and maintenance, and stairs as barriers (Mobility impairment, Visual impairment).
- Lack of sidewalk maintenance in winter with snow causing mobility barriers (Mobility impairments (wheelchairs), and Visual impairment).
- Revolving doors (Visual impairment).
- Difficulty locating receptions in buildings without navigation cues (Visual impairment).
- Older buildings pose accessibility physical barriers (Mobility impairment)
- Overly bright lighting in stores causes discomfort (Mild intellectual disability).
- Overwhelming noisy environments causes stress (Specific learning disabilities, Autism, Visual impairment).
- Perception issues with curbstones and reading signs (65+).
- Crowded spaces cause stress and discomfort (Autism, Mild intellectual disability).
- Difficulty hearing in noisy environments (65+, Hearing impairments).
- Forgetting item locations and tasks (e.g., turning off taps). (65+).
- Challenges with spatial awareness and sound directionality (Hearing impairment)
- Difficulty hearing in larger rooms (>2 meters). (Hearing impairment)

- **Solutions:**

- Ensure new buildings are designed with accessibility in mind from the start.
- Old buildings: install ramps, lifts, handrails in stairs and provide the option of additional personal assistance if needed (Mobility impairment, Visual impairment, 65+).

- Better road maintenance in winter for sidewalks, not only bike lanes (Mobility impairment, Visual impairment).
- Standardize navigation paths for consistency in indoor environments, such as finding a reception (Visual impairments).
 - Alternatively, offer personal assistance at entrances to provide guidance (Visual impairment).
- Standardize lighting levels across stores.
- Create calm, minimalistic environments.
- Improve maintenance of public spaces to ensure existing solutions work.
- Designate quiet hours or areas in public spaces to reduce cognitive load (Autism, Specific learning disabilities, Visual impairment).
- Provide larger text for signs in public spaces (65+).
- Enhance the use of sound absorbing materials to reduce noise levels (65+, Hearing impairments, Visual impairments).
- Use of lists and reminders to aid memory (65+).
- Assistive technology: Use of conference microphones to extend hearing range (hearing impairment).
- Assistive technology: Utilize smaller, discreet solutions for hearing extension in social situations (hearing impairment).
- Assistive technology: Improve hearing aid to determine where sound comes from (hearing impairment).

Mobility with means of transportation

- **Problem areas:**

- Car: limited access to accessible parking (Mobility impairment).
- Car: Losing the right for vehicle adaptation support needed after retirement at age 66 (Mobility impairment).
- Car: Forgetting to wear glasses while driving (65+).
- Special transportation service: Issues with transport service providers opening hours, causing a risk of being stranded (Mobility impairment).
- Special transportation service: drivers lack training in how to assist visually impaired individuals (Visual impairment).
- Bus: Broken and unmaintained bus ramps (Mobility impairment).
- Bus: Inconsistent bus stop locations may lead to missed buses (Visual impairments).

- Public transport information displays hard to comprehend (Specific learning disabilities, Mild intellectual disability).
- Temporary bus stops causing safety hazards due to unexpected gap to the ground level (65+).
- Difficulty with complex ticketing apps (Mild intellectual disability).
- Poor treatment due to lack of awareness among transport staff (specific learning disability, mild intellectual disability).
- Overwhelming noise and crowds in public transportation (Autism, specific learning disability, Visual impairment).
- Request for assistance takes time, posing barriers for spontaneity (Visual impairments).
- Bike: Inability to hear traffic while biking, risking safety (Hearing impairment).
- Difficulty hearing in environments who have glass protection, such as in the police station (Hearing impairment).
- **Solutions:**
 - Continued support for vehicle adaptations post-retirement (Mobility impairment).
 - Improved operational protocols, opening hours and emergency response for special transport services (Mobility impairment).
 - Assistive technology for memory: reminders for glasses before driving (65+).
 - Enhance training for transportation staff on how to assist (Visual impairment)
 - Digital information displays: ensure there is a person to ask for assistance (Mild intellectual disability).
 - Ensure bus exits matches street height for safety (65+, Visual impairments).
 - Implement real-time location tracking for buses, telling the individual if the bus is further away (Visual impairment).
 - Simplified alternatives for ticketing (Mild intellectual disability, Specific learning disability).
 - Promote greater awareness of invisible disabilities among transport staff.

- Propose quiet zones on public transport (Autism, Specific learning disability, Visual impairment)
- Suggesting alternative less crowded routes for people on the spectrum or with other social needs (Autism).
- Increase assistance availability for spontaneous travel needs (Visual impairments).
- Consider alternative materials for barriers to improve sound transmission (Hearing impairment).

Communication with public and private sectors

• Problem areas:

- Social interaction: variability in respectful communication (Mobility impairment, Specific learning disabilities, Mild intellectual disability).
 - Being addressed through assistants rather than directly (Mobility impairment).
- Difficulty being understood over the phone due to speech difficulties (Mobility impairment (with condition impacting speech)).
- Website navigation: difficulty finding contact information (Visual impairment).
- Inaccessibility of chat windows for screen readers (Visual impairment).
- Complex navigation to get in contact, too complicated digital paths (65+, Mild intellectual disability).
- Complex navigation to get in contact: Challenges in understanding too much text that is not adapted to an easy-to-read format (Mild intellectual disability, Specific learning disabilities).
- Difficulty communicating with individuals who are wearing face masks (hearing impairment).
- Social environment: Hesitation to ask for help due to fear of judgment (Specific learning disability, Mild intellectual disability).
- Exclusion due to lack of digital ID and literacy among elderly.
 - Too complex task of navigating alternatives in phone cues (65+).

• Solutions:

- Educate workers to address individuals in wheelchairs directly; and not their assistant for respectful communication.
- Provide multiple communication channels (through direct call and mail).

- Digital navigation: clarify location of contact info, preferably on the first page (Visual impairments).
- Provide access to people rather than digital bots for assistance; to help simplify communication channels.
- Provide easy-to-read texts for information.
- Increase awareness of different communication needs and styles.
- Provide simplified communication and personal interaction for assistance (65+, Mild intellectual disability, Specific learning disabilities).

Web accessibility

• Problem areas:

- Websites lacking easy-to-read formats (Mild intellectual disability, Specific learning disabilities)
- Difficulty reading small text on screens (65+).
- Cumbersome manual adjustments for preferred settings across digital spaces (65+)
- Websites lack easy-to-read formats (Mild intellectual disability, Specific learning disabilities).
- Navigation difficulties in digital interfaces due to information overload (Specific learning disabilities, Mild intellectual disability).

• Solutions:

- Simplify process for personalized and preferred settings across digital services and devices (65+).
- Provide easy-to-read alternatives for complex digital content (Mild intellectual disability, Specific learning disabilities)
- Provide multimodal features/options on websites for the user to choose from (Mild intellectual disabilities, Specific learning disabilities).

b. Digital accessible transformation

Digital documents

• Problem areas:

- Assistance needed for signing documents
 - To understand content, health and finance related as examples (Mild intellectual disability).

- To sign a physical paper (Mobility impairment).
- E-forms sometimes incompatible with screen readers (Visual impairments).
- Complex health-related forms are hard to navigate (Specific learning disabilities, Mild intellectual disability).
- Navigation difficulties in digital interfaces due to information overload (Specific learning disabilities, Mild intellectual disability).
- **Solutions:**
 - Provide easy-to-read alternatives for complex digital content, using a QR code as one alternative (Mild intellectual disability, Specific learning disabilities)
 - Provide the option of digital signing of documents (Mobility impairments).
 - Design documents for assistive tech compatibility (Visual impairments).
 - Use simpler language and clearer questions in forms and questionnaires (Mild intellectual disability).
 - Provide personal assistance if needed to ask questions (Specific learning disabilities, Mild intellectual disability)

Digital services

- **Problem areas:**
 - Difficulties with online services (e.g., needing personal assistance at the postal service). (Specific learning disability)
 - Digital assistants, Siri one example, contains errors in interpreting input (Mobility impairment)
 - Inaccessible design of phones: the initial buttons on devices like iPhones (Mobility impairment)
 - Some actions require two fingers, but can only use one.
- **Solutions:**
 - Make sure there is always an option to get personal assistance. (Specific learning disability)
 - Improved speech-to-text technology (Mobility impairment).

E-commerce

- **Problem areas:**
 - Overwhelming information on websites, causing fatigue (Visual impairments).

- Inadequate product descriptions hinder online shopping experiences (Visual impairments).
- Security concerns over sharing sensitive information (65+, Autism).
- Difficulty with basic mathematics affects shopping experiences (Mild intellectual disability).
- Avoidance of online shopping due to fear and lack of understanding (Mild intellectual disability, 65+).
- Vulnerability to online scams (Mild intellectual disability, Autism, 65+).
- **Solutions:**
 - Simplify online content, provide easy to read versions (Mild intellectual disability, Specific learning disability).
 - Enhance product descriptions with sensory details (Visual impairments).
 - Ensure accessible design of digital process for screen readers (Visual impairments).
 - Allow payment via invoice instead of online to reduce safety concern in sharing bank details online (65+).
 - Improve education on math for students with mild intellectual disabilities to improve their independence in managing basic math skills for shopping (Mild intellectual disability).
 - Develop technology to detect scams and alert users (Autism, 65+, mild intellectual disability).

Digital customer communication

This sections problem areas and solutions overlaps and are covered in **Communication with public and private sectors.**

Digital banking and payment

- **Problem areas:**
 - Inaccessibility of payment methods (touchscreens vs. buttons) (Visual impairments).
 - Barriers for elderly in managing finances due to digital payments with Bank ID (65+).
- **Solutions:**
 - Provide buttons on payment machines (Visual impairment).
 - Ensure cash acceptance (65+).

- Ensure personal assistance in a physical space for individuals who don't understand bank ID (65+).

c. Educational accessibility

Spatial accessibility in educational units

- **Problems areas:**

- Navigation challenges; hard to move across campuses (Visual impairment).
- Difficulty concentrating in crowded environments (Specific learning disabilities).
- Lack of sound-absorbent materials in classrooms leading to poor listening conditions (Hearing impairment).

- **Solutions:**

- Maintain consistent lecture locations (Visual impairment).
- Provide extended writing time and private exam settings (Specific learning disabilities).
- Provide calm and distraction free environments for learning (Specific learning disabilities).
- Use sound-absorbing materials in educational environments (Hearing impairment).

Accessibility in services provided by educational units:

- **Problems areas:**

- Restrictions on pursuing further education due to disability benefits policies (Mobility impairment).
- Challenges with self-selection in group work, leading to social isolation (Hearing impairments, Specific learning disabilities, Visual impairments)
- Reliance on classmates for note-taking causing a social issue (Specific learning disabilities, Visual impairments).
- Inconsistent accommodations from different instructors/teachers (Specific learning disabilities).
- Stronger support systems for consistent accommodation across courses and teachers (Specific learning disabilities).

- Lack of understanding of the struggles of a student with an invisible condition (Autism, Mild intellectual disability, Specific learning disabilities)
- **Solutions:**
 - Policy changes to allow further education without losing benefits (Mobility impairment).
 - Educators should actively form groups to ensure inclusivity (Hearing impairments, specific learning disabilities, Visual impairments).
 - Offer institutional support for note-taking rather than students (Visual impairments).
 - Stronger and robust support systems for consistent accommodation across courses (Specific learning disabilities).
 - Emphasize the importance of a structured environment to maintain focus (Specific learning disabilities).
 - Promote an empathetic and supportive educational environment that accommodates different needs (Autism, Mild intellectual disability, Specific learning disabilities).

Accessibility in educational material

- **Problems/Difficulties:**
 - Limited educational options and career pathways (Mild intellectual disability).
 - Delays in obtaining audio texts (Visual impairments, Specific learning disabilities)
 - Presentations with visual cues not accommodating visual impairments (Visual impairment).
 - Lack of motivation from arbitrary tasks with no real-world relevance (Autism).
- **Solutions:**
 - Offer tailored support for invisible disabilities and broader career aspirations.
 - Increase the window of time for material requests; allow it before the course starts (Visual impairments, Specific learning disabilities).
 - Train educators on inclusive presentation methods.

- Assigning tasks with clear real-world relevance (Autism).

d. Employment accessibility

Spatial/Physical accessibility in the workplace

- **Problem areas:**
 - Inaccessible presentation room, leading to a barrier in job performance (Mobility impairment).
 - Stress from noise levels (Specific learning disabilities, Autism).
 - Safety concerns working alone (65+).
 - Difficult to hear in larger conference rooms (Hearing impairment).
- **Solutions:**
 - Ensure booked rooms for presentations are accessible (Mobility impairment).
 - Advocate for a calm work environment.
 - Allowance to take breaks for recovery.
 - Assistive technologies for hearing aid (Hearing impairment).

Assistive technology in the workplace

- **Problems areas:**
 - Digital work tools, such as Outlook calendar, have too many functionalities making use of a screen reader difficult (Visual impairment).
 - Complex software and tools can be overwhelming; difficulty managing multiple tasks digitally (65+).
 - Lack of tailored support for invisible disabilities (mild intellectual disability).
- **Solutions:**
 - Provide digital services in different complexity levels, where level 1 would be a simplified version with the base functionalities (Visual impairment).

Accessible services in the workplace

- **Problems areas:**
 - Personal assistance required to work; financial aid was removed for this which led to unemployment (Mobility impairment).

- Adapting to unfamiliar social environments and unspoken rules is challenging (Autism).
- **Solutions:**
 - Allow assistants at work for individuals who need them (Mobility impairment).
 - Policy changes to ensure the ability of both education and employment (Mobility impairment).
 - Providing guidelines from coworkers and clear expectations. Offering additional social support to understand workplace norms. (Autism).

e. Tourism and recreation accessibility

Accessibility in sports & recreational facilities

- **Problems/Difficulties:**
 - Barriers to participation in hobbies due to mobility issues (Mobility impairment).
 - Barriers to participation in hobbies due to lack of accessible local initiatives in small cities (Mild intellectual disability).
- **Solutions:**
 - Explore assistive technologies tailored for specific activities (Mobility impairment).
 - Explore ways to facilitate contexts for local inclusive activities (Mild intellectual disability).

Accessibility in tourism services

- **Problems areas:**
 - Overwhelmed by planning trips independently due to navigating multiple digital channels (Specific learning disabilities).
- **Solutions:**
 - Ensure travel agencies accommodate people with disabilities for comprehensive planning to avoid stress.

Accessibility in transportation for tourism

- **Problems areas:**
 - Inaccessible holistic transport system.
 - Complicated booking processes and inaccessible options (Visual impairments, Mobility impairments, Mild intellectual disability).

- Overwhelmed by planning trips independently due to navigating multiple digital channels (Specific learning disabilities).
 - Limited options in travel organizers (Mild intellectual disability).
- **Solutions:**
 - Simplify booking procedures for events and make them accessibility compliant (Visual impairment).
 - Streamline assistance requests throughout the entire user journey with user-friendly apps or booking services (Visual impairment, Mobility impairment, Specific learning disabilities).
 - Ensure accessible parking spots (Mobility impairments).
 - Simplify booking processes and provide information in an easy-to-understand format (Mild intellectual disabilities).
 - Provide the service of personal support in booking (Specific learning disabilities, Mild intellectual disabilities, 65+).

Events and shows

- **Problems/Difficulties:**
 - Issues with concert seating for assistants, not always considered or allowed causing additional costs as a barrier (Mobility impairments, Visual impairments).
 - Inconvenient bag policies restrict carrying essential items (mild intellectual disability).
 - Insufficient warnings about sensory triggers at events (Autism, Mild intellectual disability).
 - Lack of hearing loops in cinemas (65+, Hearing impairment).
 - Difficulty managing crowded exits at events (Autism).
- **Solutions:**
 - Ensuring free seating for assistants (Mobility impairments, Visual impairments).
 - Implement alternative security measures.
 - Include detailed sensory trigger information in announcements (Autism, Mild intellectual disability).
 - Ensure hearing accommodations/hearing loops (65+, Hearing impairment).

- Designate areas for assistive devices (extended microphones) near performance stages (Hearing impairments, 65+).
- Structured exits to avoid crowds leaving at the same time (Autism)

f. Cultural heritage accessibility

• Problems/Difficulties:

- High noise levels in cultural spaces can be overwhelming (Visual impairments).
- Difficulty reading information signs in museums due to time pressure from others (Specific learning disabilities).
- Affordability issues with high ticket costs (mild intellectual disability).
- Difficulty navigating essential facilities in museums (mild intellectual disability).
- Language complexity in museum guides and exhibits (mild intellectual disability).

• Solutions:

- Suggest implementing QR codes for audio information to reduce stress and to listen in ones own time (Specific learning disabilities, Mild intellectual disability).
- Implement sound-absorbing materials (Visual impairments, Autism).
- Establish quiet hours (Visual impairments, Autism).
- suggest QR codes for audio information in museums.
- Improve signage and navigation aids; use simplified language and easy-to-read text.

g. Security and emergency situations

• Problems/Difficulties:

- Difficulty understanding critical information; inadequate accessibility of crucial information (Mild intellectual disability).
- Disengagement with complex pandemic-related communications (Mild intellectual disability).
- Lack of awareness among personnel regarding the needs of visually impaired individuals (Visual impairment).

- Inaccessible emergency information (only visual, or only sound) can pose serious risks (Visual impairments, Hearing impairments).
- Challenges with physical limitations during emergencies, such as stairs (Mobility impairment, 65+).
- Distress from unexpected events and emergencies (Autism).
- **Solutions:**
 - Ensure information is in easy-to-read formats with clear language and visual aids (Mild intellectual disability).
 - Provide engaging educational activities (Mild intellectual disability).
 - Provide training on emergency procedures tailored to assist those with disabilities (Visual impairments).
 - Ensure multiple channels for emergency communication are accessible (Visual impairments, Hearing impairments).
 - Discussing emergency plans with family to ensure preparedness and avoid additional stress in an already stressful situation (Autism).

h. Other areas:

Prejudices and societal attitudes

- **Problems/Difficulties:**
 - Miscommunication by addressing assistants rather than individuals; societal attitudes assume limitations (Mobility impairments).
 - Unawareness due to a lack of recognition for research in invisible disabilities (Mild intellectual disability).
- **Solutions:**
 - Encourage direct communication and address misconceptions through education (Mobility impairments).
 - Promote awareness highlighting the importance of inclusive research and encourage participation from individuals with diverse disabilities (Mild intellectual disability).

Social connectedness

- **Problems areas:**
 - Preference for physical interactions over digital (65+)

- Misunderstandings in social cues leading to isolation (Hearing impairment).
- **Solutions:**
 - Support for maintaining social connections through face-to-face engagements. (65+)
 - Improve hearing aid technology for better sound perception and support (Hearing impairment).

Grocery shopping

- **Problem area:** Forgetting items and challenges with digital assistants (65+)
- **Solutions:** Use mobile phones for lists and simplify digital interactions for groceries. (65+)

Social interactions and media

- **Problem for interviewee 1:** Online interactions can lack context and lead to misunderstandings (Autism).
- **Solutions for interviewee 1:** Prefer face-to-face interactions in meaningful settings over online communication (Autism).

Clear and direct communication styles

- **Problem:** Frustration with unclear punctuation, unfinished sentences, and excessive use of emojis (Autism).
- **Solutions:** Encouraging clear and direct communication styles (Autism).

5.2. Interviews (Sweden)

To protect the anonymity of participants, certain demographic details are not presented, including date of birth. The age range of interviewees is between 29 and 70 years old. Additionally, some descriptive details regarding problem areas and proposed solutions from interviewees have been abstracted where necessary. These adjustments aim to balance the depth of qualitative insights with the ethical responsibility of safeguarding participant identities.

Sweden – Specific learning disabilities no 1

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Sweden
3. **The type of learning disabilities (official clinical diagnosis):** ADHD
4. **Do you face other difficulties apart from the SLD per se?** Dyslexia
5. **The age of diagnosis of learning disabilities:** as an adult
6. **Educational level (e.g., lower secondary school):** Post-secondary education
7. **Do you use assistive technology?** Yes
8. **If yes, which means of assistive technology?**
Audiobooks, digital books with text-to-speech, and institutional support such as peer notetaking.
9. **What kind of educational material is more suitable for you? (you can choose more than one answers):** Video. Also reading with the support of something visual.
10. **Do you use any kind of accessible educational material?** Yes
11. **If yes, what kind of it?** Videos and visually supported reading.

Accessibility Area	Problems/difficulties	Solutions
- Sub-areas		
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	When navigating outdoor spaces with an abundance of stimuli causes exhaustion, affecting the	To manage these challenges, she prioritizes getting a good amount of sleep. Limiting the time

	ability to focus and remain present. Indoor environments crowded with numerous objects also pose challenges, causing distractions and reducing the ability to concentrate. Traveling on public transportation is difficult due to high noise levels and overwhelming impressions from crowded spaces.	spent in busy city environments. Clean white walls create a calm environment with minimal distractions to help maintain focus.
Mobility with the means of transportation	Traveling by public transportation is challenging due to the high noise levels and overwhelming sensory input from crowded spaces.	Uses headphones to listen to music or engages with her phone to maintain focus on a single activity. Prefers traveling by car for a more comfortable and controlled environment.
Communication with and services of the public and private sectors	Faces challenges in expressing herself clearly, often speaking too quickly and occasionally forgetting details, which can lead to misunderstandings.	Planning her communications, creating written lists of what she wants to say, especially when interacting with healthcare providers.
Web accessibility	None mentioned.	
Digital accessible transformation		

E-commerce	None mentioned.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None mentioned.	
Digital customer communication	None mentioned.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None mentioned.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Can get caught up in various social media platforms, which not only drains energy but also causes anxiety by diverting focus from important tasks. Social media often becomes a procrastination tool, especially for tasks perceived as burdensome. Similarly, when watching a series, she feels compelled to finish it in one sitting, which further distracts from other responsibilities.	Temporarily deleting social media apps or streaming services helps redirect her time and attention towards more productive activities. This strategy ensures prioritization of time more effectively.

<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Gets distracted by surrounding sounds, which poses challenges when taking exams in crowded spaces. Additionally, experiences of high level of claustrophobia in small, confined spaces over extended periods. Having too many objects in the environment also disrupts the ability to focus.	To accommodate during written examinations, she benefits from extended writing time and the option to take the exam in a private setting. During individual exams, a spacious room with an adjustable table and a sofa is preferred. This setup allows for brief breaks during long writing sessions, which she finds particularly beneficial.
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	It's difficult to simultaneously take notes and listen, as multitasking presents a significant challenge for her. Understanding the course schedule was initially challenging. Many times perceives information and organization as chaotic and lacking clear logic.	Relies on another student in her group to take notes for her. She sought assistance and clarification from a student counselor, which proved helpful. Prefers literature lists and articles to be organized alphabetically for clarity and ease of reference. Overall, instructions that are structured to be as clear and organized as possible is important.

Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Administrative services have been inconsistent in accommodating her needs. Frequent disputes is a result of this, when attempting to enroll in a course she had the right to apply. Understanding the information provided was challenging, and clarification was not readily available. Each course and institution at the university requires different procedures, complicating the submission of her certificate outlining her need for assistance. Some teachers facilitate this process, while others place the responsibility on the individual student. Submitting the certificate for each course is a tiresome task that she sometimes forgets, resulting in delays in receiving necessary support.	Despite these challenges, she persisted and received support from a student counselor who assisted her in enrolling in the course. Clear instructions and reminders for submitting the certificate, along with specific guidance on where and to whom to send it, are highly beneficial. Ideally, she envisions a system where she only needs to submit her certificate once, and the university's digital services automatically recognize her needs for every course. This automated system would provide her with extended writing time and access to recorded lectures without the need for frequent requests throughout her studies. This streamlined approach would fulfill her desire for simplicity and consistency in accessing

		necessary accommodations.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	She sometimes gets stuck on assignments due to small details she doesn't understand, which can lead to frustration and easily turning to distractions. There have been instances where she sought help from teachers to understand assignment instructions but did not receive the assistance she needed. Group work has been challenging for her. At one point, she was left without a partner despite being required to pair up with other students, which she described as feeling like adult bullying. This left her to complete the assignment alone while still meeting the same requirements as those working in pairs.	She often seeks help from family members. She also tries to adopt a mindset of not getting bogged down by minor details and moving on to other tasks, but this approach is difficult for her. Initially, she had a mentor to assist her at the start of her studies, but this support is no longer available. One positive experience was in a special education course where she received the following supports without needing to ask: • Clear and easily accessible instructions on what tasks to complete, deadlines, and where to submit work. • Pre-recorded lectures.

		Regarding group work, she suggests that teachers assign partners to ensure everyone has someone to collaborate with. If a student must work alone, the assignment requirements should be adjusted to account for the workload and time constraints of a single person. These accommodations would help alleviate some of the challenges she faces in group assignments.
Accessibility in distance education/online learning		
<i>Employment Accessibility</i>		
Spatial/Physical Accessibility in the workplace	She used to work in a loud sound environment, the sound levels caused stress and a sense of panic at times.	To manage the noise levels, she feels it's necessary to work fewer hours and avoid consecutive shifts. While she considers medication as a potential solution, she views it as a last resort. Her primary focus is on creating a

		calm environment, especially in learning and work settings. She believes that establishing a peaceful environment benefits both herself and the others within her context of work. By prioritizing the environment and surrounding conditions, she envisions creating a beneficial environment for everyone involved.
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	None mentioned.	
In-service training and career up-skilling	None mentioned.	
Assistive Technology in the work place and accessible material	None mentioned.	
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries,	None mentioned.	

archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	
Accessibility in museum exhibits and works of art	None mentioned.	
<i>Tourism (including recreation and sports) Accessibility</i>	None mentioned.	
Accessibility in tourism Services	None mentioned.	
Accessibility in accommodation (hotel units, camps, camping)	None mentioned.	
Accessibility in transportation	She finds it difficult to sit still in a narrow space for longer periods of time. She gets very restless.	She plans for things to keep her occupied. Such as movies, snacks, music. At some point she also

	She also doesn't appreciate sitting close to people she doesn't know. Exiting an airplane is described as a stressful situation, she does not like to wait for everyone to get up and leave. She does not like to sit as a passenger in a car as that would make her restless.	took a sleeping pill to ensure that she slept through the journey. She likes to sit close to the exit of the plane so she can get out fast. Preferably, she would go by car. She loves to drive the car herself as she likes to be in control.
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None mentioned.	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in	None mentioned.	

case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	
Accessibility of emergency information (Multiple channels)	None mentioned.	
Other areas discussed Distractions and stress management	She often delays tasks that she dislikes doing but must complete, leading to stress as deadlines approach. However, she acknowledges that this pressure sometimes motivates her to complete tasks. Other distractions that pose challenges include: • Too many items on walls or surroundings. • Sudden changes in plans or environments. • Managing these distractions is important for her to maintain focus and reduce stress.	

Sweden – Specific learning disabilities no 2

Demographic data

1. Gender: Female

2. **The place (country) of residence:** Sweden
3. **The type of learning disabilities (official clinical diagnosis):** Dyslexia
4. **Do you face other difficulties apart from the SLD per se?** Chronic physical condition and fatigue, which combined with dyslexia, contribute to exhaustion.
5. **The age of diagnosis of learning disabilities:** Late 1990s
6. **Educational level:** Post-secondary education
7. **Do you use assistive technology?** Yes
8. **If yes, which means of assistive technology?** Spell check, text-to-speech, Text enlargement
9. **What kind of educational material is more suitable for you? (you can choose more than one answers):** Text and visual. Added note: She would like to have presentations recorded and sent to hear afterwards, and also text read up to her.
10. **Do you use any kind of accessible educational material?** Adapts content independently using assistive tools

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	If there are many people and things going on around her, it's difficult to consume information in public spaces. Especially when there is some kind of pressure of doing it fast.	She would like a calm environment to scan the information and have it read to her at her own pace.

Mobility with the means of transportation	Information displays for public transport are usually messy to understand. Also, they tend to inform on the end destination, and not the destinations along the way. If she is going to an in-between destination, it's difficult to know which train to take.	She has learnt to look at the train number, as that is the better cue to understand which specific train to take. She would also appreciate more personal service, in addition to the displays so she can go ask a person. Bigger cities in Sweden are better at this than the smaller cities. In addition to the display with written text there also needs to be audio calls from the trains as well as the destinations at which the trains are arriving to ensure everyone can take part of that information.
Communication with and services of the public and private sectors	One problem area with the public sector sending information on paper is that she won't be able to use her assistive tools to adapt the texts to her needs. When information is too complicated, she describes a problem that some people might be hesitant asking for help as they don't want to be perceived as being unintelligent.	She stresses the importance of fostering environments where individuals feel encouraged to ask for help without hesitation. Since there are people who might not dare to ask for help given the fear of being judged, she says it's important to not make things unnecessarily complicated.

	She also describes the wish for people to manage on their own and raises the need to enable people to manage on their own. She called her doctor and got the auto response if she could write her errand and schedule an appointment online or alternatively wait if and voice her errand. She wonders why anyone would like to go online and do all of that if there is an option of taking it directly on the phone. The same goes for contact with her bank, that is reducing the available times for being able to contact them through phone call.	She would like to call the hospital and talk to a person who knows her journal and errand.
Web accessibility	Problems of too much text and not knowing where to find the information she is looking for.	
Digital accessible transformation		
E-commerce	She went to the postal service to send a package,	There should always be the option of getting help

	but she had to order the wrapping online. Previously that could be done at the postal office, and now she had to use an iPad provided to her while being there on the spot. This was difficult for her, and she needed personal assistance. She also did not understand why she would not be able still to buy it at the counter.	from a physical person for things that people won't be able to do digitally. She raised this of general importance to avoid societal exclusion in ongoing digitalization.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	She filled in a health-related form which had very difficult questions. With questions about her health, they were also important questions to interpret right. People might be hesitant asking for help as they don't want to be perceived as being unintelligent. She also describes the wish for people to manage on their own and raises the need to enable people to manage on their own. Documents from the bank with numbers and of text makes it hard for her to navigate this information.	In these situations, she goes and asks for clarifications. Preferably, she would have appreciated a much simpler language to prevent her having to ask for help. She appreciates clear and direct questions. Since there are people who might not dare to ask for help given the fear of being judged, she says it's important to not make things unnecessarily complicated. She would prefer that important information from the bank would also be

	Leading her to sometimes not read through this information at all. If there is an important contract she needs to sign, then she will make sure to take the time to properly read it.	more accessible through a QR code with a version of the information being read and explained to her.
Digital customer communication	Chatbots are cumbersome. They can be useful for easy questions such as checking the availability of a product.	For other more complicated questions she prefers asking in person.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None mentioned.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	She writes frequently online, and even with spell-checkers she sometimes has a hard time making herself understood in text.	Currently she dictates text through her assistive technology and then she uses a spell checker to doublecheck for errors. It still misses some errors.
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and	None mentioned.	

post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Even though provided with access to audio books, it took time to receive books in audio format. This resulted in her having to read the book anyways to not fall behind.	She had the right to receive audiobooks, extra time, and someone to write notes for her. Most worked, but the time it took to get the literature in audio was an issue. She bought a spellchecker for her computer on her own as this at that time was not provided by the university.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	She described a problem with inconsistent accommodation from different teachers. Some were understanding, while others were not, with one teacher even making condescending comments that could have discouraged her.	Despite this, she was able to handle the lack of understanding. Without that inner support, she believes she might have dropped out of school. However, she also had teachers who were great role models regarding her dyslexia.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	None mentioned.	
Accessibility in distance	None mentioned.	

education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place	Writing or reading under the same condition and pressure of others is described as challenging.	She would like more time and space to do reading and writing at her own pace. She would also appreciate a greater awareness of these needs in the workplace.
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	None mentioned.	
In-service training and career up-skilling	None mentioned.	
Assistive Technology in the work place and accessible material	She describes understanding the world differently living with Dyslexia, which can sometimes lead to being easily misinterpreted. She often identifies simpler ways of doing things and proposes these methods in her work collaborations, as she believes in avoiding unnecessary complications.	Having faced similar barriers, she has developed an awareness of different needs among colleagues and people who she works for. She adapts her communication to the level of others and strives to keep it as straightforward and accessible to ensure everyone can understand.

	However, this has occasionally caused friction with colleagues who have different workflows. She describes herself as easily seeing different ways of being in other people, sensing if a colleague too might have a diagnosis that is not voiced. She discussed how to balance accommodating the colleague's needs while still meeting job requirements, recognizing the importance of finding a balance between individual needs and work demands. In her own work, she sometimes faces the expectation to perform writing tasks under the same conditions and time constraints as others without dyslexia. She knows others with dyslexia share this issue but remains silent. She expressed frustration at not being given the time she needs in these situations.	It's important for increased awareness of invisible disabilities in the workplace and better accommodations for people's differences. More time and the opportunity to complete writing tasks at her own pace would be greatly appreciated.
<i>Cultural Heritage Accessibility</i>		

Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	None mentioned.	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	
Accessibility in museum exhibits and works of art	At one point she was trying to read a sign, which is a task that takes time for her. People were waiting behind her, causing stress. She describes how she usually stops to read and tries to form her own understanding by other visual cues.	Ideally, she would like to scan a QR code to step aside and listen to the information instead.

<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Difficulty syncing all aspects of planning a trip. Having to navigate through different digital channels for different things (booking flight, hotel, transport to the airport etc.).	She would appreciate being able to call an agency to help her with the entire planning of the trip.
Accessibility in accommodation (hotel units, camps, camping)	She does not wish to put together the trip in all its details by herself. The problem being all the navigation across different sites with information being difficult to piece together.	She prefers to book all-inclusive so that all is planned once getting there.
Accessibility in transportation	None mentioned.	
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies		She appreciates it when there are captions when watching a show or a movie.
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g.	None mentioned.	

the evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	
Accessibility of emergency information (Multiple channels)	There is usually a lot of information to grasp. Important information. She emphasizes the need to make this information as easy and clear as possible.	They have at the workplace discussed essential security related things to write as a short list, as an alternative to the denser information provided.
<i>Other areas discussed</i> <i>The accessibility of the information provided about the interview</i>	Information was sent beforehand as a pdf document to the participant. This text was also walked through together with the participant in the beginning of the interview. The text in the pdf was not described as a problem to read, but the walkthrough of the information together was appreciated.	A suggestion for further improvement was to also include a QR code in which participants could scan and listen to the information beforehand at their own pace.

Sweden – Visual impairments, no 1

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Sweden

3. **The type of your disability and the cause of it (official clinical diagnosis):**
Cataract
4. **The age at onset of visual impairments:** Vision deteriorated over time, leading to total blindness
5. **Educational level:** University, bachelor's level
6. **Severity of disability:** Blindness
7. **What means do you use to read?** Screen reader
8. **Visual acuity of the left eye:** Only light perception
9. **Visual acuity of the right eye:** Only light perception
10. **Visual field:** Central vision loss, Peripheral vision loss
11. **You move alone or with the help of an attendant?** Alone, but with a guide dog
12. **How often do you move alone?** Always.
13. **Do you use assistive technology?** Yes
14. **If yes, which means of assistive technology?** Screen readers, speech synthesis (on computer and phone), white cane, limited use of braille
15. **What kind of educational material is more suitable for you?** Audio-based learning, text-to-speech materials, and audio-visual content (e.g., YouTube videos)
16. **Do you use any kind of accessible educational material?** Yes
17. **If yes, what kind of it?** Audio book programs

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Town squares can be challenging due to their large open spaces. These are difficult to navigate. Low-hanging branches, especially in the spring, can be problematic. He has	More tactile paving paths would be helpful for navigation, making it easier to get around. Clear edges and environmental differences are important, so they can be felt with a cane.

	walked into branches multiple times. Outdoor seating areas, for example, that are not well-marked can be problematic, as he might walk straight into the tables. Does not feel safe crossing a road if there is no traffic light. Indoor space: Shopping centers are hard to navigate, there are no designated paths. No clear directions given on where the shop he would like to go to is and how to get there. Easy to get lost. Indoor space: shows an image of the staircase in his apartment being located as a spiral in the middle of a room. Easy to bump into. Kitchen: there are many kitchen technologies that are designed today that do not work for him. Touch screens and certain buttons. Not audio-based, only visual.	Better consideration of the overall environment, the things that the white can might not detect. Greater awareness of the paths designed for blind people. So that barriers won't unintentionally be put there. More traffic lights in general. Shopping centers: he would like more work to be done on AI solutions, for example, so that people can find and navigate indoor environments more easily. Like google maps, but inside. Apartment: general more thoughtful designs when planning and building apartment. Uses his own made solutions of setting out small markers for each button. He wishes there would be tactile differences on the buttons.
Mobility with the means of transportation	He takes the bus. But sometimes the bus does not stop where it is supposed to go. For example, if another bus is in front of it, it might stop and take on	Having the bus needing to stop in an exact place each time. Technical solutions that could help: With AI, for

	passengers behind the bus in front. In these situations, the bus driver misses him, and he misses the bus. This is described as a problem across abilities: it's also about understanding that not everyone can rush to the third bus over there. Someone in a wheelchair, or maybe an older person, can't move that quickly. Bus companies should understand that they can't stop the third bus and drive away if there's someone with a wheelchair, a white cane, or a guide dog waiting at the bus stop. Underground: there are accidents where blind people fall down the tracks. People do not always offer help. He experiences a cultural difference in this, comparing Sweden with the helpful social environment in other countries. He has the option of assistance, such as guidance services, in public transportation. However, it must be booked 24 hours in advance. This causes a problem with flexibility and the wish to be spontaneous. Some Uber drivers cancel their bookings once they	example, there is a lot of potential for providing guided assistance, like having a guide in your pocket via your phone. For instance, if the bus is farther away, you could get real-time information. Solutions: should be protecting walls like there are in the commuter trains in Stockholm train station. With doors opening only where to enter the train. He is an extroverted person so he can ask for help, but not all do. He thinks that people should offer help and let him decide if he needs it at the moment or not. There should be more resources for assistance at short notice. There should be a controlling system, checking the basis for

	learn he is blind. Not all drivers agree to take his guide dog.	cancellations in these systems. It should be illegal to cancel his booking based on this.
Communication with and services of the public and private sectors	Public sector: It is not always possible to mail in relation to sensitive content. GDPR issues. This content is instead sent to him in a physical letter, which means he needs help from someone with vision to read his post for him. He does not want that.	He would like to have all his communication, even sensitive information, digitally in the mail so he can read it with his screen reader.
Web accessibility	He is forced to use what works, rather than which site provides the cheapest offers.	More accessible options.
Digital accessible transformation		
E-commerce	Not all online experiences consider how it adapted towards a screen reader.	He has certain websites he knows work for him.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Digital documents and forms do not always work well with speech synthesis. They are not designed to be compatible, making it difficult to use the speech synthesis	
Digital customer communication	None mentioned.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Chooses bank on the level of its accessibility, does not get to choose based on who provides the best deal. He does not have the same freedom and condition to choose between options, as most people do.	Gets recommendations frequently on better solutions when problems occur within his community. Together they share their experiences of digital services and options that work for them.

	Accessibility also changes with new solutions built into services. When paying at a restaurant, for example: going from buttons to touch screens on paying machines: he is no longer able to pay himself. He does not want to tell a stranger his code. Bank ID: QR code not working. Problem in not knowing where to direct the camera.	This is getting better as the systems get smarter.
Digital libraries and repositories	No issues as he remembers.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	He does not get the chance to choose devices and services based on price, but to which extent they are accessible to him.	There should be more accessible options, not just one solution for his group. Solution to meet low number of options: pitching this as business opportunities, understanding there is a market of needs within this area.
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	When changing the location of lectures, having to navigate across campus is a problem.	Use one room and stick to it throughout the course.
Accessibility in educational material (documents – text & images/maps and	It takes a lot of time to get the student literature in audio version. Problem of getting access to the	Get notification if you are admitted to a course before others: to request

graphs, video, presentations, VR & AR) and assistive technology	literature too late. This causes a risk of falling behind.	the material in audio and receive it in time.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	He had a classmate getting paid through university for helping him take notes. Socially a problem, it is not always that fun to ask a peer to do this work for him.	This service should be provided by someone through the university.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Too long presentations with numbers being displayed in a presentation, that does not work. Coursework: risk of being left out in situations in which students choose whom to work with.	Teachers need to get the education they need to work with a student that is blind. He is extroverted and has no problem making contact, but the university could be better providing a set structure for this.
Accessibility in distance education/online learning	Zoom works well, but when holding a presentation himself he prefers having it in the physical space. He uses zoom in his work and prefers to talk to people in the physical space as he can't feel the audience responses in a digital meeting.	Solution for getting more audience feedback online: described difficult, but other tactile feedback could perhaps be explored, rather than only the visual ones.
Employment Accessibility		
Spatial/Physical Accessibility in the work place	None mentioned.	
Accessible Services in the work place (e.g. hiring processes, communication with different	He needs assistive tools for his work as a self-employed person, but the process to determine responsibility and implementation is slow and	

sectors)	unclear, unlike the other established routines for job applicants.	
In-service training and career up-skilling	None mentioned.	
Assistive Technology in the work place and accessible material	None mentioned.	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	None mentioned.	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	
Accessibility in museum exhibits and works of art	None mentioned.	
Tourism (including recreation and sports) Accessibility		
Accessibility in tourism Services	Booking tickets can sometimes be so complicated that he ended up not getting a ticket for an	Accessibility compliant processes.

	event he would have liked to attend. He Definitely can't compete with others queuing to get a ticket, since accessibility barriers make it take longer time for him.	
Accessibility in accommodation (hotel units, camps, camping)	None mentioned.	
Accessibility in transportation	Booking a train: The main issue described is the inefficiency and complexity in the process of arranging assistance, including booking a trip with a guide dog, when using public services. He feels frustrated with being redirected to different personnel and encountering delays, especially when new staff are involved.	The process should be simplified by allowing users to indicate their needs directly through the app for booking trains, avoiding the many extra tasks in planning.
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Problems: he usually finds someone that would like to go to the concert with him. However, there are a lot of people that would like to go but can't since they have no one to go with. These people have to pay an extra ticket for an assistant to follow them to a concert. This causes a problem of higher costs.	In Finland and other countries, one can take their assistant with them for free. But in Sweden, it's up to the event. There should exist a universal solution that holds everywhere and every time.

Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Lack of education amongst personnel can become dangerous in not understanding the needs of someone that is blind. There is a lack of awareness of this within security plans and education.	The need for education on different approaches towards different people in an emergency. For personnel at different locations.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	
Accessibility of emergency information (Multiple channels)	None mentioned.	
Other areas mentioned Voting in election	He cannot vote anonymous in parliamentary elections as a blind person: The paper in which he is to submit his vote through, does not have braille. To check the right box in the paper, he needs to tell someone with vision what he wants to vote for. This was expressed as a basic democratic right violation.	You can get information beforehand in braille, but there is no braille on the actual paper you are to put your vote on. The process should be digitalized, with Bank Id working as a mode for person verification.

Sweden – Visual impairments, no 2

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Sweden
3. **The type of your disability and the cause of it** (official clinical diagnosis):
Total blindness, with onset in childhood and complete vision loss in adulthood.
4. **Educational level:** Bachelor's level
5. **Severity of disability:** Total blindness with no light perception

6. **What means do you use to read?** Screen reader
7. **Visual acuity of the left eye:** Total blindness, loss of light perception
8. **Visual acuity of the right eye:** Total blindness, loss of light perception
9. **Visual field:** Central vision loss, Peripheral vision loss
10. **You move alone or with the help of an attendant?** With the help of an attendant. **Additional answer:** She has a mobility impairment that makes it very difficult for her to walk on her own.
11. **How often do you move alone?** Never
12. **Do you use assistive technology?** Yes
13. **If yes, which means of assistive technology?** Screen readers, White cane, Smartphone and computer accessibility apps, AI-powered apps (e.g., for object and text recognition), Color and light detection devices
14. **What kind of educational material is more suitable for you? (you can choose more than one answers):** Digital text accessible via screen reader
15. **Do you use any kind of accessible educational material?** No

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Uneven surfaces sometimes cause problems for her balance. Revolving doors are hard to enter through as she can't see the doors that are moving. In addition to these there is usually a regular door, but how could she know where this one is located? This is something she needs to learn for each place she goes to or gets information on.	For better balance: more handrails in, for example, stairs. Put them on both sides of the stairs. Make it the same everywhere, so there is a common pattern. She is never alone as she uses assistance, so it is not a big problem for her. But for other people who want to navigate by themselves, there should be better cues in navigation to the

	The existing guidance paths in the subway are good for tactile reference with her cane, but a problem for her problem with her balance, making it a risk for her to stumble on them. These might also be a barrier for people in a wheelchair. She feels like these paths could have been more carefully designed together with the people who are to use them. Squares: the tactile tiles or paving outside is described to be very hard to follow. They can also become very slippery in the case of rain. Lack of awareness of these tactile paths which makes other people put things in their way. In a walking street, she feels like bikers of the city are being given larger considerations than people walking. For example, they remove snow in the bike lanes in the winters but not on the sidewalk in which she needs to walk. Inside: walking into a building and finding the reception is hard. There are no cues for her on where to go, she needs to call for	alternative door or just make the door easier for everyone to enter in the first place. When inside, the guidance paths do not have to be as high. Since the floor is usually even when being inside, or in the subway, the navigation paths does not have to have as big of a contrast in height. Solutions: better maintenance by the ones responsible for these spaces. Ensuring the paths are walkable for blind people. Removing snow in the winters as one example. There should be a clearer division between walking lanes and biking lanes, with space and consideration (removing snow) being given to both. Personal service: Having a person at the entrance that spot her white cane and offering assistance. Some kind of signal stating the direction she should walk. Have the location of receptions close to the entrance. Making this a pattern

	help or ask someone to guide her there. Sometimes receptions are located on another floor in a building. She needs to call beforehand to have someone meet her at the door.	everywhere so it becomes logical.
Mobility with the means of transportation	If going alone she uses special transportation service: if it's delayed, waiting time can be a problem when it's cold outside and there are no other modes of transportation available. Drivers sometimes don't know how to properly guide. They lack the knowledge of how to approach her. She is holding on to them, and not the other way around being one example. Going with someone else she can use public transport: she finds it convenient to take the subway because she always knows she'll get to her destination, and buses too sometimes. But there are a lot of noise and many people, and sometimes they don't lower the bus, making the step high. Loud noise environments make her very tired and makes it hard for her to navigate and know where she is.	In these situations, she informs and educates them on how she wishes them to help her. Solution: she wishes for less people and less stressful surroundings. A better sound environment. Silent areas in public transport are one solution, but she thinks people would have a hard time respecting that. Designated silent areas in public transport being one solution. Also looking into how to put more sound absorbing materials in different spaces as well as in the vehicles.

Communication with and services of the public and private sectors	It is not always possible to call certain actors. Chat windows can be a bit difficult with her screen readers. It's always most convenient and easy to call. Public agencies tend to make it hard to call, as they wish people to contact them in other ways. Asking for help with assistive technologies through the employment agency was described as difficult. Contact information is many times hard to find, both mail and number, on websites. Making it hard to contacting them. Both in the public and private sectors.	Should be easy to call and always someone to talk to directly. This information should be clearly stated on the front page of each website. Or in the footer of each page. Then she can search for it through her screen reader. Preferably using the same phrasing of "contact us" or "tel" so she knows what to search for.
Web accessibility	Public agencies are better than commercial actors. There is sometimes too much alt text in the descriptions of images. QR codes have been an issue, it is not always easy to direct the camera to the right space of the computer screen. They are also too small.	Follow the accessibility directives. Summarizing texts that are short but carry the essential information. If digital: make QR codes clickable to enlarge them to full screen size. Alternatively, write an instruction for those who cannot see where it's located. Previously, she used to wave the camera around and scan from left to right. There should be information on how to do it: holding the camera

		steady from about 30 cm or so, just a small instruction like that would make a huge difference. Assistive AI apps have also improved screening for the QR code in a picture.
Digital accessible transformation		
E-commerce	Too much information from private companies trying to sell her things. Sometimes she does not go through with her purchase because there is too much information to navigate through. They lose her as a customer. The descriptions of the things she wishes to buy online are usually not good. Does not like to buy things online due to this reason.	Public agencies are better at this. They more often follow the accessibility guidelines and code their services so they're compliant with screen readers. Wishes for more descriptions of the feeling of the materials, the colors and which way they fit onto the body. Things that you would see if you saw the clothing. She prefers buying clothes in stores so she can try it and feel the materials. She also asks someone else for their opinion. Even though she can get information on the color through her assistive technologies, sometimes nuances of the color are hard to get properly. Also, the material, for example if a shirt is very matte, it would not go together with a pair of shiny pants.

		This she would like to get better feedback on her assistive tools.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None mentioned.	
Digital customer communication	None mentioned.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None mentioned.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	She appreciated the time when there were less functionalities in software. She uses 2 % of all available things to do in, in for her calendar and mail. With all else irrelevant features to her, she finds it difficult to find the things that she wants to use. The differences across all devices are also a problem as she must learn the paths for each tool she uses. Some streaming services is behind in accessibility. Putting on the show from	Should be different level of the service. For example, one very basic with the most fundamental features. All additional features make it unnecessarily difficult for her. Light, medium or high levels of features of the same service, going from the core functionalities towards the more advanced settings that some users might want, but not everyone. She does not wish to customize a version tailored to herself; she wishes it to be a set version of the basic functions. To make it easy.

	the exact time she stopped watching is difficult. Finding the setting for putting on audio description is also a challenge.	Different versions that would be beneficial for everyone, not just for people who are visually impaired. Set by some kind of universal standard. Follow accessibility standards for apps.
<i>Educational Accessibility</i>	During the time of her education she had her sight.	
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and		

tools (devices, software/apps)		
Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place	None mentioned.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	None mentioned.	
In-service training and career up-skilling	None mentioned.	
Assistive Technology in the work place and accessible material	She has problems with her online calendar.	A simpler version, as stated further above. Make the services “cleaner” and remove the features she is unlikely to use.
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Overwhelming with the sound of children, especially at museums during busy hours. The high noise levels in the entrance hall can be challenging.	Considering sounds absorbent materials within these spaces. Children free timeslots.
Accessibility in cultural heritage	None mentioned.	

sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art		Enjoys guided tours with someone describing the artifacts.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	None mentioned.	
Accessibility in accommodation (hotel units, camps, camping)	None mentioned.	
Accessibility in transportation	None mentioned.	
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None mentioned.	
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Describing this as a safety hazard if there are no clear spoken directions of what to do and where to go.	Making sure there are spoken instructions for someone who can't see.
Accessibility in Evacuation Planning	None mentioned.	

(e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)	None mentioned.	

Sweden – Deaf- Hard of hearing, no 1

Demographic data

- Gender:** Male
- The place (country) of residence:** Sweden
- The type of your hearing loss and the cause of it** (official clinical diagnosis):
Bilateral hearing loss with onset in adulthood
- Educational level:** University level
- Do you have bilateral hearing loss?** Yes
- Degrees of hearing loss in left ear:** Severe hearing loss (71-90 dB)
- Degrees of hearing loss in right ear:** Moderate hearing loss (56-70 dB)
- Level of difficulty in understanding the oral language (through lip reading)**
Neutral
- Do you read and understand the written form of the official language of your country?** Very easy
- Level of difficulty in reading and understanding the written language:** Very easy
- Do you know sign language?** No
- Do you use assistive technology?** Yes
- If yes, which means of assistive technology?** Hearing aid
- What kind of educational material is more suitable for you? (you can choose more than one answers):** Text, Visual, Audio, Audio-visual
- Do you use any kind of accessible educational material?** No

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		

Physical/Spatial Accessibility of indoor and outdoor spaces	Navigation in space can sometimes be hard in not understanding where sounds come from. This is something that also makes balance hard for him.	Make hearing aids better, and more similar in how the ear naturally perceives sound and where it comes from.
Mobility with the means of transportation	None mentioned.	
Communication with and services of the public and private sectors	Some contact with doctors was described as problematic as they did not understand his needs. He also described his doctors for sometimes being a bit arrogant. One encounter with one specific person was described as very positive experience, as she met him with more compassion than the others. He can become tired when interacting for a long time.	A more empathetic approach in the personal encounter. The doctor also had a solution-oriented thinking that he described other doctors lacked. She understood that he can become very exhausted from longer interactions. He takes out his hearing aids for about 15 minutes to recover after longer interactions. But when he takes the hearing aid out, his balance becomes a bit difficult.
Web accessibility	No perceived issues in relation to his hearing impairment. However, it was described as sometimes being too many available things to do that he could get distracted and a bit confused. This connects to his described problem of staying focused for longer times. There is sometimes too much	

	information for him to process.	
Digital accessible transformation		
E-commerce	None mentioned.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None mentioned.	
Digital customer communication	None mentioned.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None mentioned.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	He did not describe phone calls as a major problem but mentioned speech to text in video calls as a good solution making digital interactions in video easier. In social media there was a problem area in relation to his lack of focus sometimes.	Videophone calls with speech to text were described as a great invention. But there is still the problem of not quite catching everything that people say.
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	None mentioned.	

Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Speech to text can be good sometimes but described to be quite complicated when people talk and interact live. It won't cover all the things being said, and there will be a delay in the interaction.	
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	None mentioned.	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Group work, in which students choose groups themselves, was described as a problem. The people he knew in class were already in other groups, he ended up with one person also left out of a group which was very unmotivated. He ended up doing assignments by himself. He did not describe the issue of being left outside of a group to have with his hearing impairment, but more that he was older than most students and thereby had other areas of interest in, for example, the group work topic.	Course responsible divides the groups to ensure everyone is part of a group. The responsible teachers should, as soon as some people are without a group, step in with a structure to ensure everyone has a spot. Also, in the case of someone doing all the work, step in to ensure the workload is adapted to 1 person.
Accessibility in distance education/online learning	None mentioned.	

Employment Accessibility		
Spatial/Physical Accessibility in the work place	Same as core accessibility.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	Problem in finding a job in the domain in which he has studied. Instead, he has been forced to take other jobs to provide for himself. In these other jobs in service, he also describes a competition for these jobs among sometimes 100+ applicants. He reflects upon how this might also relate to him misunderstanding social interactions and thereby loses opportunities in relation to these misunderstandings. This has had an impact on his mental and emotional wellbeing, reflecting on how it has caused depression.	
In-service training and career up-skilling	He has some gaps in his resume and lacks the required work experience in relation to his ideal work scenario. This is something that companies in the domain he wishes to work within point out as a problem and reason for not getting the job he has applied for.	
Assistive Technology in the workplace and accessible material		

<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	None mentioned.	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	
Accessibility in museum exhibits and works of art	Problem in interpretation guided tours and ongoing events. It was described as sometimes being too much to interpret, which can make him feel lonely. Despite being amongst other people, he can feel very isolated.	Hearing aids becoming better.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	None mentioned.	
Accessibility in accommodation (hotel units, camps, camping)	None mentioned.	

Accessibility in transportation	None mentioned.	
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None mentioned.	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	None mentioned.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	
Accessibility of emergency information (Multiple channels)	None mentioned.	
Other areas discussed Social situations	The main problem described with a hearing disability is that he can completely misunderstand social situations. It's described as being hard to read social cues. Sometimes people can become angry at him for not hearing what they are saying. He understands their frustration. He wishes	Don't see any direct solutions apart from making the hearing aid technology he uses even better. He describes a solution as a combination of fostering a will for the individual with a hearing impairment of wanting to engage in the social

	to engage more, but it makes him very tired. This can cause misunderstanding and people around him don't understand what he is talking about, stemming from the fact that he has misperceived what they are talking about. It was described to sometimes being too much to try to interpret. Despite being amongst other people, he can feel very isolated.	public sphere, but that this person should be supported by the best possible technology in hearing aids in order to do this. He also mentioned existing research in curing different hearing impairments, but that is far in the future.
Hearing aid complications	The aid can pick up and make him hear a sound, but he does not know where it comes from. He is advised by doctors to always have the hearing aid on, as that will allow the brain to adjust and get used to it. But this makes him exhausted.	He wishes to get sound as natural as possible. The ones he is using now are almost there providing that. He needs to sometimes take them out to recover.
Focus	He describes that he has a problem with sometimes losing focus, and thereby following in events that is going on.	He sometimes says that he needs certain things repeated from his surroundings, this helps him get back to following the conversation.

Sweden – Deaf- Hard of hearing, no 2

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Sweden
3. **The type of your hearing loss and the cause of it** (official clinical diagnosis):
congenital impairment
4. **The age at onset of hearing loss:** since birth
5. **Educational level:** Post-secondary education

6. **Do you have bilateral hearing loss?** No
7. **Degrees of hearing loss in left ear:** Profound hearing loss (91+ dB), deaf
8. **Degrees of hearing loss in right ear:** Moderate hearing loss (56-70 dB)/
Severe hearing loss (71-90 dB)
9. **Level of difficulty in understanding the oral language (through lip reading):** Easy
10. **Do you read and understand the written form of the official language of your country?** Yes
11. **Level of difficulty in reading and understanding the written language:** Very easy
12. **Do you know sign language?** No
13. **Do you use assistive technology?** Yes
14. **If yes, which means of assistive technology?** Hearing aid extended with sometimes a conference microphone or other assistive microphones.
15. **What kind of educational material is more suitable for you? (you can choose more than one answers)** No answer
16. **Do you use any kind of accessible educational material?** No answer

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Inside: Limited range of hearing in large spaces. In larger rooms it can be difficult to hear. When entering his home and asking if someone is home and that person would state "here", he would not be able to know where the sound is coming from. Outside: he does not perceive any direct problems. The only alternative would be for him	Uses the conference microphone, which extends the range of his hearing aid. This is helpful in the context of meetings. With the conference mic, he can sit at the very back of a conference room if he has placed the extended mic in the front. He does not like to use this at home, dinners or at parties, it's a bit too cumbersome. In these

	to start hearing better, and that is not possible. The additional tools of extension to his hearing aid, the conference mic and an assistive pen, comes with a cost. It's cumbersome to set the whole thing up. It's not that many steps in setting it up, but it becomes a barrier of always have to fiddle with it. Difficulty in expecting all spaces to be designed for a perfect sound environment for him, it is described to be better to equip himself with the assistive tools he needs to still be able to participate and interact within spaces no matter their conditions for sound.	situations, here prefers to use a smaller more discreet extension of his hearing aid in the form of a pen. The form of a pen is appreciated, to avoid the stigma of standing out. When using the pen in a noisy environment, he described himself having better hearing than what a person with full hearing would in the same situation. The solutions are good, but he wishes them to provide him with better feedback on how much battery is left.
Mobility with the means of transportation	Challenges in traffic awareness due to hearing impairment. He has been part of situations in which there could have been an accident, but he is not sure if this is related to his lack of hearing or if it because of the driver that would not see/not minding his visual cues. When going by car, he prefers driving the car himself as that directs his hearing ear towards others in the car. This is necessary for him to be able to perceive and interact with others in the car.	In public transport, he finds that there are visual elements that make transportation feasible for him. Make cars more silent. He could potentially use the conference mic, locating it at the center of the car. But he thinks it will pick up too many surrounding sounds, such as the sounds of the car, that it will be difficult. In taxi situations, he usually uses his pen to point towards the driver to make sure he hears.

Communication with and services of the public and private sectors	Interactions at the hospital, a problem when staff has face masks. This was difficult during the pandemic, as most people had face masks. He reads lips, this was then impossible. He described that most people, even people with hearing, experienced slightly more difficulty in interacting with others, as facial cues in the interaction were missing. Can sometimes be hard to hear on the phone. When getting healthcare, he takes out his hearing aid to avoid hearing all the unwanted sounds. When renewing your passport at the police, having to take a picture, and there's glass in front of the police officers you are interacting with, that is a challenge for the hearing and his aids. These are usually expected and familiar interactions of showing one's ID and so forth, so it usually works. But if something unexpected comes, then it becomes difficult to follow.	Hospital staff ultimately took down their mask so that they would be able to communicate. He was not sure which solution could accommodate both the need to read lips, and the need for protection of the mask. Healthcare: he states that he has a hearing impairment so that people understand that once he removes the aid, he won't be able to hear anything. Consider other materials than glass in which sounds can better be transferred through.
Web accessibility	No problems given the visual elements of the web.	Captions are a good solution to take part in videos.
Digital accessible transformation		
E-commerce	None mentioned.	

Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None mentioned.	
Digital customer communication	None mentioned.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None mentioned.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None mentioned.	
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		In school his class got a wall-to-wall carpet in the classroom as a sound absorbent. This made the learning environment a little better for him. He describes that most school environments are designed with sound absorbent materials to accommodate the need for a quiet and calm learning environment.
Accessibility in educational material (documents – text & images/maps and graphs, video,	No provided more accessible alternatives. He had to adapt to the form of education. This was also in	To sit at the front of the classroom at lectures to hear.

presentations, VR & AR) and assistive technology	the time before using hearing aids.	
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	None mentioned.	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	None mentioned.	
Accessibility in distance education/online learning	None mentioned.	
Employment Accessibility		
Spatial/Physical Accessibility in the work place	Digital meetings were described as ideal for hearing all things at a meeting, as the hearing aid is connected to the phone or computer. However, he described it as not being ideal to be one of few colleagues joining meeting remotely. This becomes a problem of engagement and social interaction among colleagues.	Even though he hears better online, he prefers joining a meeting with his hearing aids in the physical space.
Accessible Services in the work place (e.g. hiring processes,	He raises the issues of being employable regarding putting pressure on companies to provide an	In the ideal world, all spaces would be accessible to everyone.

communication with different sectors)	accessible environment for him. Putting the expectation of having the external environment rebuilt or more accessible was described as a big request to accommodate his needs. He would rather equip himself with assistive technologies enabling him to navigate existing structures and spaces.	He stresses the need for assistive tools for the individual with impairment to be able to navigate in the existing world. This is an important parallel strategy in relation to making spaces, offices, services etc more universally accessible for everyone. He needs to be able to navigate across different offices and customers who might not have considered accessibility.
In-service training and career up-skilling	None mentioned.	
Assistive Technology in the work place and accessible material	He wants things to work for him without having to ask for any additional assistance. He uses his devices, and no one has reacted in any way. It works.	
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Problems in long proximity, needs to be close to the guide at museums.	Better sounds environments in general. Positions himself close to the guide and uses his pen to specify the sounds that come from the direction of the guide.
Accessibility in cultural heritage sites/environments	None mentioned.	

(museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art	None mentioned.	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	None mentioned.	
Accessibility in accommodation (hotel units, camps, camping)	None mentioned.	
Accessibility in transportation	There are usually always visual boards with information. Not an issue. At the security check the personnel checked his assistive pen and got worried that they would try to twist it as it looked like a pen. Risking causing damage to his aid.	In this situation he quickly told them that they need to be careful. He also makes sure to always have a backup solution in the situation if his aid stops functioning.
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Speech to text, is currently not working seamlessly in different streaming services. Public broadcasters have debates being broadcasted live, with a live audio description robot. It makes mistakes and goes back to correct the mistakes. Not working as it should.	Public service agencies should prioritize and buy better solutions. Buying tickets in the front seats is one solution.

	In live theaters, there are accessible solutions for hearing such as hearing loops in which hearing aids can connect to and get better audio of the theater. This is not compatible with all hearing aids. At one point the pen picked up the audio from the movie in the room next to him instead of the movie he was watching. This was a strange experience. Concerts have too high sounds environments, which puts the hearing he has left at risk.	Locate the extended hearing devices closer to the stage. There could be a designated place in which people can put their extended hearing devices close to the stage, to avoid any misunderstandings or someone picking it up wondering what it is. Solution in finding sound protecting earplugs, but this was described as defeating the purpose of going to a concert. Alternatively, if his existing hearing aid could protect his ears from the volume. This is currently not possible.
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	None mentioned.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	
Accessibility of emergency information (Multiple channels)	None mentioned.	

Other areas discussed Hearing aid complications	When starting to use the hearing aid there is a huge difference in being able to hear and not having to read lips or maintaining eye contact in his social interactions. But the hearing aid also comes with sounds that he did not want. This was described as psychologically difficult. He uses an app to sync his hearing aid with his forms of extensions (conference mic and pen). The app is not compatible with an Iwatch, he described it as cumbersome to take out the app all times. Lack of options and features in relation to the hearing aid. He states the different financial barriers in the choice of hearing aids. Some people might only get the basic option. Others have the luxury of choosing something much better, which has many more features. Both serve the same fundamental purpose, but the level of comfort and additional benefits vary significantly.	There is training required to use a hearing aid for the brain to adjust. So, this is one solution to start identifying the unwanted sounds described as psychologically difficult. However, such training is draining, and he usually takes out his hearing aid to recover. One solution described is to start with a hearing aid as soon as possible, and not to wait so that the brain can still identify certain sounds. When the brain has forgotten what certain sounds are, then they are just perceived as noise that you can't put together with the surroundings. Have the app and settings available through Iwatch. He stated that the automatic setting works quite well, so these small changes are not too important. But it would be nice to easily get an overview of the battery status of his devices, just by looking at the watch. He also likes to set the volume right, preferably with his watch as it's the easiest.

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Sweden
3. **The type of your disability and the cause of it (official clinical diagnosis):**
Spinal cord injury (tetraplegia) acquired in later adulthood. Almost totally paralyzed from the shoulders down.
4. **Educational level:** Higher education
5. **Your disability occurs:** On both sides of the body from the shoulders down
6. **How would you most accurately describe the functionality of your hands?**
D. I can only handle selected (very specific) objects that are easy and only in adapted activities. Usually, I only perform parts of an entire activity with a lot of effort and with limited success. I need continuous support, assistance and/or adapted equipment.
7. **You move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant
8. **How often do you move alone?** C. Sometimes in an electrical wheelchair
9. **How would you describe your commute?** Uses a modified vehicle with assistance and an electric wheelchair.
10. **Do you use assistive technology?** Yes
11. **If yes, which means of assistive technology?** For mobility within the home, various assistive devices are used, including a lift for safe transfers and a specialized chair for personal hygiene. Fine motor tasks are supported through adaptive tools that assist with holding and manipulating objects. In certain situations, a manual wheelchair is used for navigating spaces that are less accessible. For travel, portable wheelchairs are used. Different assistive technologies have been explored for computer use, including eye-control systems and speech-to-text functions, though manual input methods remain the preferred option due to efficiency. Additional adaptive tools help with reading and handling physical documents more easily.
12. **What kind of educational material is more suitable for you?** Digital text
13. **Do you use any kind of accessible educational material?** No

Accessibility Area - Sub-areas	Problems/difficulties	Solutions

Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	High thresholds in the built environment are a common problem. He describes that even though there are solutions like ramps, once he gets up, he often encounters a 10 cm threshold, creating barriers in accessibility that are frequently overlooked, preventing further progress. In the city, he also notes that there might be one accessible way up to the sidewalk, but once he reaches the other side, there's sometimes a high edge, posing additional challenges. Stairs are described as impossible. He hasn't been upstairs or downstairs in his house for many years. He encounters accessibility barriers more frequently in older buildings. There might be a lift, but then there is often a stair to get to the lift, further complicating access.	Inside his house, he has a ramp and ensures there are no high thresholds to navigate. To overcome barriers, he sometimes relies on good friends to carry him upstairs. This only works with his manual wheelchair, as the electric wheelchair is too heavy to carry. Other solutions, such as installing lifts, have been considered, but the high cost often makes it seem like a low priority for others.
Mobility with the means of transportation	He used to drive a car, but not anymore for safety reasons. However, in the city where he lives you need to drive the car yourself to get an accessible parking slot ticket. This was one of the reasons why he	Provisions should be made to ensure continued accessibility to vehicle adaptations after retirement age. This involves advocating for policies that support affordability through the

	continued to drive himself for a long time. Navigating daily life with his adapted vehicle presents challenges. He has a modified car equipped with a lift that allows him to transfer from his wheelchair into the driver's seat. However, a significant concern is the change of costs taking place at a certain age. This means higher costs of essential vehicle adaptations covered by the Social Insurance Agency. Public transport presents varying experiences. shortcomings in local services, such as an unsafe lift. On the contrary, a positive train experience was marked by personal service by the train conductor. Instances of miscommunication with transport service providers have led to inconvenience and frustration. Underscoring the need for improved operational protocols and emergency response procedures.	Social Insurance Agency, thereby maintaining independence in transportation. When he did not receive his transport as planned, he called a family member. He did not know how else he would have solved the situation.
Communication with and services of the public and private sectors	In terms of a respectful approach, he describes that communication can vary a lot. It's very much case by	He frequently tells people to address him directly in situations in which he is

	case. Sometimes there are no problems at all, and others he describes as hopeless, this can be very different. At some points he had encounters with doctors speaking to his assistant rather than him, this was described as very disrespectful as he does not have any form of cognitive impairment.	overlooked, and people speak with his assistant.
Web accessibility	His navigation online takes time, right now his main form of interaction is through his touch pen. One problem arises with a lack of sensitivity. He does not know how hard he pushes, so he quickly wears the pens out. He also sometimes experiences bad connection to the screen with the pen, and then usually asks to borrow the finger of his assistant.	Exploring sustainable material for the pen to last longer. He wishes there were a Siri version that would work better and know how to write better than a few words that he describes he needs to correct each time. He suggests that there should be a solution that could learn both his voice and his vocabulary to create a better experience.
Digital accessible transformation		
E-commerce	None mentioned.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		He signs documents digitally.

Digital customer communication		He usually asks family members for assistance to navigate digitally and to help him get out of a loop. If they can't figure it out, he prefers calling the service directly for support. In these situations, he relies on someone else for help
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None mentioned.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	He needs assistance to press the first button to enter his phone, but once he's within his phone, he can navigate without any issues. Writing extensively tires him out, as it requires significant effort from his shoulder. When navigating digital services, he sometimes ends up in a loop, returning to the starting point without achieving his goal. Reading the newspaper on his iPad is frustrating because it automatically activates the read-aloud function. The button for this feature is described as "too" accessible, forcing him to shut it off multiple times. Additionally, some actions	The first button on his iPhone should be improved for easier access. Speech-to-text and a better-functioning Siri would be highly appreciated solutions for him. He usually asks family members for assistance to navigate digitally and to help him get out of a loop. If they can't figure it out, he prefers calling the service directly for support. In these situations, he relies on someone else for help.

	are designed for two fingers, making it difficult for a person only using one.	
Educational Accessibility	The mobility impairment came after his educational experiences.	
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)		
Accessibility in distance education/online learning		He frequently joins meetings online, but that is because the people he works with are spread across places, so it

		becomes natural. That does not have anything to do with him as he usually goes to the physical space for work. However, he stated it was also practical to have meetings online.
Employment Accessibility		
Spatial/Physical Accessibility in the work place	There was an instance where he couldn't access a room and had to deliver his presentation from the doorway. Accommodation was eventually made. As the building was modern and new, the lack of spatial accessibility was described as surprising.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	The general description is that his work has accommodated him well.	
In-service training and career up-skilling	None mentioned.	
Assistive Technology in the workplace and accessible material	None mentioned.	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment	None mentioned.	

and proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	
Accessibility in museum exhibits and works of art	None mentioned.	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	None mentioned.	
Accessibility in accommodation (hotel units, camps, camping)		
Accessibility in transportation	None mentioned.	
Accessibility in sports & recreational facilities	He had to stop previous outdoor activities in nature; he can no longer participate. He wished to keep doing these things, but lack of mobility in his neck makes finding a solution hard.	He explores tailored solutions for him specifically.
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	He would like to attend concerts more frequently, but it requires careful planning to ensure accessible transportation. This includes finding a train with accommodating	Whilst the transport to the event was described cumbersome, the accessibility upon reaching the concert hall was described as a great experience, with someone

	conductors who can assist with his electric wheelchair. If going by car, he must also prearrange an accessible parking space, although these are often fully booked in advance.	offering immediate assistance to accommodate him.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	None mentioned.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	
Accessibility of emergency information (Multiple channels)	None mentioned.	
Other areas discussed Prejudices Against Wheelchair Users	An issue with societal attitudes was highlighted, where people often assume he cannot perform tasks simply because he uses a wheelchair. There's a misconception that he may have intellectual limitations or other impairments. Sometimes, people begin conversing with his assistant, which he described sometimes don't understand the context or lacking proficiency in Swedish. It's frustrating when others fail to	He wishes people to speak with him directly as they would with anyone else.

	communicate directly with him about matters concerning him. Despite his insistence that people address him directly, there's a tendency for continued uncertainty, and they continue directing their conversation towards his assistant. This situation was described as a frequent occurrence, highlighting ongoing challenges in communication and societal perceptions.	
<i>Emerging technologies and AI</i>	Emerging technologies were discussed. Virtual reality (VR) relies partly on head movements, which is not feasible for him.	Augmented reality (AR) using eye movement with glasses is an intriguing option. He is curious to try these new forms of interactions. AI in combination with Siri, which could be a self-learning function that gets better over time, was described as a combination holding great promise. With this improved AI, he could potentially start writing longer texts more easily.

Sweden – Mobility impairments, no 2

Demographic data

- Gender:** Female
- The place (country) of residence:** Sweden
- The type of your disability and the cause of it (official clinical diagnosis):**
Mobility impairment, Cerebral palsy
- Educational level:** Upper secondary school with support.

5. **Your disability occurs:** Arms, legs and speech
6. **How would you most accurately describe the functionality of your hands?**
Her own answer: Can manage basic tasks with effort and adapted support; fine motor control is limited, for example, unable to carry a cup safely.
7. **You move alone or with the help of an attendant?** Uses an electric wheelchair both indoors and outdoors. Occasionally walks short distances with assistance (e.g., between furniture). Always accompanied by a personal assistant when outside the home.
8. **How often do you move alone?** Never
9. **How would you describe your commute?**
10. **Her own answer:** Always accompanied by a personal assistant when outside the home.
11. **Do you use assistive technology?** Yes
12. **If yes, which means of assistive technology?** Electric wheelchairs, Joystick-controlled mouse and adapted keyboard (to isolate key presses). Assistance dog trained to help with daily tasks such as picking up dropped items.
13. **What kind of educational material is more suitable for you?** Text
14. **Do you use any kind of accessible educational material?** No

15. Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Most times buildings are accessible, but there have been instances when she has been wanting to go to a store and the only way to get inside is through the stairs.	There isn't much to do other than avoid going there. If it happens, she usually writes to the store or the chain that it's not accessible. The best scenario is to be able to go inside through the main entrance, having it accessible from scratch. Ramps.

Mobility with the means of transportation	Most of the time she uses an electric wheelchair. Sometimes she takes the bus. When she takes the bus, there's a ramp she uses to get on. Sometimes the ramp is broken. Then she must wait for the next bus, which means that she arrives late. It's happened twice in the past few weeks, but usually it doesn't happen that often. In the winters, there is the problem of maintaining the roads and paths. If it's not maintained, it is very difficult for her to transport herself in her electric wheelchair. This differs depending on the winter, but this could be much better.	She prefers going in her electric wheelchair. She therefore wishes for better snow shoveling for road maintenance in the winters.
Communication with and services of the public and private sectors	She finds it difficult to be understood over the phone. Reflecting upon differences between public and private sectors, she states that maybe it's not about where you write, but more about who writes. It's about the individual person responding.	Her assistant sometimes calls on her behalf. She prefers writing emails, but this is not always possible for her.
Web accessibility	Does not experience any problems.	
Digital accessible transformation		
E-commerce	Does not experience any problems.	

Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		When signing contracts, she usually gets help to read it together with her assistant or a family member, and then she signs it herself once I've understood what it means. This is a process she feels comfortable with.
Digital customer communication		She prefers writing to customer service rather than calling.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None mentioned.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None mentioned.	
Educational Accessibility	Wants to pursue higher education but is limited by existing system.	There needs to be a change in the system of continuing being granted financial support and pursuing education and opportunities.
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	None mentioned.	

Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	None mentioned.	
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Wants to pursue education but faces policy-related barriers affecting disability benefits: If she were to enroll in further education, it would be assumed that she can hold a standard job, which she asserts is not feasible due to her condition. Undertaking education would result in the loss of her current financial support. Furthermore, if she were unable to secure employment after completing her studies, which she describes to be a challenge, it would be difficult to regain the financial support.	Elementary school was described as well adapted. The level of difficulty was right, and she had her own assistant. When she didn't have her own assistant, there were many teachers and one student assistant. At that time, everyone in her class had some type of disability, all getting the help they needed. She would like society to give everyone a chance to pursue education. They shouldn't assume that just because someone can study, they can also work a regular job, because those are not the same. Instead of labeling people in society as not able, it should be up to each individual to decide what they are capable of and what they are not capable of.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	None mentioned.	

Accessibility in distance education/online learning	None mentioned.	
Employment Accessibility		
Spatial/Physical Accessibility in the work place	None mentioned.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	She has worked in a daily activities program, which is a job that those who have attended special education get after finishing high school because their grades aren't enough to apply for regular education. She had an assistant at work, which allowed her to work at a company, an external workplace within the daily activities program. The municipality decided to remove the assistance. Therefore, she is unemployed.	She would like to work to help others in her situation. She describes how society would probably need to change its rules. Both regarding education, that you're not allowed to study when you receive benefits. And also that you can have an assistant at work.
In-service training and career up-skilling	There is a lack of options. Barrier by the system.	Needs to have an assistant with her at work.
Assistive Technology in the workplace and accessible material	There is a lack of options. Barrier by the system.	Needs to have an assistant with her at work.
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries,	None mentioned.	

archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	
Accessibility in museum exhibits and works of art	None mentioned.	
<i>Tourism (including recreation and sports) Accessibility</i>	No problems mentioned.	
Accessibility in tourism Services		
Accessibility in accommodation (hotel units, camps, camping)		
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches		
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Faced challenges with assistant seating at an event despite booking an accessible spot.	Her assistant should be given a spot as promised.
<i>Accessibility in Security and</i>		

<i>Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	None mentioned.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	
Accessibility of emergency information (Multiple channels)	None mentioned.	
<i>Other areas discussed</i> <i>Stigma</i>	In most scenarios, she stresses the wish to be treated as equally as possible.	However, in the context of going to a concert or something similar she describes it as being important to be accommodated appropriately to have a good view. Sitting in a regular seat with a wheelchair in the audience could mean not having a clear view. Except for concerts and similar events, she wants to be treated like everyone else in all other situations.
<i>The accessibility of the interview format</i>	Interviewing participants who have a lack of mobility in their arms, there needs to be alternatives for signing the consent form.	One example would have been to make the signing for consent digital. She recommended that, especially if interviewing participants like herself.

Sweden – Mild intellectual disability, no 1

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Sweden
3. **The type of your disability (official clinical diagnosis):** Mild intellectual disability
4. **Other difficulties/disabilities (difficulties in hearing, vision, movement etc):** Experiences some physical challenges as well as a condition impacting her memory.
5. **Educational level:** Completed an upper-secondary vocational program designed for students with disabilities
6. **Do you use assistive technology?** Yes
7. **If yes, which means of assistive technology?** Mainstream scheduling app on her phone/tablet. Prefers a tangible, hand-crafted paper calendar for greater motivation.
8. **Do you find it difficult communicating with others? Own answer:** No problem speaking with others, but she has sometimes hard to understand which might lead to misunderstandings. She appreciates it and finds it very important that people doublecheck with her if she has understood something.
9. **Do you live alone?** Yes
10. **You move alone or with the help of an attendant?** a. Alone
11. **How often do you move alone?** e. Always
12. **Do you use a personal computer?** No, an iPad.
13. **If yes, how often do you use a PC?** She uses her iPad every day, it varies for how long at a time. Sometimes 15 minutes, sometimes longer.
14. **What kind of educational material is more suitable for you? (you can choose more than one answer)** Text. Original text (to preserve full context) plus an optional easy-read version to be able to compare. Visual aids only when they genuinely clarify information. Favors printed copies over digital files.
15. **Do you use any kind of accessible educational material?** No answer.

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		

Physical/Spatial Accessibility of indoor and outdoor spaces	No problems reported.	
Mobility with the means of transportation	Too complex digital apps: The ticket purchasing app for public transportation is difficult to use. Information within the app is challenging to read and understand. Lack of understanding: She faces poor treatment from bus drivers due to a lack of awareness of her invisible disability. Sometimes she must ask for additional help, and people don't understand why. Communication barriers arise because drivers may not understand or accommodate their needs. Lack of information: Public transportation services do not adequately provide information about benefits cards or similar services. There is insufficient communication about how individuals, particularly those with limited financial resources, can access these benefits. Lack of knowledge: Staff in special transportation services lack understanding and awareness of invisible disabilities. This results in navigation errors and miscommunication, such as	Simplified user interfaces: Simplify the app interface for purchasing tickets to make it more user-friendly and less complex. Raising awareness: Increase societal awareness about the needs of individuals with disabilities, including those with invisible disabilities. Educate the public and transportation staff to foster understanding and empathy towards these individuals. Accessible information: Provide more accessible information about available benefits and discounts for individuals with disabilities. Ensure clear guidance on how to access these benefits, especially for those with limited financial resources. Education for transportation staff: Train transportation staff to be more attentive and knowledgeable about

	drivers expecting passengers to provide directions they are unable to give.	interacting with individuals with invisible disabilities.
Communication with and services of the public and private sectors	Lack of easy-to-read information: Information provided by both private and public sectors is often difficult to understand, creating barriers for engagement and communication. Avoidance of communication: Due to the complexity of information, she avoids interacting with private sector entities as she struggles to comprehend their communications. Independence in communication: She desires to manage communications independently but faces challenges due to the complex nature of information provided by private and public sectors. Imposed disability by society: Society's communication practices contribute to her feeling more disabled than she feels that she is. Learning curve with medical services: She has learned to navigate	Easy-to-read information: Provide easy-to-read versions of information using simplified language. This would help her understand communications independently without relying on others. However, she would like to have access to both the original and simplified version of the information. Direct communication options: Offer options for direct communication via phone calls rather than requiring her to navigate digital platforms or write emails. This accommodates her preference for personal interaction over digital communication. Supportive communication environment: Create a supportive environment where she feels comfortable communicating directly with service providers. This could include training staff to understand and accommodate individuals

	communication with medical services.	with invisible cognitive disabilities.
Web accessibility	She barely uses the web. Too complex information and too much text are the biggest barriers.	
Digital accessible transformation	Overwhelmed by technical tools: The interviewee experiences fatigue and overwhelm when using technical tools or digital solutions. Fear of unfamiliar digital activities: She hesitates to interact with unfamiliar digital interfaces or tools. Fear of pushing buttons or links she doesn't fully understand restricts her digital activities to only those she is familiar with.	Preference for physical documents: She prefers physical documents that she can hold and interact with, indicating a preference for tangible, non-digital formats. This approach reduces mental fatigue associated with digital tools and enhances her ability to manage and comprehend information effectively. If she must navigate other services digitally, she asks her family for help.
E-commerce	Fear and lack of understanding: The interviewee avoids buying things online due to a lack of understanding of how online transactions work. There is a fear of not knowing what will happen during the online shopping process. Fear of being swindled: There is a fear of getting swindled by someone online. There is a lack of trust for platforms, transactions, transactions	Ensure that non-digital options are still available as she prefers buying products she can physically touch and see.

	and other people she comes across online. Barriers to online independence: These fears and lack of understanding create barriers to independently engaging in online shopping or digital transactions.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Uncertainty in managing any digital documents/contracts by herself due to its complexity: She feels uncertain about signing any document alone due to difficulty understanding the documents fully. Simplification issue: When a lot of information is removed to simplify, the context becomes difficult to understand.	Support from trusted individuals: she feels more comfortable signing papers when she has someone that she trusts with her. Easy-to-read options: Provide both the original source in text and an easy-to-read version. This allows her to cross-reference and ensure they have not missed any important details that might have been omitted in the simplified version.
Digital customer communication	Too complicated to buy things online.	Prefers talking to a person in a physical store.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Lack of understanding of financial Information: The information provided by the bank is often too complex for her to understand. Financial jargon and detailed terms create confusion and prevent independent management of her bank account.	She currently gets assistance from her family. Learning math in school: She would have wished to learn math during her education so she would be able to manage her own banking.

	Limited mathematical skills: She has never learned mathematics in school, which hinders her ability to perform basic financial calculations. Dependence on others: She relies on others, such as family members or trusted individuals, to help manage her bank account.	
Digital libraries and repositories	Too complicated, does not use.	Don't know.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	The interviewee finds using transportation apps challenging due to several factors: Complex navigation within the app, such as selecting departure times and confirming choices, which involves multiple steps, clicks and can be confusing. Difficulty with memory recall: making it hard to remember details like travel plans when putting in the information.	
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	None mentioned.	

Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		In a class with different needs, she emphasized the importance of tailoring the material and activities towards each student , providing different solutions for different needs.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Struggles in mainstream schools: The interviewee struggled in a mainstream school due to having an unrecognized disability, leading to difficulties in keeping up with the standard curriculum. Lack of tailored educational support: There was an absence of tailored educational support for students with invisible disabilities, causing the interviewee to feel different and face academic delays and a barrier to her own learning journey.	Appropriate educational placements: ensure relocation are suited to the specific needs of students with disabilities to enhance their learning and independence. Specialized schools and classes: Establish specialized schools and classes specifically catering to students with invisible disabilities. Provide an environment that offers tailored support, enabling students to learn and grow independently.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Limited educational options: The interviewee had only two options regarding her education and career path when starting high school. Inadequate career path choices: The lack of diverse educational and career pathways limited her ability to explore and pursue her interests. The restricted	Increase educational options: Provide a wider variety of vocational and academic programs to ensure students have multiple paths to choose from.

	choices impacted her overall career satisfaction and development.	
Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place	None mentioned.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	None mentioned.	
In-service training and career up-skilling	Closure of community programs: High costs led to the shutdown of beneficial local community programs. This closure limited opportunities for engagement, socialization, and personal growth for individuals who benefited from these activities such as herself. Uncomfortable relocation: The interviewee was relocated to a different program, where she did not feel comfortable. The new environment included individuals with more severe disabilities, making the interviewee feel out of place.	Specialized work environments: Create work environments where participants are grouped based on similar levels of ability and interests. Focus on tasks that promote individual growth and skill development.

	Lack of suitable activities: The new program did not provide activities that matched the interviewee's interests or needs. The interviewee's role primarily involved caring for others, rather than engaging in activities that foster personal development. Feeling of displacement: The interviewee never felt a true sense of belonging or personal growth in their placed environments.	
Assistive Technology in the work-place and accessible material	None mentioned.	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Limited local activities: Activities and resources for organizing cultural events suitable to her are predominantly concentrated in large cities. This restricts access to desired activities and events, limiting social engagement and opportunities for personal development. Physical accessibility issues: She has difficulty navigating stairs due to mobility challenges.	Expand local cultural activities: Increase the variety and frequency of cultural activities available locally. Collaborate with community centers, libraries, and local organizations to host events such as art exhibitions, music performances, and workshops. This provides opportunities for socialization, engagement, and personal enrichment

		without the need for longer travels. Enhance accessibility in cultural Institutions: Install easier-to-navigate stairs with handrails and use yellow tape to clearly mark steps for enhanced visibility, especially in low-light conditions.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Sometimes guides during tours have too complex language.	Simplified language: She would like the language to be easier to follow. To speak slower and showcase what they mean by examples. This wish for easier language was also raised as a solution for immigrants also sharing difficulties in understanding too complex language. Easy-to-read alternative text: Provide easy-to-read versions of all written materials. Create alternative texts with simplified language and visual aids where necessary. Ensure accessibility of forms, brochures, and informational materials in museums, libraries, and public spaces. Facilitates access to information for individuals with varying

		literacy levels and cognitive abilities. Appreciates alternative forms of engagement inspired by designs usually made for children: Audio guides and scavenger hunts. These engaging features enhance learning and motivation.
Accessibility in museum exhibits and works of art	High ticket costs pose a significant accessibility issue for the interviewee due to limited financial resources, preventing her from participating in various cultural and recreational activities.	The cost of entry to museums and cultural sites should be affordable, as high prices can prevent access for individuals with disabilities and those with limited financial means.
<i>Tourism (including recreation and sports) Accessibility</i>	Difficulty finding organizations or organizers conducting inclusive trips specifically tailored for individuals with disabilities. Limited options available for participating in group trips that cater to her needs and preferences. To have the courage to travel, she needs to feel trust towards the organizers.	She would like the ability to travel, even for shorter trips. To do that, she needs someone to organize it so that it becomes accessible to her.
Accessibility in tourism Services	Lengthy application process: For travels she needs assistance. The bureaucratic procedure for	

	securing municipal assistance for travel involves multiple steps and paperwork, making it cumbersome and time-consuming and ultimately inaccessible. Availability of personnel: Difficulty in finding available municipal personnel who can process travel assistance requests, exacerbated by factors such as holidays or staff shortages. Uncertainty in processing: Due to the reliance on municipal procedures, there is uncertainty about when and if travel assistance will be approved and provided, leading to a lack of predictability. Limitation on spontaneity: These uncertainties prevent spontaneous travel decisions, restricting her ability to travel independently and on short notice.	
Accessibility in accommodation (hotel units, camps, camping)		Needs assistance.
Accessibility in transportation		Needs assistance.
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	

Accessible shows (theaters, cinemas, concerts...) & accessible movies		Needs assistance.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Difficulty understanding information	Easy-to-read manuals and information.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Difficulty understanding information: The information related to the pandemic received in physical letters was complex and difficult for her to comprehend. Disinterest due to complexity: The complexity of the information discouraged her from making an effort to understand it, resulting in disengagement towards crucial information. Barriers to awareness: Challenges in understanding pandemic-related information may have hindered her ability to stay informed and make informed decisions about health and safety measures.	Interactive presentations by experts: Employ individuals who can deliver information in an interactive and engaging manner, such as crisis management personnel or museum exhibit guides. This approach helps in making complex subjects more accessible and memorable. Contextualized explanation: Ensure that information is not only delivered but also explained in context, helping her to understand its relevance and application in real-life scenarios. Use of visual aids and examples: Incorporate visual aids and real-life examples to illustrate key

		points and enhance understanding among audiences. Dynamic communication: Utilize dynamic communication styles that cater to different learning preferences, such as storytelling, demonstrations, or interactive activities. Accessibility of information: Ensure that information is delivered in various forms, including a format that is easy to comprehend, avoiding jargon and complex language to improve accessibility for all individuals, including those with varying levels of comprehension.
Accessibility of emergency information (Multiple channels)	Information is often too complicated .	Make it easier to engage with , as raised above.
Other areas Misunderstandings	Verbal communication misconceptions: There's an assumption that verbal ability correlates with understanding, which often overlooks her actual comprehension level. This misunderstanding can hinder effective communication in various settings, from everyday interactions to more formal discussions or instructions.	Confirmation of understanding: She appreciates it when people check with her to ensure she has understood something right. This practice helps mitigate misunderstandings and ensures clarity in communication.

<i>Invisible disabilities underrepresented</i> <i>Personal development</i> <i>Social connectedness</i> <i>Vulnerability to online scams</i>	Self-perception and societal expectations: The interviewee values being seen as a person beyond her disability, with both strengths and weaknesses like anyone else. Disabled by society: Societal norms tend to categorize individuals into binary extremes of disability: either severely disabled or not disabled at all. This oversimplification fails to acknowledge the nuanced experiences of individuals like the interviewee who fall somewhere in between. Aspirations: While she has dedicated much of her life to caregiving roles in context of being located with peers of more severe disabilities, the interviewee expresses a desire for personal growth in other areas. Seeking belonging: Feeling out of place and lacking a sense of belonging, particularly in environments where caregiving dominates her role, underscores her longing for spaces where she can meet peers on equal footing and engage in activities that nurture her personal development.	Advocacy and awareness: she appreciates the efforts of researchers and advocates who delve into issues faced by individuals with disabilities, also considering her stance as “mildly” disabled. As she feels like society makes her more disabled than she is, she stresses that understanding of her in-between position is lacking today. Creation of social engagement spaces in the local community: She would like the

	Social challenges: The lack of suitable group housing options that facilitate social interaction and support networks. The interviewee desires independent living but with access to nearby group homes or community centers where she can engage in social activities. This lack of options contributes to feelings of isolation and restricts her ability to foster meaningful connections within her community. Exploitation concerns: There's a significant concern about scammers targeting individuals who may not fully grasp the complexities of technology or recognize the signs of fraudulent activities. These scammers often exploit trust and manipulate through friendly personas over the phone, leading to financial exploitation and emotional distress for vulnerable individuals. The increasing complexity of technology, including AI-driven interactions and sophisticated scam tactics, adds to this experienced vulnerability.	establishment of social groups within the community where individuals can interact, support each other, and foster social connections. Consider utilizing community spaces like the library as venues for these activities. Enhanced digital security measures to prevent scams: Develop technological solutions that enhance security in digital interactions. This could include features like dedicated buttons on phones that ensure safer transactions and reduce vulnerability to scams.

Sweden – Mild intellectual disability, no 2

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Sweden
3. **The type of your disability (official clinical diagnosis):** Mild intellectual disability
4. **Other difficulties/disabilities (difficulties in hearing, vision, movement etc):** Anxiety related issues
5. **Educational level:** High school, a vocational program for individuals with disabilities
6. **Do you use assistive technology?** Yes
7. **If yes, which means of assistive technology?** Visual timers in apps to track time during meetings or tasks. Uses both physical (cardboard-based) and digital planners. App for simplified access to meeting agendas and organizational updates. Planning to begin using a simplified calendar app designed for cognitive accessibility.
8. **Do you find it difficult communicating with others?** No
9. **Do you live alone?** Yes
10. **You move alone or with the help of an attendant?** Sometimes alone, sometimes with friends or family
11. **How often do you move alone?** Always
12. **Do you use a personal computer?** Yes
13. **If yes, how often do you use a PC?** Everyday, sometimes more than 1 hour per day.
14. **What kind of educational material is more suitable for you? (you can choose more than one answer)** Prefers a. text, c.audio (verbal information) and d.video. Added note: video is better when she is tired.
15. **Do you use any kind of accessible educational material?** No

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Overly bright lighting: Some stores have excessively bright lighting,	Consistent lighting for a calm experience: standardized lighting

	causing eye strain and fatigue as she is sensitive to some light. Varied lighting conditions: Inconsistent lighting levels between stores (some too bright, others too dim) can be disorienting and uncomfortable. Crowded spaces: crowded stores can be overwhelming and stressful.	levels across stores could help ensure a comfortable shopping experience for all customers. Designated quiet hours: Implement designated shopping hours specifically for vulnerable groups, such as individuals with disabilities or those who prefer quieter environments. For example, stores can designate certain hours of the day as "quiet hours" or "low-traffic hours" where there are fewer customers. This allows individuals to shop without feeling rushed or overwhelmed by crowds. Color coding: Use a traffic light system (green, yellow, red) to indicate the level of busyness at different times of the day. This could help customers plan their visits, promoting a more relaxed and accessible shopping experience.
Mobility with the means of transportation	Inaccessible information in the event of sudden changes: Lack of timely and clear information about bus delays, cancellations, or changes causes stress and uncertainty.	On-site personnel for assistance: Ensure that there are dedicated staff members available at transportation hubs who can provide assistance, directions, and information in person, especially for passengers who may find digital interfaces challenging or inaccessible. There needs to be a balance between digital

		communication channels and direct human interaction. While digital updates are valuable, having personnel on-site who can offer personalized assistance and address individual needs is crucial.
Communication with and services of the public and private sectors	Complex and tiring digital processes: Navigating digital interfaces for contacting customer service or accessing information can be overly complex and confusing. Complex and tiring content: there is usually too much text to consume, resulting in brain fatigue. Lack of direct contact with a person for help. In the services that do provide direct contact through call, there is an issue of long waiting times.	Simplify website navigation: Offer a simplified version of the website for easier navigation. Ensure that users can easily find the information they need without unnecessary clicks. Provide easy-to-read options: These alternatives could be offered similarly as a translating features. So that all text is available in an easy-to-read alternative one click away. Offer alternative communication channels: Provide a phone number prominently displayed on the website. Enable immediate access to live support without lengthy waiting times. Implement callback feature: Introduce a callback service where users can request to be called back by customer service.

Web accessibility	Lack of accessible information: Websites often lack accessibility features like easy-to-read formats, alternative communication methods, and visual supports. Users with cognitive disabilities or difficulties comprehending standard text formats are excluded from accessing vital information.	Easy-to-read formats: Introduce easy-to-read versions of web content, including simple language and clear structure. Provide a link on websites to switch between standard and easy-to-read formats. Providing multimodal content: alternative forms in which information is given. Stretching from digital content with multimodal features, combining text with images, icons, or videos to improve comprehension.
Digital accessible transformation		
E-commerce	Lack of easy-to-read text.	Should provide easy-to-read formats to ensure the requirements for returns etc. are understood before buying something.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Lack of easy-to-read text.	
Digital customer communication	Lack of direct contact with a person for help. In the services that do provide direct contact through call, there is an issue of long waiting times.	

Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	No issues for her, but she raises that many people sharing her disability do not have their own BankId and are dependent on someone else for this responsibility.	There is a described wish for greater independence among her peers to also have their own BankId.
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Lack of notification on interface changes: face difficulties when digital services make significant interface changes without prior notification. This can disrupt the familiarity and usability of services, particularly for those with cognitive or visual impairments who rely on consistency.	Notify users of upcoming changes and do it in an easy-to-read format.
Educational Accessibility	No issues reported.	
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units		

(e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)		
Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place	None mentioned.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	Understanding of wage subsidies: There is a need for understanding and communication regarding wage subsidies. These subsidies are intended to accommodate specific needs, such as adjustments to work structures or schedules.	
In-service training and career up-skilling	None mentioned.	
Assistive Technology in the work-place and accessible material	None mentioned.	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments	Navigation and information: she sometimes finds it challenging to locate	Signs in the built environment on directions.

(museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	essential facilities within venues like museums. Stating a need for clearer navigation and information.	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Complex language and fast paced communication in guided museum tours: she finds that guided museum tours often proceed too quickly, making it difficult for her to fully grasp the information.	Adjust tour pace: Museum guides should be trained to speak at a slower pace, allowing participants to absorb information comfortably. Provide multimodal forms of interaction and alternatives: provide accessible formats such as easy-to-read materials and visual aids. This accommodates diverse needs and ensures everyone can follow along independently.
Accessibility in museum exhibits and works of art	Navigation and information: she sometimes finds it challenging to locate essential facilities within venues like museums. Stating a need for clearer navigation and information.	
Tourism (including recreation and sports) Accessibility		

Accessibility in tourism Services	Everything tends to work well expect when there are changes and delays in transport. Then there is a barrier of accessible information in a situation of change.	Personal assistance: there should be someone she could ask for help or guidance providing this information.
Accessibility in accommodation (hotel units, camps, camping)	No reported issues.	
Accessibility in transportation	Difficulty remembering departure dates and time: she mixed up the dates for a travel once.	Notification with reminders: she would have appreciated a reminder to help her plan. A notification about her trip through a text as one example.
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Attending a concert: Bag ban and security concerns: She finds the bag ban policy inconvenient. While acknowledging security concerns, she states that she needs her bag to keep track of her things. Concerts: lack of accessibility features in seating areas: she and her friend prefer sitting at the ground floor instead of using elevated seating areas due to mobility challenges. They discovered a lift that could have facilitated easier access, but this information	Alternative security measures: Implement alternative security measures such as increased security personnel who can thoroughly check bags rather than imposing a complete ban. Handrails and lifts in the built environment. Improved information on where these are located.

	was not readily available until then. Limited accessibility features such as handrails or lifts make it difficult for individuals with mobility impairments to access seating areas comfortably. Inconsistent availability of such facilities adds to the challenge. Lack of social consideration: She had to be relocated in relation to a discomforting light where she was sitting, her brother was not allowed to move with her. Inadequate accommodation for individuals with sensory sensitivities: During an event she attended with a friend, a bright blinking lamp caused discomfort, prompting her to request a seat change. However, the venue staff did not allow the speaker's friend to accompany them to the new seating area. Insufficient notification and preparation for sensory triggers at events: she highlights the lack of warning about sensory triggers at events, such as concerts. She mention instances where flashing lights were not adequately communicated beforehand, potentially causing discomfort or distress.	Her friend should be regarded as an assistant in such a scenario, being given the same relocation as her. Pre-event Information: Include detailed information about potential sensory triggers in event announcements, ticketing platforms, and promotional materials. Specify the types of stimuli (e.g., flashing lights, loud noises) that attendees may encounter during the event.

Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Need easy-to-read instructions.	Easy-to-read formats: Develop easy-to-read versions of critical information using simplified language, short sentences, and visual aids to enhance comprehension.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		The importance of accessible information on security trials: It is important, to avoid distress, to send warnings in advance about upcoming emergency drills in Sweden. This information needs to be accessible to everyone.
Accessibility of emergency information (Multiple channels)	Inadequate accessibility of information during COVID-19: highlights the lack of accessible formats, such as easy-to-read or visual formats, for important COVID-19 information. This meant that crucial information was not readily available to individuals with varying cognitive abilities or language skills for some time.	Easy-to-read formats: Develop easy-to-read versions of critical information using simplified language, short sentences, and visual aids to enhance comprehension.
Other areas	Difficulty in performing basic mathematics, such as adding up totals while shopping.	

Sweden – High functioning autism, no 1

Demographic data

1. **Gender:** Male
2. **The place (city & country) of residence:** a nordic country
3. **The type of your disability (official clinical diagnosis):** Autism
4. **Level of intelligence:** He has not taken an official test at any point..
5. **Other difficulties/disabilities:** ADHD and physical health challenges.
6. **Educational level:** Post-secondary education
7. **Do you use assistive technology?** Yes
8. **If yes, which means of assistive technology?** No, uses spell checkers but that is not related to autism or ADHD. Using noise-canceling technology, to manage daily challenges. Medication.
9. **Do you find it difficult communicating with others?** Sometimes.
10. **Do you use any kind of communication aid?** No
11. **Do you live alone?** Lives with his family
12. **You move alone or with the help of an attendant?** Alone
13. **How often do you move alone?** Always
14. **Do you use a personal computer?** Yes
15. **If yes, how often do you use a PC?** More than 1 hour a day
16. **What kind of educational material is more suitable for you?** A varied and interactive learning environment. Responds best to a mix of visual, auditory, text-based, and interactive materials
17. **Do you use any kind of accessible educational material?** No formal accommodations used. Develops and adapts personal strategies for learning, accessing and processing information.

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Being in crowded spaces can be stressful and energy-draining. He often feels exhausted at the end of a day spent around too many people.	He prefers to go grocery shopping during off-peak hours to steer clear of the crowds. Additionally, he chooses side streets over main streets to minimize

		interactions with large groups of people.
Mobility with the means of transportation	He finds traveling during rush hours stressful. When he is on a train with many conversations happening around him, he hears them all at once, which can be overwhelming. Having an invisible condition can be problematic because people often don't realize he has different needs in various situations.	He has developed some coping mechanisms as solutions. Supports initiatives for visual indicators of invisible disabilities to increase awareness. Designated quiet areas in various situations, such as on trains, to provide a more comfortable environment. To block out surrounding noise and impressions, he uses noise-canceling headphones. Uses technology to plan travel and avoid high-traffic times in different contexts.
Communication with and services of the public and private sectors	In the public sector he does not find the public sector to be a major problem for him, as he can navigate existing structures with the help of social workers and other resources. He understands the constraints within which public sector employees must operate. However, he believes that there should be more adaptive systems in place to support citizens who are not as capable of working around these structures. He has also encountered problems with communication and trust	Advocates for more flexibility in public services to accommodate specific needs, while balancing workload and resources. He is now more cautious in his interactions, actively developing strategies to avoid being swindled. He also relies more on user reviews to become better informed about different companies. Supports initiatives for community-based resource-sharing, where essential items can be borrowed as needed.

	when dealing with private companies. Believes some business practices exploit individuals with cognitive disabilities.	
Web accessibility	None mentioned.	
Digital accessible transformation		
E-commerce	Difficulties in trust.	He looks at reviews of other customers.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None mentioned.	
Digital customer communication	Difficulties in trust.	He looks at reviews of other customers.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	He does not experience any difficulties but mentioned the difficulties of an older relative who has a hard time understanding all new digital banking systems.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None mentioned.	
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and	None mentioned.	

post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	None mentioned.	
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	None mentioned.	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	He finds it challenging to complete tasks simply because he is told to do them. For example, arbitrary assignments designed to demonstrate that a student has learned course goals, but without a clear connection to real-world problems, are unmotivating for him. This lack of real-world relevance makes it difficult for him to stay motivated. He struggles to see the point of completing tasks that have already been solved just to prove he can do them. As a result, he received the lowest grade on such an assignment. However, when it came to the reflective part of the assignment, where he	He would like more motivating tasks to learn through, for example by solving “real” problems.

	critiqued the purpose and relevance of the task, he earned the highest grade.	
Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place	A lot of people in the workplace at the same time is energy consuming.	He takes breaks every now and then to be by himself. This is something that he has learnt works for him to cope with existing structures around him.
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	Arbitrary assignments are again described as draining. The task of having to report his hours on a weekly basis is something he finds unnecessarily time-consuming and does not contribute to his work. He has the same issue with reporting travel costs.	He would prefer a system that notifies him only when a specific detail needs to be checked, rather than requiring him to provide all the details every time. He envisions a system based on trust, where it is assumed, he is fulfilling his work and hours. Only if there is a reason to doubt this should he be required to start reporting his hours.
In-service training and career up-skilling		
Assistive Technology in the work place and accessible material	Starting a new job often means adapting to an unfamiliar social environment. Navigating this can be challenging when there is a lack of structure or clear expectations. Unspoken	He would like additional social support to understand how things work in this specific work setting. He would also appreciate receiving guidelines from the workplace or

	rules and invisible norms can be particularly difficult to grasp.	coworkers on aspects to consider for his work, providing him with a helpful starting point.
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Problem with crowded spaces during the days.	Enjoys it when there are night exhibitions, as there are usually less visitors then.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Sometimes the content of certain exhibitions can be triggering. Surprising elements are something that can cause discomfort.	He thinks that it would be a good idea to provide information with trigger warnings to let people mentally prepare before walking into a room with very graphic or violent content.
Accessibility in museum exhibits and works of art	None mentioned.	
<i>Tourism (including recreation and sports) Accessibility</i>	Practicing different things to travel in the future, to understand what works well.	
Accessibility in tourism Services	Plans himself.	

Accessibility in accommodation (hotel units, camps, camping)	New situations sensory inputs can be a stressful scenario.	Practices by visiting local hotels and restaurants. Ensuring he and his close ones have "safe food," familiar foods in case new foods become overwhelming.
Accessibility in transportation	New situations or sensory inputs can be a stressful scenario.	Familiarity is described as a solution for stressful situations, currently preferring to travel by car as it is their own "safe space".
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	He likes to go to concerts, and this is a problem area of a space with a lot of people. In cinemas, it is very stressful and problematic to get in and out of the salon. All the people are standing up and starting to walk at the same time. He usually sits until everyone has gone, and then leaves.	He participates in his own way. Using earplugs and usually sitting in the back at a distance from people. He thinks that the cinema could provide a structure of having one row leave at a time to maintain a calmer pace for everyone. He thinks this thinking could be applied in the context of leaving other spaces, such as leaving a train as well.
Accessibility in Security and Evacuation Situations	He doesn't see any direct problems in the situation of an emergency. He has taken a first aid course, that he repeatedly takes, to ensure he is adequately equipped to act in case of	He would like for others to equip themselves in case of him being the one getting hurt.

	someone getting hurt around him.	
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Sensory sensitivity is described as a problem in the case of evacuation or crisis for people on the spectrum.	Strategies to prepare for stressful situations, by maintaining a large stock of "safe foods" at home.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	In the scenario of unexpected events such as an emergency, planning for maintaining some familiarity can prevent additional distress.	Having conversations on various scenarios to ensure preparedness in case of unexpected events. He emphasizes the balance of discussing plans without causing undue stress.
Accessibility of emergency information (Multiple channels)	In the scenario of unexpected events such as an emergency, planning for maintaining some familiarity can prevent additional distress.	
Other areas discussed Stigma	Feels that people perceive him as more neurotypical than he feels he is, which contrasts with the typical experience of stigma. He explains that stigma often revolves around visible disabilities, where people hold preconceived notions about certain conditions. However, this isn't always the case for diagnoses that are mostly invisible. This lack of visibility is seen as problematic, highlighting the need for greater awareness and understanding of the	Wearing an established symbol to raise awareness is one solution to raise knowledge of people with invisible disabilities and their needs. One solution is to strive for social cohesion, creating mutual spaces in which we start to learn more about people functioning differently than ourselves.

	needs of people with invisible disabilities. He identifies an issue as the societal division among different groups of people. There is a gap in understanding between people, and he thinks the current societal structure of our set divisions contributes to such a problem.	
<i>Interactions in social media</i>	Interacting on social media or in different online spaces poses challenges for him. He finds it difficult because online interactions can sometimes lack common context and understanding, creating emotional distance that wouldn't exist in face-to-face encounters. He also gets frustrated with others' communication styles, particularly when there is no punctuation or finished sentences, and when emojis replace words. His direct communication style sometimes unintentionally leads to misunderstandings.	He prefers face-to-face social interactions in specific, meaningful settings rather than generic online interactions. He values interactions that serve a purpose related to shared interests, rather than merely socializing for the sake of it.

Sweden – High functioning autism, no 2

Demographic data

1. **Gender:** Other
2. **The place (country) of residence:** Sweden
3. **The type of your disability (official clinical diagnosis):** Autism
4. **Other difficulties/disabilities:** Additional cognitive and emotional health conditions
1. **Educational level:** Vocational education

2. **Do you use assistive technology?** Yes
3. **If yes, which means of assistive technology?** Employs her own coping tools and self-regulation strategies, including sensory aids (e.g., fidget toys), meditation, and preferred clothing for comfort
4. **Do you find it difficult communicating with others?** Sometimes
5. **Do you use any kind of communication aid?** No
6. **Do you live alone?** Yes
7. **You move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant
8. **How often do you move alone?** Most of the time
9. **Do you use a personal computer?** Yes
10. **If yes, how often do you use a PC?** More than 1 hour a day
11. **What kind of educational material is more suitable for you?** Visual, Audio-visual
12. **Do you use any kind of accessible educational material?** No

13. Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Experiences sensory overload from unexpected noises, strong odors, and crowded spaces	General things that make things more manageable: In the social environment they would respectful behavior in public spaces, respecting personal space and avoiding rushing and pushing. Minimize interactions with people whenever possible. Take regular breaks, practice deep breathing, and move at their own pace to manage stress and sensory overwhelm.

Mobility with the means of transportation	If they must do several things in one day or go to multiple places, they avoid public transportation. This is to avoid getting overly stimulated and anxious.	Relies on personal support or alternative transport methods when public transit is overwhelming. Current solution: rely on their partner for transportation to avoid triggering panic attacks from public transportation. Proposed solutions were autism-friendly areas (quiet zones) on trains, buses, trams, and subways. They would also like more alternative routes, queues, etc., for people on the spectrum or with other social needs. They would appreciate a generally increased understanding and knowledge so that everyone can be a part of society on their own terms.
Communication with and services of the public and private sectors	They find it difficult to formulate their thoughts if they can't write them down. Phone calls are described as difficult.	Email and text format, in general, are preferable for them. They describe it as good that you can send messages in most sectors these days.
Web accessibility	None mentioned.	They describe their online presence as a solution to socially engage on their own terms. They state that there's information, honesty, and various communities where they feel seen without needing to speak.
Digital accessible transformation		

E-commerce	None mentioned.	They describe their online presence as a solution to socially engage. Being able to order almost everything online has made a big difference for their life.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None mentioned.	
Digital customer communication	None mentioned.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None mentioned.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Problems can arise when they miss the social nuances and cues online. Since they take things literally, they easily get caught up in ads and other people's lifestyles.	They take breaks from social media and stick to using internet services strictly as tools.
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	None mentioned.	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR &	Reflecting on their experience in school, they described a non-understanding environment in which they expect to	They wish for greater empathy towards different needs.

AR) and assistive technology	participate in the same way as others. Generally, they struggle with meeting expectations and have a hard time performing tasks in front of others.	
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	School is described as a major source of anxiety. Everyone says it doesn't show that they are autistic, so they feel that they must maintain that image.	Same as above.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Teachers were described to generally only notice those who were outwardly expressive with their struggles, which meant that someone like them, who struggled quietly and were introverted, flew under the radar.	Same as above.
Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place	None mentioned.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	They describe how they can't have a regular job. It's described as highly stressful trying to live up to the pressure and expectation of how others function. They describe a lack of willingness to compromise from managers.	Finding a job, they can manage themselves. Self-employed. A more empathetic social environment in general. Normalizing accommodating different needs.
In-service training and career up-skilling	None mentioned.	

Assistive Technology in the work place and accessible material	Generally, they describe how they push themselves until they burn out because they don't want to be treated differently. They describe how other people mirror them as that it is not noticeable that they are autistic. Due to this expectation, they feel like they must uphold that image. This causes both anxiety and fatigue.	Same as above.
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	None mentioned.	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	
Accessibility in museum exhibits and works of art	None mentioned.	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	They do not like to travel. They need many aids and extensive planning that often drains the most	They do not think there are solutions to accommodate this situation.

	energy, describing that the journey itself not worth it.	They would rather stay home and or be in nature.
Accessibility in accommodation (hotel units, camps, camping)	They need many aids and extensive planning that often drains the most energy, describing that the journey itself not worth it	
Accessibility in transportation	They need many aids and extensive planning that often drains the most energy, describing that the journey itself not worth it	
Accessibility in sports & recreational facilities	They need many aids and extensive planning that often drains the most energy, describing that the journey itself not worth it	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Sometimes they go to the movies and concerts/musicals. It's described as challenging, but with planning for rest, manageable. If they forget their earplugs, it might cause a breakdown.	Planning for rest before and after. Earplugs.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	None mentioned.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned. None mentioned.	
Accessibility of emergency information (Multiple channels)	None mentioned.	

Sweden – Older people, no 1

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** UK (been living in Sweden)
3. **Age:** 65+
4. **Do you face any kind of difficulties/disabilities:** Hearing: a little bit. Vision: naturally long-sighted and now the long sight is progressively getting worse.
5. **Do you face any kind of other difficulties/disabilities:** Age-related changes in hearing and vision (long-sightedness gradually worsening). Occasionally forgets small details, which causes concern. Diagnosed with mild dyslexia in adulthood
6. **Educational level (e.g., lower secondary school, tertiary level of education, master degree):** Higher education
7. **Do you use assistive technology?** Yes
8. **If yes, which means of assistive technology?** Uses a personal computer and smartphone daily. Adjusts text size and font for easier reading. Prefers reading books on her phone with customized font settings (color, size, sans-serif fonts). On the computer she also customizes her text through settings.
9. **Do you live alone?** Yes
10. **You move alone or with the help of an attendant?** Alone
11. **How often do you move alone?** Always
12. **Do you use a personal computer?** Yes
13. **If yes, how often do you use a PC?** More than 1 hour a day

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	She doesn't feel impaired or disabled in quiet environments but finds it difficult to hear people in noisy settings like restaurants or places with music, even if they're right next to her.	Not sure how to make noise levels more manageable.

	Sometimes forgets where she places things, which can be frustrating. She also has a fear of forgetting to turn the tap off or something damaging in the house. When living alone and being in her apartment, there is a fear of not getting help if something were to happen to her.	Solution: Uses digital tools and reminders to help with memory. Cloud based voice services being one example. Solution: Exploring wearable technology for safety but prefers minimal distractions. Problem: to remember to wear it. Another problem is that she does not want digital notifications to disturb her. This was described to probably be easy to set to only have the functionalities she wishes.
Mobility with the means of transportation	Can legally drive a car, but sometimes forgets to have the right glasses on. If being stopped by the police in the case of an accident, this will have legal consequences. Different glasses for different situations are good in terms of the function, but remembering which ones to put or bring for different context is a difficulty. Underground stations: some underground escalators are described as both fast and going down far. She is conscious in the way she is using it to ensure she does not fall. It works okay for her now but might become a bigger problem in the future.	Solution: something to make sure she has the right glasses on. A proposed solution: a reminder “do you have the right glasses on” when entering the car. Needs a solution to help remember to wear them in certain situations. Alternatively, and preferably, have one pair of glasses that works in all contexts. Solution: there are usually other ways of getting down and up, such as an elevator. Also not having to go down at all and taking a bus instead. She also prefers walking sometimes.

		Solution: You can get a map which tells you all the stations which have step free access. which she thinks means they have lifts.
Communication with and services of the public and private sectors	None mentioned.	
Web accessibility	Can't read the print on the computer sometimes. She tried wearing glasses that you wear all the time. That would have solved the problem of reading print close to her and driving but she just couldn't get used to them. She needs multiple pairs of glasses. Having to manually make her preferred changes of text for each digital service she is using.	She changes fonts, color and text size. Having a solution for her preferred settings that could work across platforms and sites.
Digital accessible transformation		
E-commerce	None mentioned.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Difficulty to read small text. Black on white background is too much contrast and not pleasant to read. Described to be cumbersome to make all adaptations across all different digital programs. The place for changing settings is put into different	Enlarges text and changes font size and color. Ideal scenario: for each device she uses, she can specify the settings she wants. Whenever going into a different document or program, the settings

	places and is also changing place sometimes. Learning where something is located and then it changes place. It's too complicated to find and takes time. Also, the settings do not hold for an entire session. She must go in and reset the settings for each document. In one program, when scrolling a document, the page flips automatically to the other page. This is a problem.	will be set automatically without her having to go in manually each time. She uses a lot of programs. One solution to work across platforms would be ideal. This is a feature she thinks most people, no matter the condition, would appreciate. A solution for everyone. Solution: to scroll digital documents without the automated flip.
Digital customer communication	None mentioned.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None mentioned.	
Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Described to be cumbersome to make all adaptations across all different digital programs. The place for changing settings is put into different places and is also changing place sometimes. Learning where something is located and then it changes place. It's too	Enlarges text and changes font size and color. Ideal scenario: for each device she uses, she can specify the settings she wants. Whenever going into a different document or program, the settings will be set automatically without her having to go

	complicated to find and takes time. Also, the settings do not hold for an entire session. She must go in and reset the settings for each document. In one program, when scrolling a document, the page flips automatically to the other page. This is a problem.	in manually each time. She uses a lot of programs. One solution to work across platforms would be ideal. This is a feature she thinks most people, no matter the condition, would appreciate. A solution for everyone. Solution: to scroll digital documents without the automated flip.
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	None mentioned.	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Same concern as raised in digital documents.	
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the	None mentioned.	

teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	None mentioned.	
Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place	None mentioned.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	Before Covid digital meetings was something she was unfamiliar with. Now she does it everyday with no problem.	
In-service training and career up-skilling	None mentioned.	
Assistive Technology in the work-place and accessible material	None mentioned.	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space,	Needing her distance glasses for looking at the objects. But then she'd want to read the labels, and she'd have to get out her reading glasses. So basically, she had two pairs of glasses going on and off.	Wishes to have one solution that could work in multiple contexts, but the technology of the glasses is not quite there to accommodate that.

guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	
Accessibility in museum exhibits and works of art	None mentioned.	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	None mentioned.	
Accessibility in accommodation (hotel units, camps, camping)	None mentioned.	
Accessibility in transportation	Driving in a foreign country is harder now in comparison to when she was younger.	Other options of transportation.
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None mentioned.	
<i>Accessibility in Security and Evacuation Situations</i>		

Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Walked down many floors due to an electricity failure. It was very hot, and it was a long way to get out to get back up again. A general concern: if someone can't hear it, how would they get notified?	Not sure how the situation could be solved in a different way. Visual lights blinking could aid in emergency. Described to not always be the case.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	
Accessibility of emergency information (Multiple channels)	A general concern: if someone can't hear it, how would they get notified?	Visual lights blinking could aid in emergency. Described to not always be the case.
Other areas Grocery shopping And the need for lists to remember things	Finds herself forgetting items when shopping. She has a habit of making a shopping list but sometimes forgets to bring it along. To mitigate this, she recognizes the convenience of using her mobile phone to create lists since she always has it with her. She has attempted to use cloud-based voice services as a digital assistant for managing her shopping lists but has encountered challenges. For instance, when wanting to add an item to the shoppinglist, she finds it inconvenient because the digital assistant doesn't always register her commands promptly or accurately.	Finds pen and paper to be her reliable method for making lists, whether it's for groceries or daily tasks. Despite trying to use digital voice services for list management, she prefers the simplicity of writing things down manually. There is potential in cloud-based voice services if it becomes more user-friendly and less complicated. For example, she envisions a smoother experience where she can directly instruct the digital assistant to update her grocery list as she notices items need replenishing in her fridge. She values the idea of customizing her list-making experience to suit her specific needs, such as organizing different

		types of lists for various tasks. Setting up such customizations should be straightforward and reliable, ensuring that the system functions as intended without unnecessary complexity. Ideal scenario involves having the flexibility to tailor lists according to different contexts and needs. She thinks there should be a preset of options to start with, with the option of further customization.

Sweden – Older people, no 2

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Sweden
3. **Age:** 65+
4. **Do you face any kind of difficulties/disabilities:** **Hearing:** she uses a hearing aid that does not always work that well. **Sight:** nearsighted. **Movement:** mobility related challenges, she has prostheses in her knees.
5. **Do you face any kind of other difficulties/disabilities:** No
6. **Educational level (e.g., lower secondary school, tertiary level of education, master degree):** Post-secondary education
7. **Do you use assistive technology?** Yes
8. **If yes, which means of assistive technology?** Hearing aid and glasses.
9. **Do you live alone?** Yes
10. **You move alone or with the help of an attendant?** Alone
11. **How often do you move alone?** Always
12. **Do you use a personal computer?** Yes
13. **If yes, how often do you use a PC?** C. 1h a day

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Perceiving curbstones: struggle to perceive the height and location of curbstones, posing significant safety risks during urban navigation. This difficulty can lead to tripping hazards or challenges in crossing streets safely. Stairs without handrails: Navigating stairs without a handrail is especially challenging, particularly when visiting a friend who lives on the top floor of an old building with no elevator. Her poor balance necessitates careful and cautious movement. Reading signs: Reading signs is difficult for her, requiring her to go very close to see which direction to take, which can be inconvenient and sometimes unsafe. High thresholds in old apartments: While high thresholds in old apartments pose accessibility challenges, she describes this as a relatively minor issue for her.	More ramps. Handrails in stairs. Make the text larger.

Mobility with the means of transportation	Unfamiliar temporary bus stops: During road closures and bus stop relocations, unfamiliar temporary bus stops pose significant challenges. These changes can create safety hazards, such as unexpected drops in pavement height. For example, one evening, the interviewee almost fell when exiting a bus onto the street, unaware that their usual bus stop had been relocated. Lack of parking spaces: The shortage of parking spaces in town forces her to more often rely on public transportation. Driving in familiar areas only: She only drives in areas she is familiar with, as her visual impairment makes it difficult to read new directional signs, limiting her ability to navigate unfamiliar routes.	Make sure the bus lowers towards the height of the street to avoid a gap.
Communication with and services of the public and private sectors	She has no trouble with digital communication, but mentioned she many times aids other older people with the following problems: Complex navigation: The process of navigating automated phone systems is cumbersome, requiring users to go through multiple steps and select from various options, which can	Personal assistance by direct call: To address the difficulties faced by individuals navigating automated phone systems, it is beneficial to provide access to an actual person. Offering a more personal and comprehensible experience.

	be difficult to remember and manage. Memory overload: The need to keep track of several levels of options often causes confusion, especially for older individuals, making it hard to proceed with the call. Excluded by not having digital ID: some elderly, do not have access to or are unable to use mobile BankID or similar digital authentication tools, which further restricts their ability to access necessary services. Excluded by lack of digital literacy: Older people is described to often struggle to navigate today's digital services due to a lack of understanding and familiarity with technology. A preference and need to call directly to a service without having to navigate any digital steps beforehand. Currently, it is many times required to use a touch phone and possess digital identification (such as BankID), which they may not understand or have. This creates significant barriers to receiving the help and guidance they need	Eliminating the need for complex digital tools like touch phones and mobile BankID simplifies the process, ensuring that all individuals, regardless of their technological proficiency, can access necessary services directly through their healthcare provider.
Web accessibility	None mentioned.	

Digital accessible transformation	Does not experience any major barriers in accessibility as she describes herself as having digital know-how. She finds that algorithms can pose challenges to digital accessibility. Algorithmic filtering of news and online content restricts access to diverse perspectives and comprehensive information. She, despite being adept with technology, struggles to break free from these curated algorithms, hindering her ability to choose freely information she wishes to engage with.	A wish for more transparency on how the algorithms work from big tech.
E-commerce	Security issue: She do not want to give any sensitive information, like her bank account, online. Rarely buys anything online due to a lack of trust and the risk of being swindled. Too complicated: she also finds the steps and navigation cumbersome in the few attempts she has made to buy something online.	The ability to not have to add sensitive credentials online, but instead get the option of paying by an invoice being sent to her home, is one mentioned solution to overcome the issue of trust and security.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material,	She sometimes has faced challenges with reading invoices due to small text size and PDF format limitations. When invoices	She has, with the help of the service providers devices, set up the same settings in which

tax or government sites/applications)	are received in PDF format, enlarging the text requires manually adjusting the view, which is cumbersome and inefficient.	text gets automatically enlarged.
Digital customer communication	None mentioned.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Whilst not facing difficulties herself, she knows of people who face significant barriers in managing their finances due to a lack of access to and understanding of digital payment methods and banking systems. Without bank cards or the knowledge to handle digital transactions, they struggle to make purchases and manage their money, relying instead on cash. This lack of digital literacy and resources limits their ability to participate fully in the modern economy and often leads them to seek help for various financial issues. Despite legal requirements mandating that merchants and shops must accept cash payments, many do not comply. This lack of adherence poses significant accessibility issues for individuals who rely on cash transactions and do not use or understand digital payment methods.	Personal service beyond digital solutions. She stresses the importance of being able to call for assistance and help, without being advised to navigate websites. To ensure accessibility for all individuals, it is essential that all establishments comply with the mandate to accept cash payments. Strict enforcement of this requirement would guarantee that those who rely on cash transactions, including individuals who do not use or understand digital payment methods, can continue to conduct their transactions without difficulty.

Digital libraries and repositories	None mentioned.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None mentioned.	
Educational Accessibility	No reported issues.	
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)		
Accessibility in distance		

education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place	Safety concerns at the office: She is uncomfortable being alone at the office due to fears of falling or sustaining an injury. Need for ergonomic chair: She requires a chair that supports her physical condition, particularly as she spends long hours sitting. Discomfort from medical condition: She experiences eye discomfort, impacting screen focus and digital device use. Challenges in conference settings: Due to the room layout and hearing impairment, she struggles to both see PowerPoint presentations clearly and hear speakers effectively during conferences.	Coordinated office schedule: her work schedule is synchronized with colleagues' presence to avoid being alone, ensuring immediate assistance in case of accidents or emergencies. Hearing extension aid: Implementing Bluetooth-enabled microphones strategically in conference rooms to transmit audio directly to her hearing aids. This setup enhances her ability to hear distant speakers clearly, overcoming challenges posed by room layouts and distance. Request for speaker visibility: She prefers that speakers do not cover their mouths during presentations or discussions.
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	Emphasizes the need for adapted work arrangements and communication with their supervisors to ensure a safe working environment, following regional guidelines closely. This has worked well.	

In-service training and career up-skilling	None mentioned.	
Assistive Technology in the work-place and accessible material	She faces difficulties managing multiple ongoing tasks through digital chat platforms, which often leads to confusion and errors. The fast-paced and demanding nature of digital communication causes stress and fatigue for her.	To manage these challenges, she has opted for direct, physical communication methods such as phone calls. This approach allows for clearer and more personal interactions, reducing the risk of errors caused by digital multitasking.
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Given her condition she finds it challenging if there are not areas to sit, as she needs to sit down and rest occasionally.	Locate chairs in the physical space in the venue.

Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Difficult access to Castle: The uphill location of a nearby Castle poses a significant challenge for people with mobility issues, making it hard to reach without proper accessible infrastructure. Location of cultural institutions: Cultural venues like the art museum are often situated in less accessible areas, requiring visitors to navigate through challenging transportation options. Desire for relocation: There is a strong desire for cultural institutions to relocate to more central and accessible locations. Improving accessibility: Moving cultural venues to more accessible areas would enhance their reach and inclusivity, ensuring that everyone, regardless of mobility challenges, can enjoy cultural activities without barriers.	Preservation of historical sites emphasizes the importance of maintaining the historical authenticity and integrity of sites when considering accessibility improvements. Accessible solutions: advocates for finding practical and respectful ways to enhance accessibility without detracting from the historical charm and identity of cultural and historical landmarks.
Accessibility in museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	None mentioned.	

Accessibility in accommodation (hotel units, camps, camping)	None mentioned.	
Accessibility in transportation	High steps: Challenges posed by high steps when boarding buses, which can be difficult to navigate for individuals with mobility impairments or physical disabilities. Physical effort: Requires significant physical effort to board the bus multiple times a day due to the height of the steps.	
Accessibility in sports & recreational facilities	None mentioned.	
Accessibility at beaches	None mentioned.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Concert venues: Difficulty coping with excessively loud music at concert venues, necessitating the use of hearing protection for preservation of hearing health. General venue accessibility: Seating availability: Inaccessibility due to insufficient seating options; she requires adequate seating to attend events or venues comfortably. Movie theaters (cinemas): Hearing loops: Challenges with hearing accessibility in	She has learnt which venues work for her and avoids the places that do not.

	movie theaters, particularly the absence of hearing loops that are essential for individuals with hearing aids. Volume levels: Some venues have high volume levels that render hearing aids unnecessary, providing an alternative for hearing-impaired individuals. Preference for smaller theaters: Smaller theaters are noted for their more accommodating environment, allowing the speaker to comfortably use their hearing aids without relying on a hearing loop.	
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Reduced mobility and CPR: Inability to Perform CPR Effectively: Due to reduced mobility, she faces challenges in performing CPR during emergencies such as sudden cardiac arrests. She is unable to kneel, which is essential for administering CPR effectively. Impact of physical limitations: Despite being trained as a CPR instructor, her physical limitations	

	prevent her from applying her skills effectively in real-life emergency situations.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	
Accessibility of emergency information (Multiple channels)	None mentioned.	
Other areas <i>Social connectedness: prioritizing physical encounters over digital.</i>	Avoidance of digital substitution: The interviewee avoids replacing daily activities with digital solutions, emphasizing a reluctance to lose social connections that physical interactions provide. This reflects a preference for maintaining meaningful social interactions through face-to-face engagements rather than relying solely on digital communication methods.	Enjoyment of physical shopping: They find pleasure in the social aspect of shopping, especially interacting with cashiers and other staff members at local supermarkets. This underscores the significance of in-person interactions and social engagement during daily activities like shopping

5.3. Summary of interviews from Greece - List of accessibility problem areas and solutions

a. Core accessibility

Physical/Spatial accessibility of indoor and outdoor spaces

Problem areas:

- Narrow sidewalks that hinder movement.
- Insufficient ramps in public spaces.
- Various obstacles in pathways, including parked cars blocking access.
- Lack of tactile guides and proper signage.
- Poorly located infrastructure
- Obstacles in pathways, including holes for trees, columns, and construction work without proper signage.
- Inconsistent maintenance of tactile guides and pathways for visually impaired individuals.
- Difficulty in understanding or communicating needs due to physical or spatial barriers in public spaces.
- Poorly placed infrastructure (benches, columns) obstructing pathways.
- Inadequate ramps, elevators, and narrow doors in public buildings (e.g., bars, restaurants, schools, hospitals).
- Lack of accessible toilets and elevators in public spaces.

Solutions:

- Improved maintenance and design of sidewalks and pedestrian areas to enhance accessibility.
- Installation of clear signage and removal of obstacles from pathways.
- Ensure tactile guides are present and regularly maintained in all outdoor spaces.
- Ensure that physical spaces (e.g., offices, service counters) are well-designed to be accessible for individuals with communication challenges.
- Create accessible pathways and clear signage for those with mobility or cognitive impairments
- Clear signage and obstacle-free pathways.

- Install tactile guides in all outdoor spaces.
- Improve placement and maintenance of infrastructure, ensuring clear and unobstructed paths.
- Install ramps, elevators, and wider pedestrian areas.
- Educate the public about disability's needs and enforce parking regulations to keep ramps clear.
- Ensure all public buildings are accessible with proper elevators, ramps, and accessible toilets.
- Involve disability advocacy organizations to enforce rights and accessibility standards.

Mobility with means of transportation

Problem areas:

- Mass transportation schedules and routes are not integrated into Google Maps, limiting accessibility.
- Lack of accessibility features on transportation vehicles and bus stations.
- Communication barriers related to mobility when using transportation means, including lack of assistance and unclear information.
- Lack of accessibility features in transportation vehicles.
- Difficulty getting on buses due to high doorsteps and lack of assistance from the driver.
- Inadequate bus and taxi services, with no proper ramps or assistance from drivers.
- Lack of special buses for individuals in wheelchairs.
- Crowded buses with no room for wheelchair users.

Solutions:

- Integrate all mass transportation schedules and routes into Google Maps for easier navigation.
- Enhance accessibility features on transportation, such as ramps, priority seating, and clear audio-visual announcements.
- Ensure that public transportation staff are trained in assisting individuals with disabilities.

- Provide clear, accessible signage and digital tools for people to understand transportation options.
- Improve accessibility features (e.g., ramps, priority seating) in transportation means.
- Ensure buses are accessible with lower steps or ramps and train drivers to assist passengers with disabilities.
- Improve public transportation infrastructure and introduce special buses for wheelchair users.
- Increase the availability of accessible taxis.

Communication with public and private sectors

Problem areas:

- Electronic platforms are not consistently accessible, posing challenges for users with disabilities.
- Lack of patience and understanding from staff when interacting with customers with communication challenges.
- Difficulty in communication with public and private sectors due to misunderstanding information or struggling to explain needs.
- Lack of interpretation services in public and private sectors (e.g., hospitals, banks).
- Speech difficulties leading to misunderstandings and refusal of service.
- Lack of signage and written information about bus stops or airports, making navigation difficult.
- Difficulty in crowded spaces (e.g., large gatherings) and low lighting making communication difficult for deaf individuals.

Solutions:

- Ensure all platforms are compatible with screen readers and other assistive technologies.
- Conduct regular accessibility checks and updates to maintain and improve platform accessibility.
- Train service staff to be more patient and informed about communication difficulties, ensuring they help where necessary.

- Implement clearer, simpler communication methods, including alternative formats for information (e.g., audio, visual aids, or simplified language).
- Provide interpretation services in all public and private sectors and larger screens for interpretation on TV programs.
- Implement circular tables for better eye contact and ensure adequate lighting in communication areas.
- Provide information in multiple formats for buses, airplanes, and other transportation services (e.g., sign language, written messages, audio).
- Promote awareness and empathy towards the challenges faced by deaf individuals.

Web Accessibility

Problem areas:

- Platforms are not structured or converted to meet accessibility standards, limiting usability for individuals with disabilities.
- Lack of specific, understandable instructions for tasks (e.g., digital forms, submissions) on websites, leading to confusion and anxiety.
- Platforms are not always accessible with screen readers.
- Platforms are not designed or structured with inclusion principles.
- Difficulty with electronic forms, lack of specific instructions for completing them.

Solutions:

- Design and structure all web platforms with inclusive principles, ensuring compatibility with screen readers and other assistive tools.
- Implement accessible navigation, clear layout, and alternative text for images.
- Ensure that websites and digital platforms provide specific, clear instructions, especially for critical processes like submitting forms or handling taxes.
- Integrate accessible design standards into web platforms, ensuring compatibility with assistive technologies and clear guidance for users.
- Ensure all platforms are accessible with screen readers and conduct regular accessibility checks and updates.
- Make sure that all digital platforms (e.g., online forms, services) have accessible design structures to support a wide range of disabilities.

b. Digital accessible transformation

E-commerce

Problem areas:

- Platforms are not compatible with screen recognition programs.
- Some websites are not accessible during final stages of transactions.
- Inconsistent accessibility during online shopping and payments.
- There is a fear of fraud in online shopping.

Solutions:

- Develop e-commerce platforms to be fully compatible with screen recognition software.
- Ensure complete accessibility throughout all stages of online transactions.
- Standardize accessibility features across all e-commerce websites.

Digital documents and services of the public and private sectors

Problem areas:

- Difficulty understanding digital forms due to unclear instructions.
- Some platforms are not accessible with screen recognition programs.
- Unfamiliar terminology in digital documents causes confusion.

Solutions:

- Provide clear and specific instructions for completing digital forms.
- Make all digital platforms accessible with screen recognition programs.
- Use simpler and more common vocabulary in digital forms and documents.

Digital customer communication

Problem areas:

- Difficulty communicating due to unfamiliar terminology or lack of clarity.
- Difficulty with phone-based customer service.
- Lack of video call options for sign language communication.

Solutions:

- Better training for customer service representatives to handle communication with individuals who have difficulties.

- Implement video call options for sign language communication.
- Provide customer service platforms that are fully compatible with screen recognition software.

Digital banking and payment

Problem areas:

- Inconsistent accessibility across different banks.
- ATMs and banking platforms are not accessible with screen recognition programs.
- Banking software is not fully accessible or functional for some users.
- Difficulty with digital banking transactions and reliance on ATMs.

Solutions:

- Ensure all banking platforms and ATMs are compatible with screen recognition programs.
- Standardize accessibility features across all banks.
- Implement digital banking services with simpler navigation and clearer instructions for users.
- Provide assistance and tutorials for learning to use digital banking services.

Digital libraries and repositories

Problem areas:

- Difficulty navigating and using digital libraries due to unclear instructions.
- Digital libraries are not frequently used due to navigation difficulties.

Solutions:

- Improve the structure and accessibility of digital libraries.
- Provide clearer navigation and better guidance for using digital libraries and repositories.
- Enhance accessibility features within digital library platforms for all users.

Digital devices and their software/apps

Problem areas:

- Some devices and software are not compatible with accessibility tools.
- Initial difficulty with managing digital formats and devices.

- Difficulty understanding unfamiliar software terminology.

Solutions:

- Ensure all digital devices and apps are compatible with accessibility tools.
- Provide continuous assistance and support for users adapting to digital devices.
- Use simpler, more common vocabulary in software and apps to improve understanding.
- Offer personalized support, including video calls for technical assistance with sign language options.

c. Educational accessibility

Spatial accessibility in educational units

Problem areas:

- Lack of blind guides, narrow spaces, and obstacles in educational buildings.
- Some schools and universities lack elevators or ramps.
- Difficulty accessing certain areas due to poor spatial design.

Solutions:

- Install blind guides and improve spatial design to ensure accessibility in educational units.
- Retrofit older buildings with ramps, elevators, and wider corridors.
- Ensure all educational buildings are spacious and obstacle-free, providing clear pathways.

Accessibility in educational material

Problem areas:

- Educational tools and materials are not accessible with screen recognition software.
- Lack of accessible educational materials, such as texts, images, and videos.
- Limited support for students with disabilities in terms of educational resources.
- Educational materials not compatible with assistive technologies.

Solutions:

- Ensure all educational materials are provided in accessible digital formats.
- Develop and integrate accessible digital tools for courses, such as text-to-speech and screen readers.

- Implement platforms for accessible educational resources and materials.
- Create and provide more diverse, accessible media (subtitles, sign language interpretation, and simplified text).

Accessibility in services provided by educational units

Problem areas:

- Communication with administrative services can be challenging, especially when staff are not informed or patient.
- Lack of accessible services or information regarding academic resources.
- No clear communication for students with specific needs.

Solutions:

- Provide better training for administrative staff to assist students facing difficulties.
- Implement clear and standardized communication platforms for both administrative and academic services.
- Ensure announcements and important information are available in multiple formats (e.g., braille, audio, video with subtitles).

Accessibility in courses

Problem areas:

- Lack of accessible tools for courses, including assistive technology and software.
- Teachers do not consistently use digital tools or e-learning platforms, especially older generations.
- Some teaching practices (fast-paced lectures, lack of audiovisual materials) do not cater to students with learning disabilities.
- Difficulty keeping up with handwritten notes during classes, especially in large classrooms.
- Teachers progress too quickly, making it difficult for students with learning difficulties (e.g., dyslexia) to follow.

Solutions:

- Encourage and train educators to utilize accessible teaching tools, including interactive boards, digital textbooks, and audiovisual aids.

- Implement more interactive and inclusive teaching strategies that incorporate technology and multimedia.
- Offer more personalized support for students, including providing additional learning materials (videos, simplified notes) and using slower-paced teaching methods.
- Provide recorded lectures and digital notes for better notetaking and comprehension.
- Implement smaller class sizes for better interaction and teacher engagement.
- Provide additional time and support for students with learning difficulties to help them absorb material more effectively

Accessibility in distant education

Problem areas:

- Inaccessibility of online learning platforms for students with disabilities.
- Distance learning is not effective for practical or hands-on subjects.
- Electronic exams are complicated, time-constrained, and often inaccessible for students with learning disabilities.

Solutions:

- Ensure distance education platforms are fully accessible with screen recognition tools.
- Provide a mix of online and in-person learning opportunities, especially for practical subjects that require hands-on experience.
- Modify exams and assessments to be more inclusive (e.g., flexible timing, clearer questions, oral exams).
- Train teachers and administrative staff to better support students with learning difficulties, using both online and in-person methods.

d. Employment accessibility

Spatial/Physical accessibility in the workplace

Problem areas:

- Narrow spaces that hinder movement and accessibility.
- Lack of accessible toilets and facilities.
- No ramps or elevators in certain workplaces, preventing access to all areas.

- Poor infrastructure that limits accessibility for employees with mobility challenges.
- Inadequate space and bad design make it hard for wheelchair users to navigate.

Solutions:

- Widen doorways and hallways to ensure smooth movement for individuals with mobility devices.
- Install ramps and elevators in all areas to provide access to upper and lower floors.
- Ensure that all restrooms are accessible and compliant with accessibility standards.
- Modify workplace layouts to eliminate obstacles and ensure free movement for all employees.
- Regularly evaluate and update the office space to meet current accessibility standards.

Accessible services in the workplace

Problem areas:

- Lack of accessible services during the hiring process, making it difficult for individuals with disabilities to apply.
- Inaccessible communication channels between employees and various workplace sectors.
- Fear of disclosing disabilities (e.g., deafness) during recruitment, leading to discrimination.
- Limited understanding and support from employers regarding accessibility needs.

Solutions:

- Ensure all hiring processes are accessible, including providing materials in accessible formats (e.g., braille, audio, or screen reader-compatible formats) and using accessible online platforms for applications.
- Create accessible communication channels, including the use of sign language interpreters, captioning, and assistive listening devices during interviews and meetings.
- Educate employers about the importance of accommodating employees with disabilities and making workplace recruitment inclusive.

- Provide a clear and confidential process for employees to disclose disabilities, and ensure they are supported without fear of discrimination.

In-service training and career up-skilling

Problem areas:

- Limited access to in-service training or career development programs that are accessible to employees with disabilities.
- Training programs that do not cater to the specific needs of employees with learning disabilities or other disabilities.
- Lack of tailored and inclusive professional development opportunities.
- Insufficient opportunities for employees to gain new skills or advance in their careers due to accessibility barriers.

Solutions:

- Provide accessible and inclusive training programs that accommodate various disabilities (e.g., using screen readers, offering content in multiple formats).
- Offer career development and upskilling opportunities specifically designed for employees with disabilities.
- Ensure that training is delivered in accessible formats, such as through captioned videos or braille materials.
- Regularly assess and improve in-service training materials to make sure they meet accessibility needs.

Assistive technology in the workplace and accessible materials

Problem areas:

- Lack of provision for assistive technology, such as screen readers, hearing aids, or other devices.
- Inadequate instructions or support for using assistive technology effectively.
- Inaccessibility of training or work materials for employees with disabilities.
- Limited access to accessible versions of work-related documents (e.g., braille, audio, digital formats).

Solutions:

- Ensure that assistive technologies (e.g., screen readers, speech-to-text tools, hearing aids) are available for all employees who need them.

- Provide detailed, user-friendly instructions and ongoing support for employees using assistive technology.
- Make sure all work-related materials, including documents, presentations, and reports, are available in accessible formats (e.g., large print, audio, braille, or digital formats).
- Regularly evaluate the accessibility of workplace materials and technology to ensure they meet the needs of employees with disabilities.

e. Cultural heritage accessibility

Problem areas:

- There is a lack of clear directions to entrances, making it difficult for visitors to locate accessible entry points.
- Limited indicators and accessible pathways for people with mobility or visual impairments.
- Some museums lack elevators, restricting access to upper floors for individuals who use mobility aids.
- Inaccessible seating arrangements in theaters and cinemas, limiting options for wheelchair users and those with other mobility needs.
- Lack of accessible services for deaf visitors, including the absence of sign language interpretation or video guides in exhibitions.
- Challenges in guided tours for deaf visitors due to large group sizes, making it hard to follow sign language interpretation.
- Lack of accessible information about museum exhibits, and limited tactile experiences, which creates barriers for blind and partially sighted visitors.
- Absence of audio or sign language options for exhibit descriptions, leaving some visitors without the support they need.

Solutions:

- Provide clear directions and descriptions in mapping tools like Google Maps and on-site signage to help guide visitors to accessible entrances.
- Implement tactile maps, braille labels, and accessible pathways that include ramps and clear indicators.
- Provide accessible services and information at cultural heritage sites, including trained staff who can assist visitors with diverse needs.

- Install screens in exhibitions with sign language interpretation and provide image-based information to enhance accessibility for deaf visitors.
- Reduce group sizes for guided tours for deaf visitors or use individual screens and headsets with sign language videos for a more personalized experience.
- Provide braille labels and incorporate NFC technology for easy access to audio descriptions or additional information on mobile devices.
- Include tactile elements within exhibits, such as touchable replicas and braille signage, to create interactive, hands-on experiences for visitors with visual impairment.
- Ensure that exhibits include videos or screens with sign language interpretation and provide both auditory and visual options for exhibit descriptions to accommodate different learning preferences.

f. Tourism (including recreational activities and sports) accessibility

Problem areas:

- Staff often lack training on accessibility needs, leading to inadequate assistance for travelers with disabilities.
- Lack of interpretation for announcements on transportation and other services can create difficulties for individuals who are deaf or hard of hearing.
- Limited accessibility information in hotel descriptions makes it difficult for individuals with disabilities to know if a location meets their needs.
- At some hotels there is a lack of ramps, accessible rooms, and elevators that can limit access for wheelchair users and individuals with mobility impairments.
- Lack of accessible transportation options, including ramps and adequate support, limits mobility for individuals with disabilities.
- Announcements on transportation are not always accessible for deaf or hard-of-hearing individuals.
- Lack of accessible paths, ramps, and clear indicators in sports and recreational areas, making it challenging for individuals with disabilities to navigate.
- Inadequate support for individuals with disability in sports facilities, such as lack of accessible lockers, seating, or equipment.

- Beaches often lack accessible paths, ramps, or designated seating, making it difficult for wheelchair users and those with mobility challenges to access them.
- Limited interpretation or assistive options for individuals who are deaf or hard of hearing during shows and movies.
- Lack of guidance for visually impaired individuals in navigating theaters or locating seats.

Solutions:

- Train all staff on accessibility practices, including assisting individuals with visual, auditory, or mobility needs, and incorporate sensitivity training.
- Provide interpretation services, with email or text notifications for important updates. Ensure staff are trained to assist individuals with hearing impairments.
- Provide detailed accessibility descriptions, including wheelchair access, braille labels, and other relevant accommodations, on booking platforms and hotel websites.
- Install and maintain functional ramps, elevators, and accessible paths in hotels, camps, and other accommodation settings.
- Modify transportation services to include ramps, accessible seating, and trained staff to assist passengers with a disability.
- Use visual announcements, text messages, and accessible email communications. Provide training to staff to assist passengers with hearing impairments.
- Install accessible paths, tactile maps, and ramps in all facilities, along with clear signage for easy navigation.
- Ensure that in sports facilities, accessible lockers, seating, and adaptive sports equipment are available and that staff are trained to assist as needed.
- Provide wooden pathways, accessible ramps, and reserved seating areas for individuals with mobility impairments. Ensure these facilities are regularly maintained.
- In theaters and cinemas offer sign language interpretation, closed captioning, and audio descriptions, and ensure availability of assistive listening devices.

- Provide tactile maps, braille signage, and assistance from trained staff to help visually impaired patrons navigate the space and locate their seating.

g. Accessibility in security and evacuation situations

Problem areas:

- There is a lack of accessible evacuation routes and plans.
- Insufficient audible alarms for visually impaired individuals and visual aids for those who are deaf or hard of hearing.
- Staff unprepared for emergencies involving individuals with disabilities.
- Emergency plans are not always accessible, practiced, or frequently updated to include accessibility needs.

Solutions:

- Install accessible emergency alert systems that include both audible alarms and visual signals to ensure inclusivity for all users.
- Accessible and regularly updated evacuation plans.
- Regularly train all staff on inclusive emergency protocols and assistive techniques to support people with disabilities during evacuations.
- Ensure that evacuation plans are available in accessible formats (braille, large print, digital), are regularly reviewed for inclusivity, and practiced in drills to reinforce readiness for all participants.

5.4. Interviews (Greece)

Greece – Specific learning disabilities no 1

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Greece
3. **The type of learning disabilities** (official clinical diagnosis): Specific learning disabilities: Dyslexia
4. **Do you face other difficulties apart from the SLD per se?** ADHD
5. **The age of diagnosis of learning disabilities:** 17
6. **Age:** 29
7. **Educational level** (e.g., lower secondary school): Higher education
8. **Do you use assistive technology?:** Yes
9. **If yes, which means of assistive technology?:** Only mainstream like Google calendar
10. **What kind of educational material is more suitable for you? (you can choose more than one answers)**
 - a. Text
 - b. Visual
 - c. Audio
 - d. Audio-visual (e.g., video)
11. **Do you use any kind of accessible educational material?:** Yes
12. **If yes, what kind of it? :** Videos

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions

Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Narrow and neglected sidewalks. Obstacles such as holes for trees, columns, and various works without signage. Maintenance of free blind drivers not upheld.	Better maintenance and design of sidewalks and pedestrian areas Clear signage and obstacle- free pathways Ensure all outdoor spaces have tactile guides.
Mobility with the means of transportation	Mass transportation not integrated into Google Maps. Lack of accessibility features.	Integrate all mass transportation schedules and routes into Google Maps for accessibility Improve accessibility features on transportation means.
Communication with and services of the public and private sectors	Electronic platforms not always accessible.	Ensure all platforms are accessible with a screen reader. Regular accessibility checks and updates on platforms.
Web accessibility	Platforms not converted and structured to be accessible.	Design all web platforms with accessibility in mind, including compatibility with screen readers.
Digital accessible transformation		
E-commerce	Platforms not compatible with screen recognition programs.	Develop e-commerce platforms to be fully accessible with screen recognition software.
Digital documents and services of the public	Some ATMs and banking platforms not accessible.	Ensure all ATMs have screen recognition functionality.

and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		Make all banking platforms compatible with screen recognition programs.
Digital customer communication	Some platforms not accessible.	Make digital customer communication platforms accessible with screen recognition programs.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Inaccessibility of some banking software and platforms.	Ensure all banking software and platforms are accessible with screen recognition programs.
Digital libraries and repositories	Not frequently used due to navigation difficulties.	Improve accessibility features in digital libraries.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Inaccessibility of some applications and platforms.	Ensure all digital devices and software are compatible with accessibility tools.
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Accessibility issues in educational buildings.	Implement blind guides and improve spatial accessibility in educational units.
Accessibility in educational material (documents – text &	Educational tools not accessible with screen recognition.	Ensure all educational materials are provided in accessible digital formats.

images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Communication depends on the digital environment.	Standardize accessible communication platforms in educational units.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Lack of accessible digital tools.	Develop and integrate accessible digital tools for courses.
Accessibility in distance education/online learning	Inaccessibility of some online learning platforms.	Ensure distance education platforms are accessible with screen recognition tools.
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	Lack of technical support for accessibility tools.	Provide technical support and ensure accessibility tools are available in the workplace.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	Lack of accessible services in the hiring process.	Ensure all hiring processes are accessible.
In-service training and career up-skilling	None mentioned.	None needed.

Assistive Technology in the workplace and accessible material	None mentioned.	None needed.
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Lack of clear directions to entrances.	Include clear directions and descriptions in Google Maps. Implement tactile maps and braille labels at sites.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	None needed.
Accessibility in museum exhibits and works of art	Lack of descriptions for navigating exhibits.	Provide braille labels and NFC technology for descriptions.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Lack of awareness and training among staff.	Train staff on accessibility needs.

Accessibility in accommodation (hotel units, camps, camping)	Lack of braille labels and tactile maps.	Require accommodations to have braille labels and tactile maps.
Accessibility in transportation	Lack of accessibility features and support.	Improve accessibility features and train staff to assist travelers.
Accessibility in sports & recreational facilities	None mentioned.	None needed.
Accessibility at beaches	Difficulty locating chairs and belongings.	Provide wooden paths and consider instruments like beepers for locating items.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Lack of specific instructions and assistance.	Provide specific instructions and ensure someone is available to assist.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Uncertainty in evacuation plans.	Develop clear and audible evacuation plans.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Lack of study on effective implementation.	Further study needed for effective evacuation plans.
Accessibility of emergency information (Multiple channels)	Lack of audible signals for emergency exits.	Implement audible signals and study effective ways to guide individuals during emergencies.

Demographic data

1. **Gender:** Female

2. **The place (country) of residence:** Greece

3. **The type of learning disabilities** (official clinical diagnosis): Dyslexia

4. **Do you face other difficulties apart from the SLD per se?**

ADHD

5. **The age of diagnosis of learning disabilities:** 9

6. **Age:** 24

7. **Educational level** (e.g., lower secondary school): Higher education

8. **Do you use assistive technology?:** Yes

9. **If yes, which means of assistive technology?:** Various

10. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)**

a. Text

b. Visual

c. Audio

11. **Do you use any kind of accessible educational material?:** No

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces		Sometimes I face difficulties in communication with public and private sector services because I don't always understand the information	My opinion is that people working in fields that demand social interaction should be more informed about communication difficulties,

	explained to me, or I struggle to explain what I want in an understandable way.	more patient, and, most importantly, willing to help.
Mobility with the means of transportation	Sometimes I face difficulties in communication with public and private sector services because I don't always understand the information explained to me, or I struggle to explain what I want in an understandable way.	My opinion is that people working in fields that demand social interaction should be more informed about communication difficulties, more patient, and, most importantly, willing to help.
Communication with and services of the public and private sectors.	Sometimes I face difficulties in communication with public and private sector services because I don't always understand the information explained to me, or I struggle to explain what I want in an understandable way.	My opinion is that people working in fields that demand social interaction should be more informed about communication difficulties, more patient, and, most importantly, willing to help.
Web accessibility	Access to the internet in general, especially in our generation, has come from a very young age. I have learned to handle it quite well, as I believe most young people have.	If I struggle with a problem, I will probably ask for help. For instance, with taxes and similar issues, which are very specific, there are times when I may have problems and need better clarification about what to do. In such cases, I ask for help either from someone in the municipality, from someone who has done it before, or from my family. The most characteristic example that comes to mind is

		when I graduated and had to submit a digital statement to accept my degree and send it to the office. I was very anxious because the instructions were not very specific, and I didn't know if what I did, what I found, and what I submitted was the correct document. I want more specific and valid instructions so that I do not waste time.
Digital accessible transformation		
E-commerce	: In some websites, it would be beneficial to have a translation feature. Not all websites accommodate translation capabilities in some way. I find myself frequently copying and pasting paragraphs that I don't understand or can't make sense of into a dictionary. This process is time-consuming and slows down my workflow significantly. For instance, a task that could take me half an hour ends up taking 2-3 hours, which is detrimental to my productivity. With my issues with distraction, completing	Implementing translation features on more websites to save time and reduce confusion.

	tasks efficiently becomes even more challenging for me.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	If the instructions for completing digital forms are not specific, it can cause anxiety and mistakes.	Provide clear and specific instructions for completing digital forms and accessing services.
Digital customer communication	I sometimes face difficulties in understanding or explaining information during digital communications.	Better training for customer service representatives to handle communication with individuals who have difficulties.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Specific issues with digital banking and the need for clear instructions.	Provide more detailed guidance and support for users facing difficulties.
Digital libraries and repositories	Accessing digital libraries can be challenging if instructions and navigation are not clear.	Improve navigation and provide better guidance for using digital libraries and repositories.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Sometimes, navigating software and apps can be confusing and time-consuming.	Implement features that simplify navigation and provide user-friendly interfaces.
Educational Accessibility		
Spatial Accessibility in educational units (public	In higher education, there's a lack of support and understanding for students	Schools should have psychologists to assess and support all children, helping to

and private education, primary, secondary and post-secondary education including tertiary)	with learning difficulties. Professors often don't engage with students who need extra help, which is discouraging.	identify learning difficulties early. This would foster a better understanding of diverse learning needs and create more effective teaching strategies.
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Many teachers, especially those of older generations, did not utilize e-learning tools. Consequently, I often had to rely solely on reading from textbooks and creating my own diagrams or PowerPoint presentations.	Utilize technology more frequently and implement interactive boards in all schools. Use more audiovisual material to aid in understanding.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Communication with administrative services can be challenging if the staff is not well-informed or patient.	Provide better training for administrative staff to handle communication with students facing difficulties.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Distance learning posed significant challenges, especially with electronic exams that were overly complicated and time-constrained.	Incorporate more specific and clear questions that test critical thinking and comprehension without overwhelming students. Having a mix of oral and written exams could cater to different strengths and learning styles.

Accessibility in distance education/online learning	The limited time for these exams was especially problematic for students with dyslexia or hyperactivity.	Teachers should undergo psychological evaluations and training to better understand and support students with learning difficulties. The educational material should be updated regularly, and there should be feedback mechanisms to ensure that students understand the lessons.
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	Dealing with dyslexia in the workplace can be challenging, especially when employers don't provide specific instructions or consider individual needs.	Effective training should be more detailed and tailored, addressing potential misunderstandings and ensuring clarity. Understanding and support from employers are crucial for a productive work environment.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	Clear and specific guidance is often lacking.	Provide clear, specific guidance and avoid assumptions.
In-service training and career up-skilling	Prejudices and misconceptions can be barriers.	Thorough and empathetic training can mitigate many issues.

Assistive Technology in the workplace and accessible material	Lack of specific instructions for using assistive technology can be problematic.	Provide detailed instructions and support for using assistive technology.
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	No specific challenges mentioned.	Ensure clear and precise directions included in Google Maps about how to reach the entrance and descriptions for navigating inside the building.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	No specific challenges mentioned.	Implement better information availability and clear guidance.
Accessibility in museum exhibits and works of art	No specific challenges mentioned.	Use braille labels and NFC technology for descriptions.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Booking accommodations or traveling shouldn't be	Provide better information availability and assistance.

	significantly challenging for individuals with specific learning disabilities.	
Accessibility in accommodation (hotel units, camps, camping)	Booking accommodations can be challenging.	Ensure assistance is available and provide clear instructions for booking.
Accessibility in transportation	Booking and navigating transportation can be challenging.	Provide better information availability and assistance.
Accessibility in sports & recreational facilities	Not specifically mentioned.	Provide assistance and clear instructions for using facilities.
Accessibility at beaches	Not specifically mentioned.	Provide assistance and clear instructions for accessing beaches.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Not specifically mentioned.	Provide assistance and clear instructions for accessing shows and movies.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	It's essential to provide clear and concise instructions, especially during emergencies like fire.	Use visual aids or videos for understanding steps to take.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Mechanizing everything does not help people with dyslexia.	Maintain human interaction in situations where understanding and being understood are vital.

Accessibility of emergency information (Multiple channels)	Visual aids or videos can be beneficial for understanding steps to take.	Use multiple channels for providing emergency information, ensuring it is clear and concise.

Greece – Visual impairment no 1

Demographic Data

1. **Gender:** Male
2. **The place (country) of residence:** Greece
3. **The type of your disability and the cause of it** (official clinical diagnosis): Leber, Total blindness
4. **The age at onset of visual impairments:** date of birth
5. **Age:** 32
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Master degree
7. **Severity of disability:** Blindness
8. **What means do you use to read?** Braille or screen reader
9. **Visual acuity of the left eye** Total blindness, loss of light perception
10. **Visual acuity of the right eye** Total blindness, loss of light perception
11. **Visual field** Central vision loss, Peripheral vision loss
12. **Do you move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant
13. **How often do you move alone?** Most of the time
13. **Do you use assistive technology?:** Yes
14. **If yes, which means of assistive technology?** Screen reader, AI applications for image description

15. What kind of educational material is more suitable for you? (*you can choose more than one answers*)

a. Text

c. Audio

16. Do you use any kind of accessible educational material?: Yes

17. If yes, what kind of it? Digital books

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Narrow and neglected sidewalks. Obstacles such as holes for trees, columns, and various works without signage. Maintenance of free blind drivers not upheld	Better maintenance and design of sidewalks and pedestrian areas. Clear signage and obstacle- free pathways. Ensure all outdoor spaces have tactile guides.
Mobility with the means of transportation	Mass transportation not integrated into Google Maps. Lack of accessibility features.	Integrate all mass transportation schedules and routes into Google Maps for accessibility. Improve accessibility features on transportation means.
Communication with and services of the public and private sectors	Electronic platforms not always accessible.	Ensure all platforms are accessible with a screen reader. Regular accessibility checks and updates on platforms.
Web accessibility	Platforms not converted and structured to be accessible.	Design all web platforms with accessibility in mind, including

		compatibility with screen readers.
Digital accessible transformation		
E-commerce	Platforms not compatible with screen recognition programs.	Develop e-commerce platforms to be fully accessible with screen recognition software.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Some ATMs and banking platforms not accessible.	Ensure all ATMs have screen recognition functionality. Make all banking platforms compatible with screen recognition programs.
Digital customer communication	Some platforms not accessible.	Make digital customer communication platforms accessible with screen recognition programs.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Inaccessibility of some banking software and platforms.	Ensure all banking software and platforms are accessible with screen recognition programs.
Digital libraries and repositories	Not frequently used due to navigation difficulties.	Improve accessibility features in digital libraries.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Inaccessibility of some applications and platforms.	Ensure all digital devices and software are compatible with accessibility tools.

<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Accessibility issues in educational buildings.	Implement blind guides and improve spatial accessibility in educational units.
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Educational tools not accessible with screen recognition.	Ensure all educational materials are provided in accessible digital formats.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Communication depends on the digital environment.	Standardize accessible communication platforms in educational units.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Lack of accessible digital tools.	Develop and integrate accessible digital tools for courses.
Accessibility in distance education/online learning	Inaccessibility of some online learning platforms.	Ensure distance education platforms are accessible with screen recognition tools.

<i>Employment Accessibility</i>		
Spatial/Physical Accessibility in the workplace	Lack of technical support for accessibility tools.	Provide technical support and ensure accessibility tools are available in the workplace.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	Lack of accessible services in the hiring process.	Ensure all hiring processes are accessible.
In-service training and career up-skilling	None mentioned.	None needed.
Assistive Technology in the workplace and accessible material	None mentioned.	None needed.
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Lack of clear directions to entrances.	Include clear directions and descriptions in Google Maps. Implement tactile maps and braille labels at sites.
Accessibility in cultural heritage sites/environments	None mentioned.	None needed.

(museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art	Lack of descriptions for navigating exhibits.	Provide braille labels and NFC technology for descriptions.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Lack of awareness and training among staff.	Train staff on accessibility needs.
Accessibility in accommodation (hotel units, camps, camping)	Lack of braille labels and tactile maps.	Require accommodations to have braille labels and tactile maps.
Accessibility in transportation	Lack of accessibility features and support.	Improve accessibility features and train staff to assist travelers.
Accessibility in sports & recreational facilities	None mentioned.	None needed.
Accessibility at beaches	Difficulty locating chairs and belongings.	Provide wooden paths and consider instruments like beepers for locating items.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Lack of specific instructions and assistance.	Provide specific instructions and ensure someone is available to assist.
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the	Uncertainty in evacuation plans.	Develop clear and audible evacuation plans.

evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Lack of study on effective implementation.	Further study needed for effective evacuation plans.
Accessibility of emergency information (Multiple channels)	Lack of audible signals for emergency exits.	Implement audible signals and study effective ways to guide individuals during emergencies.

Greece – Visual impairment no 2

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Greece
3. **The type of your disability and the cause of it** (official clinical diagnosis): Visual impairment, Retrolental fibroplasia
4. **The age at onset of visual impairments:** 2 months old
5. **Age:** 37
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Higher education
7. **Severity of disability:** Blindness
8. **What do you use to read?** Braille or screen reader
9. **Visual acuity of the left eye** Only light perception
10. **Visual acuity of the right eye** Total blindness, loss of light perception
11. **Visual field**
 - a. Central vision loss
 - b. Peripheral vision loss

12. **Do you move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant

13. **How often do you move alone?** Most of the time

13. **Do you use assistive technology?:** Yes

14. **If yes, which means of assistive technology?** NVDA, voice over, braille watch, weight scale with voice over

15. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)**

c. Audio

d. Audio-visual (e.g., video)

16. **Do you use any kind of accessible educational material?:** Yes

17. **If yes, what kind of it?** Tactile images, verbal description, maps, gps

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Poorly located or obstructed infrastructure, non-existent or inadequate ramps, columns, benches, and other obstacles.	Proper placement and maintenance of infrastructure, ensuring clear and unobstructed paths.
Mobility with the means of transportation	Lack of information and proper treatment for people with visual impairments, parked cars obstructing access, inadequate driver assistance.	Educating the public and drivers, enforcing parking regulations, providing necessary information and assistance.
Communication with and services of the public and private sectors	Lack of specific measures for visually impaired individuals in public services and hospitals,	Providing tactile maps, braille labels, audible information, and employee training.

	insufficient training for employees.	
Web accessibility	Accessible internet but other core issues remain with physical accessibility.	Improving the physical environment and infrastructure for better overall accessibility.
Digital accessible transformation		
E-commerce	Many websites are not accessible, particularly during final steps of transactions.	Ensuring complete accessibility throughout all stages of online transactions.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Inconsistent accessibility in banks and e-banking, limited functions in ATMs.	Standardizing accessibility features across all banks and improving ATM functionalities.
Digital customer communication	Inaccessible websites and applications.	Enhancing the accessibility of digital platforms.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Inconsistent accessibility across different banks.	Implementing universal accessibility standards for all banks.
Digital libraries and repositories	Difficult navigation in digital libraries.	Improving the structure and accessibility of digital libraries
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None reported.	Continuing to ensure that devices and software remain accessible.

Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Lack of guides for blind individuals, narrow spaces, and obstacles.	Providing proper guides and ensuring spacious, obstacle-free environments.
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Lack of accessible educational materials and support for employees with disabilities	Creating accessible educational materials and a support network for teachers with disabilities
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Inaccessible educational materials and lack of support	Implementing platforms for accessible educational resources and materials
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Issues with accessing educational materials and courses	Ensuring all educational resources are accessible and accommodating different needs
Accessibility in distance education/online learning	Difficulties accessing online courses and materials	Providing accessible online educational resources and materials

<i>Employment Accessibility</i>		
Spatial/Physical Accessibility in the workplace	Narrow spaces, lack of accessible toilets	Improving workplace infrastructure for better accessibility
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	Lack of accessible hiring processes and communication	Implementing accessible digital hiring processes and communication channels
In-service training and career up-skilling	Limited access to in-service training and career development	Providing accessible training and up-skilling programs
Assistive Technology in the workplace and accessible material	Lack of provision of assistive technology	Ensuring availability and access to assistive technology and materials.
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Lack of indicators and accessible pathways.	Implementing tactile maps, accessible pathways, and clear indicators.
Accessibility in cultural heritage sites/environments	Inadequate accessibility in services.	Providing accessible services and information in cultural heritage sites.

(museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art	Limited tactile experiences and guidance.	Providing tactile exhibits, audio descriptions, and knowledgeable guides.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Lack of accessible hotel descriptions and accommodations.	Providing detailed accessibility information and ensuring accessible accommodations.
Accessibility in accommodation (hotel units, camps, camping)	Lack of accessible facilities and information.	Ensuring all accommodations are accessible and providing clear accessibility information.
Accessibility in transportation	Inaccessible transportation websites and facilities	Implementing tactile maps, auditory signals, and guides for the blind.
Accessibility in sports & recreational facilities		
Accessibility at beaches	Inadequate ramps and assistance.	Providing and maintaining functional ramps and trained assistants.
Accessible shows (theatres, cinemas, concerts...) & accessible movies	Inaccessible booking systems and lack of audio descriptions	Implementing accessible booking systems and providing audio descriptions

Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Lack of specific provisions for people with disabilities in emergencies.	Developing inclusive emergency plans and training for handling emergencies involving people with disabilities
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Lack of accessible evacuation plans.	Implementing and practicing inclusive evacuation plans.
Accessibility of emergency information (Multiple channels)	Insufficient emergency information for people with disabilities.	Providing emergency information through multiple accessible channels.

Greece – Deaf- Hard of hearing, no 1

Demographic data

1.**Gender:** Female

2. **The place (city & country) of residence:** Thessaloniki, Greece

3. **The type of your hearing loss and the cause of it** (official clinical diagnosis):

Sensorineural hear loss / bilateral deafness

4. **The age at onset of hearing loss:** 6 months old

5. **Age:** 45

6. **Educational level** (e.g., lower secondary school, tertiary level of education):

Higher education level

7. **Do you have bilateral hearing loss?** Yes

8. **Degrees of hearing loss in left ear:** Profound hearing loss (91+ dB)

9. **Degrees of hearing loss in right ear:** Profound hearing loss (91+ dB)

10. **Level of difficulty in understanding the oral language (through lip reading)**Easy

11. **Do you read and understand the written form of the official language of your country?** Yes

12. **Level of difficulty in reading and understanding the written language:** Very easy

13. **Do you know sign language?** Yes

14. **Do you use assistive technology?** No

15. **If yes, which means of assistive technology?** None

16. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)**

a. Text

b. Visual

d. Audio-visual (e.g., video)

17. **Do you use any kind of accessible educational material?** Yes

18. **If yes, what kind of it?** Visual

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Difficulty in communication due to distance and low lighting.	Circular tables for better eye contact and adequate lighting.
Mobility with the means of transportation	Low lighting outdoors, especially during evening outings.	Legislation and adequate lighting.
Communication with and services of the public and private sectors	Large gatherings making it hard for deaf individuals to communicate.	Awareness and empathy towards the challenges faced by deaf individuals.
Web accessibility	None mentioned specifically.	None mentioned.
Digital accessible transformation		
E-commerce	Difficulty understanding unfamiliar terminology in digital documents.	Use more common vocabulary on digital forms.

Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Difficulty understanding unfamiliar terminology.	Use more common vocabulary.
Digital customer communication	Difficulty communicating with technical assistance for digital devices.	Option to make video calls with someone in sign language for assistance.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Banks claim to provide accessibility but do not in reality.	Implementation of real accessibility services for deaf individuals.
Digital libraries and repositories	Difficulty reading large amounts of text with complex vocabulary.	Provide smaller, more convenient texts with simpler vocabulary.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None mentioned.	None mentioned.
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and	None mentioned.	None mentioned.

post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Lack of interpretation in schools and universities.	Classrooms should have TVs with subtitles or sign language interpretation. Teachers should be informed about deafness and provide notes in simple language. Some lessons could be pre-recorded in sign language.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	None mentioned.	None mentioned.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Teachers progress lessons too quickly for lip-readers.	Teachers should speak clearly and slowly, and provide analytical notes before classes.
Accessibility in distance education/online learning	None mentioned.	None mentioned.
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	None mentioned.	None mentioned.

Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	Fear of disclosing deafness during recruitment.	Employers should be more informed about accommodating individuals with hearing disabilities.
In-service training and career up-skilling	None mentioned.	None mentioned.
Assistive Technology in the workplace and accessible material	None mentioned.	None mentioned.
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Lack of accessibility in museums for deaf individuals.	Screens in exhibitions with sign language interpretation and image-based information.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	None mentioned.
Accessibility in museum exhibits and works of art	Difficulty with guided tours in sign language due to group size.	Provide screens with sign language videos.

<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Lack of interpretation for announcements on transportation.	Email communication for clarity, staff training on dealing with deaf individuals.
Accessibility in accommodation (hotel units, camps, camping)	None mentioned.	None mentioned.
Accessibility in transportation	Lack of interpretation for announcements on transportation.	Staff training and interpretation services.
Accessibility in sports & recreational facilities	None mentioned.	Provide information about deaf individuals' needs.
Accessibility at beaches	None mentioned.	None mentioned.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None mentioned.	None mentioned.
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	None mentioned.	Visual signals for building evacuations.
Accessibility in Evacuation Planning	None mentioned.	Notifications and visual signals.

(e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)	Current emergency application is not very effective.	Better-equipped applications for emergencies.

Greece – Deaf- Hard of hearing, no 2

Demographic data

1. **Gender:** Female

2. **The place (city & country) of residence:** Greece

3. **The type of your hearing loss and the cause of it** (official clinical diagnosis):

Sensorineural hear loss

4. **The age at onset of hearing loss:** Date of birth

5. **Age:** 26

6. **Educational level** (e.g., lower secondary school, tertiary level of education): Higher education level

7. **Do you have bilateral hearing loss?** Yes

8. **Degrees of hearing loss in left ear:** Profound hearing loss (91+ dB)

9. **Degrees of hearing loss in right ear** Profound hearing loss (91+ dB)

10. **Level of difficulty in understanding the oral language (through lip reading)**
Easy

11. **Do you read and understand the written form of the official language of your country?** Yes

12. **Level of difficulty in reading and understanding the written language** Easy

13. **Do you know sign language?** Yes

14. **Do you use assistive technology?** Yes

15. **If yes, which means of assistive technology?** Hearing aids

16. **What kind of educational material is more suitable for you? (you can choose more than one answers)**

a. Text

b. Visual

d. Audio-visual (e.g., video)

17. **Do you use any kind of accessible educational material?** Yes

18.If yes, what kind of it? Interpretation

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Indoors, difficulty in crowded spaces without good contact with interlocutors. Outdoors, sudden movements by people can be startling, and not seeing/hearing cars can be dangerous.	Round tables indoors. Awareness and education about deafness and the difficulties faced by deaf individuals.
Mobility with the means of transportation	Lack of signage or written information about bus stops, making navigation difficult. Lack of access to information on airplanes and ships.	Buses should provide information in multiple formats. Airplanes and ships should have screens with sign language interpretation and videos for standard messages.
Communication with and services of the public and private sectors	No interpretation services in public and private sectors, leading to stress and difficulties, especially in hospitals and banks.	Provide interpretation services in all sectors, larger screens for interpretation on TV programs, and simpler vocabulary.
Web accessibility	None mentioned specifically.	None mentioned.
Digital accessible transformation		
E-commerce	Fear of scams.	Option to make video calls with someone in sign language for assistance.

Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None mentioned specifically.	None mentioned.
Digital customer communication	Difficulty communicating with technical assistance for digital devices.	Option to make video calls with someone in sign language for assistance.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Banks claim to provide accessibility but do not in reality.	Implementation of real accessibility services for deaf individuals.
Digital libraries and repositories	Difficulty reading large amounts of text with complex vocabulary.	Provide smaller, more convenient texts with simpler vocabulary.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None mentioned specifically.	None mentioned.
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	None mentioned specifically	None mentioned

Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Lack of interpretation in schools and universities.	Classrooms should have TVs with subtitles or sign language interpretation. Teachers should be informed about deafness and provide notes in simple language. Some lessons could be pre-recorded in sign language.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	None mentioned specifically	None mentioned.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Teachers progress lessons too quickly for lip-readers.	Teachers should speak clearly and slowly, and provide analytical notes before classes.
Accessibility in distance education/online learning	None mentioned specifically	None mentioned.
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	None mentioned specifically	None mentioned.
Accessible Services in the workplace (e.g. hiring processes,	Fear of disclosing deafness during recruitment.	Employers should be more informed about accommodating individuals with hearing disabilities.

communication with different sectors)		
In-service training and career up-skilling	None mentioned specifically.	None mentioned.
Assistive Technology in the workplace and accessible material	None mentioned specifically.	None mentioned.
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Lack of accessibility in museums for deaf individuals.	Screens in exhibitions with sign language interpretation and image-based information.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned specifically.	None mentioned.
Accessibility in museum exhibits and works of art	Difficulty with guided tours in sign language due to group size.	Provide screens with sign language videos.

<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Lack of interpretation for announcements on transportation.	Email communication for clarity, staff training on dealing with deaf individuals.
Accessibility in accommodation (hotel units, camps, camping)	None mentioned specifically.	None mentioned.
Accessibility in transportation	Lack of interpretation for announcements on transportation.	Staff training and interpretation services.
Accessibility in sports & recreational facilities	None mentioned specifically.	Provide information about deaf individuals' needs.
Accessibility at beaches	None mentioned specifically.	None mentioned.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None mentioned specifically.	None mentioned.
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	None mentioned specifically.	Visual signals for building evacuations.
Accessibility in Evacuation Planning	None mentioned specifically.	Notifications and visual signals.

(e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)	Current emergency application is not very effective.	Better-equipped applications for emergencies

Greece – Mobility Impairments no 1

Demographic data

1. **Gender:** Female

2. **The place (country) of residence:** Greece

3. **The type of your disability and the cause of it** (official clinical diagnosis): Left hemiplegia

4. **The age at onset of mobility impairments:** 11

5. **Age:** 25

6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Higher education level

7. **Your disability occurs** On one side of your body

8. **How would you most accurately describe the functionality of your hands?** I handle all objects with somewhat reduced quality (accuracy) or/and speed. Certain activities need to be done in alternative ways. Usually, these difficulties do not restrict my independence in my daily activities.

9. **You move alone or with the help of an attendant?** Alone

10. **How often do you move alone?** Most of the times

11. **How would you describe your commute?** I walk on any place without restrictions and assistance. I may have balance, speed or motor-coordination difficulties.

12. **Do you use assistive technology?** Yes

13. **If yes, which means of assistive technology?** Orthopedic brace on my left hand and on my left foot

14. What kind of educational material is more suitable for you? (*you can choose more than one answers*)

- a. Text
- b. Visual
- c. Audio
- d. Audio-visual (e.g., video)

15. Do you use any kind of accessible educational material? No

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	There are no ramps or sidewalks in many places. Bars and restaurants lack accessible toilets and elevators. The school lacks ramps and elevators, making it difficult to move between floors.	Installation of ramps, elevators, and wider pedestrian areas.
Mobility with the means of transportation	Difficulty getting on buses due to the high doorsteps and lack of assistance from drivers or passengers.	Implementing accessible buses with lower steps or ramps and training drivers to assist passengers with disabilities.
Communication with and services of the public and private sectors	Lack of infrastructure for wheelchair users in public services like hospitals, which refuse to grant seats even with a disability card	Active involvement of the National Confederation of Disabled People (NCDP) to enforce accessibility and respect for disability rights.

Web accessibility	...	...
Digital accessible transformation		
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None reported	
Digital customer communication	None reported	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None reported	
Digital libraries and repositories	None reported	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None reported	
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and	There is a lack of elevators or ramps in some schools, making it difficult to access certain areas	Installing ramps and elevators and modifying old school buildings to improve accessibility

post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Lack of information about useful tools and apps for students with disabilities	Training teachers to support students with disabilities and providing information about assistive tools
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Inadequate support for students with disabilities in administrative services	Appointing trained staff to assist students with disabilities in educational institutions
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Slow writing speed affecting note-taking and comprehension during classes	Recording lectures and providing notes to improve accessibility for students with disabilities
Accessibility in distance education/online learning	Difficulties in keeping up with handwritten notes during online classes	Recording lectures and providing digital notes to enhance accessibility
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	Lack of ramps and elevators in the workplace	Improving infrastructure with ramps and elevators to enhance accessibility

Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	No specific difficulties reported, but better infrastructure is preferred	Continuous improvement of accessibility services in the workplace
In-service training and career up-skilling	None reported	
Assistive Technology in the workplace and accessible material	None reported	
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Some museums lack elevators, making it difficult to access different floors	Providing alternative means such as maps, brochures, and specialized coordinators to assist visitors with disabilities
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Inaccessible seating arrangements in theaters and cinemas	Reserving accessible seating in the last rows of theaters and cinemas
Accessibility in museum exhibits and works of art		

<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Lack of ramps and accessible facilities in some tourist areas.	Ensuring that accommodations and tourist services are accessible and providing necessary assistance.
Accessibility in accommodation (hotel units, camps, camping)	Issues with room accessibility and elevator availability.	Providing accessible rooms and facilities in hotels and camping sites.
Accessibility in transportation	Inadequate design of transportation services for people with disabilities.	Modifying transportation means including ramps and assistance for disabled passengers
Accessibility in sports & recreational facilities	None reported	
Accessibility at beaches	Lack of ramps for wheelchair users.	Providing ramps and trained assistants at beaches.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Inaccessible seating arrangements.	Reserving accessible seating for people with disabilities.
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Concerns about safety during emergencies due to mobility issues.	Developing structured programs for emergency assistance and providing comprehensive information for people with disabilities.

Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Lack of accessible evacuation plans.	Implementing inclusive evacuation plans and training staff for emergency situations.
Accessibility of emergency information (Multiple channels)	Information is not directed towards people with disabilities.	Providing emergency information through multiple channels and ensuring inclusivity.

Greece – Mobility impairments, no 2

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Greece
3. **The type of your disability and the cause of it** (official clinical diagnosis): Mobility impairment in lower limbs
4. **The age at onset of mobility impairments:** Date of birth
5. **Age:** 31
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): master degree
7. **Your disability occurs:** In your lower extremities
8. **How would you most accurately describe the functionality of your hands?** I handle all objects easily and successfully. I may have some difficulties in activities that require great speed or/and accuracy. However, these difficulties do not restrict my independence in my daily activities at all.
9. **Do you move alone or with the help of an attendant?** With help of an attendant
10. **How often do you move alone?** Never
11. **How would you describe your commute?** In most places, I walk without any assistance. However, outside my home, I may use either walking aids – walkers, crutches, cane – for walking or climbing up the stairs or a wheelchair for long distances.

12. Do you use assistive technology? No

13. If yes, which means of assistive technology? None

14. What kind of educational material is more suitable for you? (*you can choose more than one answers*)

a. Text

d. Audio-visual (e.g., video)

15. Do you use any kind of accessible educational material? No

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Poor infrastructure, non-existent or inadequate ramps, narrow doors, and lack of accessible toilets. External spaces are difficult to navigate due to obstacles like parked cars in front of ramps.	Installing and maintaining proper ramps and elevators, ensuring accessibility in all public and private buildings, educating the public about disability needs, and enforcing traffic regulations to keep ramps clear.
Mobility with the means of transportation	Inadequate bus and taxi services, lack of proper ramps and assistance from drivers.	Improving public transportation infrastructure, training drivers to assist passengers with disabilities, and increasing the availability of accessible taxis.
Communication with and services of the public and private sectors	Lack of accessible facilities in workplaces and public services.	Implementing accessible infrastructure in all public and private sector buildings and providing education on disability sensitivity.

Web accessibility	None reported	
Digital accessible transformation		
E-commerce	None reported	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None reported	
Digital customer communication	None reported	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None reported	
Digital libraries and repositories	None reported	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None reported	
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and	Inadequate space and blocked ramps at educational institutions.	Ensuring accessible infrastructure in all educational buildings and preventing obstructions in accessible areas

post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	None reported.	
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	None reported	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	None reported	
Accessibility in distance education/online learning	None reported	
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	Narrow spaces and lack of accessible toilets	Improving infrastructure to ensure accessibility, including wider doors and accessible bathrooms.

Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	None reported	
In-service training and career up-skilling	None reported	
Assistive Technology in the workplace and accessible material	None reported	
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Uncertainty about accessibility at cultural sites and non-operational elevators.	Ensuring reliable and maintained accessibility features at cultural heritage sites.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None reported	
Accessibility in museum exhibits and works of art	None reported	

<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Lack of proper ramps and accessible facilities at tourist sites	Implementing and maintaining accessibility features at tourist sites, educating staff, and providing detailed accessibility information on websites.
Accessibility in accommodation (hotel units, camps, camping)	Issues with room accessibility and bathroom facilities.	Ensuring all accommodations have accessible rooms and bathrooms, and providing clear information about accessibility features.
Accessibility in transportation	Inadequate design of transportation services for people with disabilities.	Modifying transportation means to include ramps and assistance for disabled passengers.
Accessibility in sports & recreational facilities	None reported	
Accessibility at beaches	Lack of functional ramps and misuse by the public.	Providing and maintaining accessible ramps at beaches and educating the public on their proper use.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None reported	
<i>Accessibility in Security and Evacuation Situations</i>		

Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Concerns about safety during emergencies due to mobility issues and narrow spaces.	Developing structured emergency plans and ensuring proper infrastructure to facilitate safe evacuation for people with disabilities.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Lack of accessible evacuation plans.	Implementing inclusive evacuation plans and training staff for emergency situations.
Accessibility of emergency information (Multiple channels)	None reported	

Greece – Mild intellectual disability, no 1

Demographic data

1. **Gender:** Male

2. **The place (country) of residence:** Greece

3. **The type of your disability** (official clinical diagnosis): Mild intellectual disability

4. **Other difficulties/disabilities** (difficulties in hearing, vision, movement etc): Vision problems, epileptic seizures

5. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree). Lower secondary school, Joinery and Information Technology - Vocational Training Center for the Disabled (Lakia)

6. **Do you use assistive technology?:** No

7. **If yes, which means of assistive technology?** None

8. **Do you find it difficult communicating with others?** Never

9. **Do you live alone?:** Yes

10. **Do you move alone or with the help of an attendant?** Alone

11. **How often do you move alone?** Most of the times

12. Do you use a personal computer?: Yes

13. If yes, how often do you use a PC? 2-3 time a week

14. What kind of educational material is more suitable for you? (*you can choose more than one answers*) Text

15. Do you use any kind of accessible educational material?: No

16. Age: 30

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	None mentioned specifically for indoor/outdoor spaces.	None mentioned.
Mobility with the means of transportation	Buses are crowded, no room to stand, lack of ramps and space for wheelchairs. Lack of special buses for individuals in wheelchairs.	Increase the number of buses. Introduce special buses for individuals in wheelchairs with adequate space and ramps.
Communication with and services of the public and private sectors	Speech difficulties leading to misunderstandings and refusal of service.	Speech therapy for individuals with speech difficulties, patience and effort from service providers to understand and help.
Web accessibility	Internet access requires payment, which can be a burden. Cost of internet.	None provided.
Digital accessible transformation		
E-commerce	Fear of using a credit card online.	Option to pay by cash on delivery.

Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	None mentioned.	None mentioned.
Digital customer communication	None mentioned	None mentioned.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Only able to withdraw money from ATM, never tried digital transfers.	None mentioned.
Digital libraries and repositories	None mentioned.	None mentioned.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None mentioned.	None mentioned.
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Small spaces at Lakia.	Enlarge educational spaces.
Accessibility in educational material (documents – text &	None mentioned.	None mentioned.

images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	None mentioned.	None mentioned.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Difficult courses, but viewed positively.	None mentioned.
Accessibility in distance education/online learning	Lack of student engagement during online classes.	Mandatory attendance and engagement.
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	None mentioned.	None mentioned.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	None mentioned.	None mentioned.
In-service training and career up-skilling	None mentioned.	None mentioned.

Assistive Technology in the workplace and accessible material	None mentioned.	None mentioned.
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	None mentioned.	None mentioned.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Generally not interested in cultural heritage sites; only visited the White Tower in Thessaloniki without issues.	None mentioned.
Accessibility in museum exhibits and works of art	Lack of interest in museum exhibits or works of art.	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Speech difficulties while arranging accommodations.	More patient service providers.

Accessibility in accommodation (hotel units, camps, camping)	Difficulty communicating due to speech problems.	Service providers should be more patient and understanding.
Accessibility in transportation	Comfortable with all means of transport.	More frequent draws for trips or discounts for people with disabilities. Free bus service to beaches during summer.
Accessibility in sports & recreational facilities	Lack of facilities (basketball/football field) at Lakia	Install sports fields.
Accessibility at beaches	None mentioned.	None mentioned.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None mentioned.	None mentioned.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	None mentioned.	None mentioned.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None mentioned.	Training and awareness.
Accessibility of emergency information (Multiple channels)	None mentioned.	Multiple channels for emergency information.

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Greece
3. **The type of your disability** (official clinical diagnosis): Mild intellectual disability
4. **Other difficulties/disabilities** (difficulties in hearing, vision, movement etc): No
5. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree). Lower secondary school, Joinery- Vocational Training Center for the Disabled (Lakia)
6. **Do you use assistive technology?:** Yes
7. **If yes, which means of assistive technology?** Only mainstream like my mobile phone
8. **Do you find it difficult communicating with others?** Never
9. **Do you live alone?:** No, with my parents
10. **Do you move alone or with the help of an attendant?** Alone
11. **How often do you move alone?** Always
12. **Do you use a personal computer?:** Yes
13. **If yes, how often do you use a PC?** 2-3 time a week
14. **What kind of educational material is more suitable for you? (you can choose more than one answers)** Text
15. **Do you use any kind of accessible educational material?:** No
16. **Age:** 23

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			

Physical/Spatial Accessibility of indoor and outdoor spaces	No, I don't face any difficulty, I am quite comfortable. I didn't have the chance yet to communicate with any public service, my dad usually deals with that.	None specified.
Mobility with the means of transportation	I only wish we had more buses, so that everyone can use them. For example, for people in wheelchairs or the elderly it is difficult.	Increase the number of buses to accommodate everyone, including those with mobility challenges.
Communication with and services of the public and private sectors	No specific difficulties as the interviewee has not yet communicated with public services.	
Web accessibility	No difficulties mentioned; comfortable with internet usage, including GPS. Solutions: None specified.	None specified
Digital accessible transformation		
E-commerce	Prefers cash on delivery for safety reasons when purchasing items online.	None specified
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Not experienced yet as the interviewee's father handles these tasks.	Will seek help from family when needed.

Digital customer communication	Needed help initially to create a Facebook account but no ongoing difficulties.	None specified.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	No experience yet, but I am aware of how e-banking works.	Plans to seek help from family when needed.
Digital libraries and repositories	Not mentioned.	None specified.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Uses mobile phone frequently with no difficulties.	None specified.
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	No problems currently but had difficulties in school due to speech problems and the fast pace of teachers.	Teachers should speak more slowly and repeat instructions if needed, especially for students with learning difficulties.
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Struggled with reading and writing quickly, leading to difficulties with homework and exams.	Providing oral exams and additional help for students with these challenges.
Accessibility in services provided by the	Not mentioned.	Not specified.

educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Distance learning during COVID was ineffective for practical subjects like joinery.	Practical subjects need hands-on learning, not distance education.
Accessibility in distance education/online learning	Did not like online lessons during COVID for practical subjects.	None specified.
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	Faced issues in past employment experiences, such as slow performance and lack of oversight on employers.	Need for better oversight on employers to ensure fair treatment.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	Had an interview with a construction company but received no follow-up.	Ensure employers follow up with candidates and provide clear communication.
In-service training and career up-skilling	None specified.	None specified.
Assistive Technology in the workplace and accessible material	Not mentioned.	None specified.

<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	No difficulties guided tours make visits enjoyable.	Continue providing guides and informational videos in cultural heritage sites
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None mentioned.	None specified.
Accessibility in museum exhibits and works of art	Enjoyed visits with guides and informational videos.	Implement informational videos in more cultural heritage sites.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	No difficulties mentioned; first travel experience outside Thessaloniki was smooth.	Ensure assistance is available for travelers.
Accessibility in accommodation (hotel units, camps, camping)	No difficulties, girlfriend handled hotel booking.	None specified.

Accessibility in transportation	No difficulties, father handled booking tickets.	None specified.
Accessibility in sports & recreational facilities	None mentioned.	None specified.
Accessibility at beaches	None mentioned.	None specified.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None mentioned.	None specified.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Familiar with earthquake drills and procedures.	None specified.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	No personal experience with emergencies.	None specified.
Accessibility of emergency information (Multiple channels)	Not mentioned.	None specified.

Greece – Autism (High Functioning/Asperger's Syndrome), no 1

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Greece
3. **The type of your disability** (official clinical diagnosis): Asperger's syndrome

4. **Level of intelligence** : IQ>85
5. **Other difficulties/disabilities**: sound sensitivity, phobia for animals
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Higher Education, Aristotle University of Thessaloniki
7. **Do you use assistive technology?**: No
8. **Do you find it difficult communicating with others?** Never
9. **Do you use any kind of communication aid?**: No
10. **Do you live alone?**: Yes
11. **Do you move alone or with the help of an attendant?** Alone
12. **How often do you move alone?** Always
13. **Do you use a personal computer?**: Yes
14. **If yes, how often do you use a PC?** 2-3 time a week
15. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)** Audio-visual (e.g., video)
16. **Do you use any kind of accessible educational material?**: No
17. **Age**: 21

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	None specified.	None specified.
Mobility with the means of transportation	None specified.	None specified.

Communication with and services of the public and private sectors	Long waiting times in lines and lack of priority for people on the autism spectrum.	Inform and educate people to be more understanding and offer positions in lines to those on the autism spectrum.
Web accessibility	Insulting use of the word "autistic" on the internet. Difficulty finding socialization groups for people with Asperger's and autism.	More control over the internet and greater awareness among people. Creating a platform to find socialization groups for people with Asperger's and autism
Digital accessible transformation		
E-commerce	No significant problems encountered.	None specified.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		
Digital customer communication	None specified.	None specified.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None specified.	None specified.
Digital libraries and repositories	None specified.	None specified.
Digital devices and their software/apps (e.g.		

mobile phone, smart TV, home appliances)		
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Difficulty with unclear and indirect exam questions.	Providing clear instructions and repetitions in courses.
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Challenges in large classes due to distance from the board and listening to the teacher.	Smaller class sizes for better lessons and personal contact with teachers.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Inefficient distant education experiences. Social challenges with peers.	Implementing interactive boards and organizing field trips for practical knowledge. More understanding from peers.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Large books with redundant information.	Smaller, focused educational materials.

Accessibility in distance education/online learning	Teacher was in a hurry, making it hard to digest information and take notes.	Recording and providing access to distant education sessions for review.
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	No employment yet, but fear of socializing in the work environment.	Establishing a labor inspection agency to check for discrimination or toxic behaviors.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	Concerns about socializing in the workplace.	Connecting state or municipalities with autism associations to help find jobs. Creating associations to help individuals on the autism spectrum socialize and gain experience for employment.
In-service training and career up-skilling	None specified.	None answer.
Assistive Technology in the workplace and accessible material	None specified.	None specified.
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g.	None specified	

parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None specified.	
Accessibility in museum exhibits and works of art	Not much experience attending such sites.	None specified.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Challenges in very crowded places with intense sounds due to sound sensitivity.	Discounts for transportation and accommodation for individuals with disabilities.
Accessibility in accommodation (hotel units, camps, camping)		
Accessibility in transportation	Challenges in very crowded places with intense sounds due to sound sensitivity.	Discounts for transportation and accommodation for individuals with disabilities.
Accessibility in sports & recreational facilities	None specified.	None specified.
Accessibility at beaches	None specified.	None specified.
Accessible shows (theatres, cinemas, concerts...) & accessible movies		

Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Lack of detailed knowledge about emergency procedures beyond calling 112.	More emergency exits and clearer signs in schools and universities.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	No specific difficulties mentioned.	More information about self-protection in case of an emergency.
Accessibility of emergency information (Multiple channels)	No specific difficulties mentioned.	

Greece – Autism (High Functioning / Asperger’s Syndrome), no 2

Demographic data

- Gender:** Male
- The place (country) of residence:** Greece
- The type of your disability** (official clinical diagnosis): Asperger’s syndrome
- Other difficulties/disabilities:** No
- Educational level** (e.g., lower secondary school, tertiary level of education, master degree): secondary school, ECDL, Information Technology- Vocational Training Center for the disabled (Lakia)
- Do you use assistive technology?** Yes
- If yes, which means of assistive technology?** In general technology like my laptop, mobile phone and tablet
- Do you find it difficult communicating with others?** Few times

9. **Do you use any kind of communication aid?:** No
10. **Do you live alone?:** No. With my mum or with my dad
11. **Do you move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant
12. **How often do you move alone?** Sometimes
13. **Do you use a personal computer?:** Yes
14. **If yes, how often do you use a PC?** 2-3 time a week
15. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)**
- a. Text
 - b. Visual
 - c. Audio
 - d. Audio-visual (e.g., video)
18. **Do you use any kind of accessible educational material?:** No
19. **Age:** 24

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces		My struggle, basically, is that recently, whenever I am in an external space, pleasant things and thoughts come to mind, while in internal spaces, such as my house or my storeroom, I have unpleasant thoughts.	The only solution, first of all, is to clear my mind. I would like to be able to change this, but it is really difficult to control my thoughts.

Mobility with the means of transportation	The only difficulty that I encounter is that I try to find the single seats in front so that I don't sit in the double seats and sit next to someone, but they are not always available. Also, I don't want to stand upright because I won't be able to protect my stuff and I'm afraid someone will steal them.	There should be more buses so that they are not so crowded.
Communication with and services of the public and private sectors	I want to make some changes in my life. I have gone through really bad situations in school, where other students teased and tortured me. I have been humiliated several times. The same thing happens in the school where I am right now, in Lakia.	I think that teachers should be more involved in preventing bad situations. They need to educate all children to have good behavior.
Web accessibility	Regarding the access to the internet, I don't face any difficulties, I just pay attention to what pages I enter.	Sometimes I'm afraid of being hacked.
Digital accessible transformation		
E-commerce	Problems/Difficulties: When I buy things, I never use a card; I always request to pay by cash on delivery because my parents don't give me	

	permission to use their card as they are afraid of fraud.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		
Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	I don't like changes; it's difficult for me when I am used to something and then have to change it.	I haven't used other software like Linux and iMac yet.
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	When I go to a new environment, I'm a bit curious because it's new, and I'm going for the first time. It makes sense. Who will I meet? What will I do? As I mentioned earlier, I have had	Teachers should be more involved in preventing bad situations. They need to educate all children to have good behavior.

	bad experiences with my peers.	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Throughout my school years, I had a teacher by my side to guide me and help me do at least something. Now that I don't have a teacher, it is much more difficult to read and do my homework without their help, and I often can't manage it.	
Accessibility in distance education/online learning	: I had to do that once and it was very difficult for me to participate; it was very fast, I didn't have help from a teacher, and the biggest problem was my old laptop.	

Employment Accessibility		
Spatial/Physical Accessibility in the workplace	I haven't really worked anywhere yet.	
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the workplace and accessible material		
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Most museums are boring.	
Accessibility in cultural heritage sites/environments		

(museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art	It would definitely be better to have both image and sound combined, rather than just reading a text.	For example, headsets with a guide talking, or something that can be heard through a speaker, would be more engaging.
Tourism (including recreation and sports) Accessibility		
Accessibility in tourism Services	I have never traveled alone, only with my family.	
Accessibility in accommodation (hotel units, camps, camping)	I like hotels, despite the fact that I am picky with the food.	
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches		
Accessible shows (theaters, cinemas, concerts...) & accessible movies	I like cinema sometimes, except terror movies. I'm afraid of the dark.	
Accessibility in Security and Evacuation Situations		

Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)		

Greece – Older people, no 1

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Greece
3. **Do you face any kind of difficulties/disabilities:** vision
4. **Do you face any kind of other difficulties/disabilities:** No
5. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree). Higher education
6. **Do you use assistive technology?:** No
7. **If yes, which means of assistive technology?** None
8. **Do you live alone? :** Yes
9. **Do you move alone or with the help of an attendant?** Alone
10. **How often do you move alone?** Most of the time
11. **Do you use a personal computer?** Yes
12. **If yes, how often do you use a PC?** More than 1 hour a day

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	No significant difficulties.	None.
Mobility with the means of transportation	No significant difficulties.	None.
Communication with and services of the public and private sectors	Sometimes spend more time to find information on unfamiliar websites.	None.
Web accessibility	None mentioned specifically.	None mentioned.
Digital accessible transformation		
E-commerce	Difficulty managing digital formats initially.	Support from family and personal effort to adapt.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Difficulty managing digital formats initially.	Support from family and personal effort to adapt.
Digital customer communication	None.	None.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	None.	None.

Digital libraries and repositories	None.	None.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	None.	None.
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	None.	None.
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Old school methods preferred, new tools are confusing.	Simpler tools might help.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	None.	None.
Accessibility in courses – modifications in teaching	None.	None.

practices and tools (devices, software/apps)		
Accessibility in distance education/online learning	None.	None.
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	None.	None.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	None.	None.
In-service training and career up-skilling	Old school methods preferred, new tools are confusing.	Simpler tools might help.
Assistive Technology in the workplace and accessible material	Vision problems in one eye causing fatigue.	None.
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g.	None.	None.

parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	None.	None.
Accessibility in museum exhibits and works of art	None.	None.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	None.	None.
Accessibility in accommodation (hotel units, camps, camping)	None.	None.
Accessibility in transportation	None.	None.
Accessibility in sports & recreational facilities	None.	None.
Accessibility at beaches	None.	None.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None.	None.

Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	None.	None.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	None.	None.
Accessibility of emergency information (Multiple channels)	None.	None.

Greece – Older people, no 2

Demographic data

1. **Gender:** Female

2. **The place (country) of residence:** Greece

3. **Do you face any kind of difficulties/disabilities:** vision

4. **Do you face any kind of other difficulties/disabilities:** No

5. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree). Higher education

6. **Do you use assistive technology?:** Yes

7. **If yes, which means of assistive technology?** Not assistive but in general technology like computers and mobile phone

8. **Do you live alone? :** Yes

9. **Do you move alone or with the help of an attendant?** Alone

10. **How often do you move alone?** Most of the time

11. **Do you use a personal computer?** Yes

12. **If yes, how often do you use a PC?** 2-3 times a week

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Difficulty moving in crowded indoor spaces; sudden movements of people in outdoor spaces cause fear.	Use of round tables for better communication, better public awareness about challenges faced by deaf individuals.
Mobility with the means of transportation	In Athens, chaotic mass transportation, overcrowded metro, unclear routes.	Clearer and more specific routes, larger letters on information signs.
Communication with and services of the public and private sectors	Lack of interpretation, difficulty understanding and being understood.	Televisions showing written information, better maintenance of display systems in hospitals and banks, larger interpretation screens, simpler vocabulary in subtitles.
Web accessibility	Insecurity about internet use, especially for financial transactions.	More controlled internet environment to prevent fraud, assistance for learning digital tools.
Digital accessible transformation		
E-commerce	Fear of scams, additional costs for cash on delivery.	More regulation to prevent fraud.

Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Difficulty understanding unfamiliar terminology.	Use simpler, more common vocabulary.
Digital customer communication	Difficulty with phone-based customer service.	Video call options for sign language communication.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Difficulty with digital transactions, reliance on ATMs only.	Assistance in learning how to use digital banking services.
Digital libraries and repositories	Difficulty reading large amounts of text.	Provide smaller, more convenient texts with simpler vocabulary.
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Initial difficulty with learning digital devices.	Continuous assistance and repeated explanation.
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Limited familiarity with new environments.	None specified.
Accessibility in educational material	Limited familiarity with new environments.	Use simpler language, provide notes in advance,

(documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Difficulty with complex texts and lack of interpreters.	ensure all educational material is accessible.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Lack of communication support.	More staff trained in sign language and alternative communication methods.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Fast-paced teaching, unclear articulation.	Slower teaching pace, clear articulation, pre-recorded lessons in sign language.
Accessibility in distance education/online learning	Inconsistent engagement during online classes.	Ensure mandatory attendance and active participation.
Employment Accessibility		
Spatial/Physical Accessibility in the workplace	None specified.	None specified.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	Fear of discrimination during hiring.	More information for employers, greater empathy.

In-service training and career up-skilling	None specified	None specified
Assistive Technology in the workplace and accessible material	None specified	None specified
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Lack of trained staff, cancellations of group visits.	Organized group visits with trained staff, use of images for better understanding.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Lack of trained staff, cancellations of group visits.	Organized group visits with trained staff, use of images for better understanding.
Accessibility in museum exhibits and works of art	Lack of trained staff, cancellations of group visits.	Organized group visits with trained staff, use of images for better understanding.
Tourism (including recreation and sports) Accessibility		

Accessibility in tourism Services	Lack of staff trained in disability issues.	Staff training, prompt response to text messages, daily communication.
Accessibility in accommodation (hotel units, camps, camping)	None specified.	None specified.
Accessibility in transportation	Lack of interpretation.	Interpretation screens, staff training.
Accessibility in sports & recreational facilities	Limited participation.	Provide information about difficulties faced by deaf individuals.
Accessibility at beaches	None specified	None specified.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	None specified.	None specified.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Lack of organized plans for deaf individuals.	Organized plans, visual signals in addition to audible ones.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Lack of organized plans for deaf individuals.	Organized plans, visual signals in addition to audible ones.
Accessibility of emergency information (Multiple channels)	Reliance on digital technology is insufficient.	Organized and practical plans for various accessibility needs.

5.5. Summary of interviews from Italy - List of accessibility problem areas and solutions

a. Core accessibility

Physical/Spatial accessibility of indoor and outdoor spaces

- **Problem areas for indoor spaces:**
 - Architectural Barriers:
 - Entrances: Many buildings lack accessible entrances, such as ramps or automatic doors.
 - Elevators and Stairlifts: Often, elevators or stairlifts are broken or not available, making it difficult for individuals with mobility impairments to navigate buildings.
 - Restrooms: Accessible restrooms are not always marked or available.
 - Navigation and Orientation:
 - Complex Layouts: Indoor spaces with complex layouts can be challenging to navigate, especially for individuals with visual impairments or cognitive disabilities.
 - Signage: Lack of clear and accessible signage can make it difficult for individuals to find their way.
 - Sensory Sensitivity:
 - Lighting and Noise: Environments with harsh lighting (e.g., neon lights) and loud noises can be overwhelming for individuals with sensory sensitivities, such as those on the autism spectrum.
- **Problem areas for outdoor spaces:**
 - Sidewalks and Pathways:
 - Obstacles: Sidewalks often have obstacles such as uneven surfaces, steep slopes, or vehicles blocking the way.
 - Slippery Surfaces: Outdoor routes can become very slippery in the rain, posing a hazard for individuals using wheelchairs or other mobility aids.

- Public Transportation:
 - Accessibility: Public transport systems are not always fully accessible. Issues include non-punctual services, lack of accessible vehicles, and difficulty identifying stops.
 - Information: Lack of real-time information on accessibility conditions can make it challenging for individuals to plan their journeys.
- Public Spaces:
 - Parks and Recreational Areas: These areas often lack accessible pathways and facilities, making it difficult for individuals with mobility impairments to enjoy outdoor activities.
 - Beaches: Accessible walkways to the sea are rare or poorly maintained, limiting access for individuals with disabilities.
- **Proposed solutions:**
 - Entrances: Install ramps and automatic doors to ensure accessible entrances.
 - Elevators and Stairlifts: Regular maintenance and ensuring functionality of elevators and stairlifts. Implement devices on wheelchairs that allow users to select the floor of the elevator.
 - Restrooms: Clearly mark accessible restrooms on maps and ensure they are available.
 - Clear Signage: Improve signage to be clear and accessible, helping individuals navigate complex layouts.
 - Decompression Spaces: Create sensory-friendly spaces with low lighting and minimal noise for individuals with sensory sensitivities.
 - Lighting and Noise: Use softer lighting and reduce noise levels in public indoor spaces. Provide noise-canceling headphones or earplugs for those who need them.
 - Obstacle Removal: Ensure sidewalks are free of obstacles and have even surfaces. Implement stricter controls by authorities to maintain walkability.
 - Non-Slip Surfaces: Use non-slip materials for outdoor routes to prevent hazards during rain.

- Accessibility: Ensure public transport vehicles are accessible and provide real-time information on accessibility conditions through apps.
- Punctuality: Improve the punctuality of public transport to help individuals manage their time better.
- Accessible Pathways: Ensure parks and recreational areas have accessible pathways and facilities.
- Beaches: Maintain accessible walkways to the sea and provide appropriate aids for individuals with disabilities.

Mobility with means of transportation

• Problems/Difficulties:

- Public transport is often not punctual, making it difficult for individuals to manage their time effectively.
- Buses and Urban Buses: Generally accessible, but trams are less so.
- Metro: Good accessibility, but issues arise when elevators are not working.
- Trains: Good support for traveling by train, but traveling between countries (e.g., Italy to France) can be problematic.
- Lack of real-time information on accessibility conditions can make it challenging for individuals to plan their journeys.
- Difficulty in identifying stops and knowing when to get off, especially for individuals with visual impairments.
- Airlines often do not allow individuals with disabilities to travel alone, and there is no discount for an accompanying person.
- Wheelchairs cannot stay in the cabin, posing a risk of damage as they are fragile and customized.
- Accessibility often needs to be verified by phone, which can be cumbersome and unreliable.

• Solutions proposed:

- Develop apps that provide real-time updates on accessibility conditions for public transportation.

- Implement stricter controls by authorities to maintain walkability and remove obstacles from sidewalks and pathways.
- Use GPS apps to notify individuals when they have arrived at their stop and to help identify which bus has arrived.
- Facilitate the use of accessibility tools built into operating systems for easier navigation.
- Provide support services via chat or email for better communication with public and private sectors.

Communication with public and private sectors

• Problems/Difficulties:

- The language used by public and private services is often too complex and verbose, making it difficult for individuals to understand and engage effectively.
- Many companies use totems (kiosks) for taking numbers or accessing services, which are often not accessible to individuals with disabilities.
- Individuals with specific learning disabilities or cognitive impairments may find it challenging to explain concepts clearly, leading to communication barriers.
- There is often a lack of support services available via chat or email, which can be crucial for individuals with hearing impairments or other disabilities that affect verbal communication.

• Solutions:

- Use plain language in all communications to ensure that information is clear and easy to understand. Avoid jargon and overly complex sentences.
- Make totems accessible by integrating features such as voice guidance, touchscreens with large buttons, and compatibility with smartphone apps that can assist individuals with disabilities.
- Provide support services via multiple channels, including chat, email, and text messaging, to accommodate different communication needs.

Ensure that staff are trained to handle inquiries from individuals with disabilities.

- Ensure that websites and digital services are fully accessible. This includes using readable fonts, providing subtitles for videos, and ensuring that all digital content is compatible with screen readers and other assistive technologies.
- Encourage the use of assistive technologies such as voice conversion tools, transcription apps, and other aids that can help individuals communicate more effectively.
- Train public and private sector employees on how to communicate effectively with individuals with disabilities. This includes understanding the use of assistive technologies and being aware of the specific needs of different disabilities.
- Implement feedback mechanisms that allow individuals to report communication barriers and suggest improvements. This can help organizations continuously improve their accessibility and communication strategies.

Web accessibility

- **Problems/Difficulties:**

- Fonts used on websites are often difficult to read, which can be a significant barrier for individuals with visual impairments or specific learning disabilities.
- Some websites are not user-friendly, making it challenging for users to find the information they need. This can be particularly problematic for individuals with cognitive impairments or those who rely on assistive technologies.
- Websites that are not fully accessible for screen readers pose a significant challenge for individuals with visual impairments. This includes issues with navigation, lack of alternative text for images, and improperly tagged PDFs.
- Websites with complex navigation structures can be difficult for users with cognitive impairments or those who are not tech-savvy.

- **Solutions:**

- Ensure that fonts are clear and easy to read. This includes using larger font sizes, high-contrast colors, and avoiding overly decorative fonts.
- Simplify website navigation and ensure that information is easy to find. This can be achieved by using clear headings, logical structures, and intuitive design.
- Make websites fully accessible for screen readers. This includes providing alternative text for images, ensuring that all interactive elements are accessible, and properly tagging PDFs and other documents.
- Follow accessible design practices such as using ARIA (Accessible Rich Internet Applications) landmarks, ensuring keyboard navigability, and providing captions for videos.
- Conduct user testing with individuals who use assistive technologies to identify and address accessibility issues. This can help ensure that websites are usable by everyone.
- Offer information in multiple formats (e.g., text, audio, video) to accommodate different preferences and needs. Ensure that all formats are accessible.
- Train web developers and content creators on accessibility best practices. Raise awareness about the importance of web accessibility and the impact it has on users with disabilities.

b. Digital accessible transformation

Digital documents

- **Problems/Difficulties:**

- Inaccessibility of Government Applications: Government applications are problematic and difficult to read, making it challenging for users to access and understand necessary information.
- Difficulty Understanding Documents: Some users have trouble understanding the meaning of digital documents, which can be a barrier to accessing important information and services.
- Motor Difficulties with Digital Tools: Users with motor impairments face challenges using digital tool input devices, such as mice, keyboards, and

touchscreens, which can hinder their ability to interact with digital documents.

- **Solutions:**

- Simplify Government Applications: Make government applications easier to read and understand by using plain language, clear formatting, and intuitive design.
- Provide More Understandable Documents: Ensure that digital documents are written in clear and simple language. Use visual aids, such as images and diagrams, to help explain complex information.
- Facilitate Use of Assistive Tools: Implement accessibility tools built into operating systems to assist users with motor difficulties. This includes features like voice recognition, automatic dictation systems, and eye-tracking technology.
- Use OCR Software: For documents that are not initially accessible, use Optical Character Recognition (OCR) software to convert them into readable formats.
- Enhance Contrast and Font Size: Increase font size and enhance contrast in digital documents to make them easier to read for individuals with visual impairments.

Digital services

- **Problems/Difficulties:**

- Government applications are problematic and difficult to read, making it challenging for users to access and understand necessary information.
- Users feel lost with the a university app, preferring the old one. The new app lacks images, and schedules are harder to understand, although the maps section has improved.
- Many companies use totems (kiosks) for taking numbers or accessing services, which are often not accessible to individuals with disabilities.
- Users with motor impairments face challenges using digital tool input devices, such as mice, keyboards, and touchscreens, which can hinder their ability to interact with digital services.

- **Solutions:**

- Make government applications easier to read and understand by using plain language, clear formatting, and intuitive design.
- Make totems accessible by integrating features such as voice guidance, touchscreens with large buttons, and compatibility with smartphone apps that can assist individuals with disabilities.
- Implement accessibility tools built into operating systems to assist users with motor difficulties. This includes features like voice recognition, automatic dictation systems, and eye-tracking technology.

E-commerce

- **Problems/Difficulties:**

- E-commerce sites can be problematic if they are not accessible, making it difficult for users with disabilities to navigate and use these platforms.
- There are issues with coordinating delivery times, which can be particularly challenging for users who need to agree on an exact time for delivery.
- Some users find it difficult to buy things online due to complex procedures.

- **Solutions:**

- E-commerce companies need to make sure their sites are usable by everyone. This includes ensuring compatibility with screen readers and other assistive technologies.
- Provide accurate product descriptions to compensate for users not being able to see photos. This can help users make informed purchasing decisions.
- Implement systems that allow users to agree on exact delivery times via SMS, email, or messaging apps like WhatsApp.
- Make the online purchasing process easier by simplifying procedures and ensuring that the steps are clear and straightforward.

Digital customer communication

This sections problem areas and solutions overlaps and are covered in **Communication with public and private sectors.**

Digital banking and payment

- **Problems/Difficulties:**

- ATMs are often too high and lack space for wheelchair users, making them difficult to use.
- Some users have trouble counting money, which can be a barrier to using digital banking services effectively.

- **Solutions:**

- Place ATMs at an appropriate height and ensure there is enough space for wheelchair users to access them comfortably.
- Provide assistive features or tools that can help users count money more easily, such as voice-guided instructions or digital displays that clearly show the amount being dispensed.

c. Educational accessibility

Spatial accessibility in educational units

- **Problems/Difficulties:**

- Limited Study Room Spaces: There are few places available in study rooms, and additional spaces are needed for rest.
- Outdoor Routes in Rainy Conditions: Outdoor routes become very slippery in the rain, posing a hazard for wheelchair users.
- Elevator Issues: Elevators are frequently problematic, which can hinder accessibility.
- Ticketing Service Difficulties: The ticketing service of the student services office is difficult to use.

- **Solutions:**

- Provide more spaces in study rooms and ensure there are designated areas for rest.

- Enhance the safety of outdoor routes, especially in rainy conditions, to prevent slipping hazards for wheelchair users.

Ensure regular maintenance and prompt repair of elevators to improve reliability and accessibility.

Accessibility in services provided by educational units:

- **Problems/Difficulties:**

- Communication with Student Administration Office: Difficulty in communicating with the student administration office.
- Knowledge Among Professors:
 - Little knowledge among professors about learning disabilities (DSA).
 - Lack of moral support from teachers, who doubted the student's ability to attend scientific high school and engineering.
 - Some professors did not guarantee the student's rights or intentionally put obstacles in their way.
- Response Times for Tickets: Long wait times for responses to tickets and to collect the smart card.

- **Solutions:**

- Enhance communication methods with the student administration office to make it easier for students to get the support they need.
- Provide training for professors to increase their understanding of learning disabilities. □
- Ensure professors are aware of and uphold students' rights.
Encourage moral support and belief in students' abilities.

Accessibility in educational material

- **Problems/Difficulties:**

- Sometimes slides are not updated, which can hinder learning.
- Slides with very little text are not helpful for understanding the material.
- Some students have difficulty understanding written texts.

- There is a need for more updated and comprehensive educational materials.

- **Solutions:**

- Ensure that slides are regularly updated to reflect the most current information and course content.
- Include more detailed text and explanations in slides to aid comprehension.
- Utilize assistive technologies such as screen readers to help students who have difficulty understanding written texts.
- Offer more comprehensive and updated educational materials to support learning.

d. Employment accessibility

Spatial/Physical accessibility in the workplace

- **Problem areas:**

- Exterior architectural barriers such as entrances to premises, uneven sidewalks, steep or missing slides, and impediments from vehicles.
- Need for support in the workplace for daily activities and to have a companion.
- Some devices are not accessible to wheelchair users due to height and lack of space for legs

- **Solutions:**

- Implement stricter controls by authorities to ensure the use of accessible slides and removal of architectural barriers.
- Provide laws that facilitate job inclusion and telecommuting regulations for companies that hire individuals with disabilities.
- Ensure that someone is available at all times to assist with daily activities and commuting to the workplace.

Assistive technology in the workplace

- **Problems areas:**

- If accessible technologies and materials are not available, it creates difficulties for employees with disabilities.
- Motor difficulties in using digital tool input devices such as mouse, keyboard, and touchscreen.
- **Solutions:**
 - Make sure that accessible technologies and materials are available in the workplace.
 - Engage in conversations with employees to understand their specific needs and provide the necessary assistive technologies.
 - Facilitate the use of mouse accessibility tools and assistive tools for touchscreen interaction.
 - Provide alternative virtual assistant interaction apps to help employees with motor difficulties.

Accessible services in the workplace

- **Problems areas:**
 - Communication Difficulties: Difficulty in communicating with different sectors within the workplace.
 - Lack of Accessible Communication Methods: Need for accessible communication methods for employees with disabilities.
- **Solutions:**
 - Engage in conversations with employees with disabilities to find solutions and test accessible services together.
 - Provide accessible communication methods such as chat, email, and other text-based services to support employees with disabilities.

e. Tourism and recreation accessibility

Accessibility in sports & recreational facilities

- **Problems/Difficulties:**
 - Sports and recreation facilities are often very large and scattered, which does not help with orientation.

- Gyms may have accessibility issues, such as old stairlifts, causing discomfort in new places.
- Difficulty moving in a group due to hotel and facility limitations for wheelchair sports.

- **Solutions:**

- Get help from someone and try to learn the layout through landmarks.
- Staff assistance in gyms to help navigate and use facilities.

Accessibility in tourism services

- **Problems areas:**

- Difficulty in finding accurate and useful information about accessibility.
- Information provided may not always be true or reliable.

- **Solutions:**

- Ensure that information about accessibility is easy to find and accurate.
- Use updated apps to provide real-time information on accessibility conditions.
- Improve the truthfulness and reliability of information provided about accessibility.
- Provide detailed and accurate descriptions of accessibility features.

Accessibility in transportation for tourism

- **Problems areas:**

- Airlines do not allow individuals with disabilities to travel alone and do not offer discounts for accompanying persons.
- Wheelchairs cannot stay in the cabin, risking damage as they are fragile and customized.
- Traveling from Italy to France by train is problematic.
- Public transportation in Paris is not very accessible.
- Traveling alone on Interrail would be a problem.
- Public transport, including buses and urban buses, is generally fine, but trams are less accessible.
- Metro systems are good if elevators work.

- **Solutions:**

- Airlines should allow individuals with disabilities to travel alone and offer discounts for accompanying persons.
- Ensure wheelchairs can stay in the cabin or provide better handling to prevent damage.
- Improve accessibility for train travel between countries, especially from Italy to France.
- Enhance accessibility of public transportation in cities like Paris.
- Provide better support for individuals traveling alone on Interrail.
- Ensure that all public transport, including trams and metro systems, are fully accessible and that elevators are consistently operational.

Events and shows

- **Problems/Difficulties:**

- Many films provide audio descriptions, but some scenes cannot be understood without them.
- Subtitles are necessary for understanding movies, especially for those with hearing impairments.
- In theaters, there is often a limit on the number of people with disabilities who can participate, with small reserved areas that often have a limited view.
- In concerts, there are enclosed areas for people with disabilities, which can feel discriminatory.
- Individuals with sensory sensitivities may experience overstimulation in cinemas.

- **Solutions:**

- Ensure that all films and shows provide comprehensive audio descriptions.
- Use subtitles to make movies more accessible for those with hearing impairments.
- Inform in advance about architectural barriers and let people decide where to stay.

- Increase the size and improve the location of reserved areas to provide better views and a more inclusive experience.
- Implement measures to reduce overstimulation in cinemas, such as providing quiet zones or sensory-friendly screenings.

f. Cultural heritage accessibility

- **Problems/Difficulties:**

- Architectural barriers in cultural heritage sites such as museums, art galleries, archaeological sites, and religious sites.
- Accessible routes are often not provided, making it difficult for individuals with disabilities to navigate these sites.
- Historical buildings are more problematic in terms of accessibility.
- In some cases, only a portion of the museum is accessible (e.g., 30%).
- Videos and captions in museums are not designed for people with learning disabilities (DSA) (issues with font, text length, etc.).
- Audio guides are better but cannot be listened to at 2X speed.
- Museums do not always present accessible or alternative routes.
- Lack of tactile reproductions of artworks for visually impaired visitors.

- **Solutions:**

- Provide accessible routes in cultural heritage sites, including the possibility of touching certain exhibits.
- Ensure that explanations by guides are accurate and detailed so that even individuals who cannot see can appreciate the various works.
- Eliminate architectural barriers where possible and provide timely and quality information about accessibility.
- Inform visitors in advance about the accessibility level of the site and let them decide where to stay.
- Design videos and captions with consideration for people with learning disabilities, using appropriate fonts and text lengths.
- Offer audio guides that can be listened to at different speeds.
- Provide alternative routes where there are artworks reproduced tactilely for visually impaired visitors.

- Ensure that all information is provided in a usable mode for deaf people, including captioning, plain language, and transcription apps.

g. Security and emergency situations

- **Problems/Difficulties:**

- Blind individuals may face significant trouble if they have not seen evacuation plans before.
- In the case of an emergency, blind individuals need to be shown through drills and rehearsals what to do.
- People with mobility impairments may need to wait for help or be carried out in emergencies, especially if elevators are required to exit buildings.
- If evacuation plan instructions are only in paper form, blind users do not know they are there and cannot read them.
- Communications written in very small and inconspicuous fonts are difficult for individuals with visual impairments to read.
- Emergency rooms in hospitals often lack the expertise to handle certain types of disabilities.
- Deaf individuals require visible alarm systems and apps for alerts, chat, and email to be informed about emergencies.
- Some individuals with specific learning disabilities approach evacuation drills very calmly and believe they can handle emergencies well by anticipating them rationally.

- **Solutions:**

- Ensure that blind individuals are fully familiar with evacuation plans through drills and rehearsals.
- View evacuation plans together with blind individuals and modify them if necessary.
- Provide clear and accessible evacuation routes for individuals with mobility impairments, ensuring they do not have to rely solely on elevators.
- Provide evacuation plan instructions in multiple formats, including verbal explanations and digital formats accessible to screen readers.

- Increase font size and enhance contrast in written communications to make them more readable for individuals with visual impairments.
- Inform individuals about hospitals that have adequate emergency rooms equipped to handle various types of disabilities.
- Implement visible alarm systems and ensure that apps for alerts, chat, and email are available and accessible to deaf individuals.

5.6. Interviews (Italy)

Italy – Specific learning disabilities no 1

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Italy
3. **The type of learning disabilities** (official clinical diagnosis): Specific developmental disorder of reading and writing (F81.0).
4. **Do you face other difficulties apart from the SLD per se?** ADHD, difficult concentration, chronic migraines (under treatment at a headache center).
5. **The age of diagnosis of learning disabilities:** 18
6. **Age:** 29
7. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): B.S. in Engineering
8. **Do you use assistive technology?** Yes
9. **If yes, which means of assistive technology?** Technology in general like transcription of video lectures with AI
10. **What kind of educational material is more suitable for you? (you can choose more than one answers)**
 - d. Audio-visual (e.g., video)
11. **Do you use any kind of accessible educational material?**
 - a. Yes
12. **If yes, what kind of it?** Video-lectures with subtitles, speed 2X

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces		All streets in Turin are perpendicular, making it difficult for him to orient himself.	

Mobility with the means of transportation	Public transport is not punctual, causing difficulty in managing time.	
Communication with and services of the public and private sectors	Language used by public and private services is too complex and verbose.	
Web accessibility	Fonts are often hard to read.	
Digital accessible transformation		
E-commerce	E-commerce is essential because he has trouble being understood in stores.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Government applications are problematic. Reading is practically impossible.	Government apps need to be easier to read and understand.
Digital customer communication	Difficulty explaining concepts.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		
Digital devices and their software/apps (e.g.	Millennial who grew up with technology, sees its potential and is not addicted to it.	

mobile phone, smart TV, home appliances)		
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Few places in study rooms, he also needs places to rest.	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Difficult to communicate with the student administration office. Little knowledge among professors about the issue of learning disabilities (DSA). Lack of moral support from teachers, who didn't believe in his ability to attend scientific high school and then engineering. Significant problems at university with some professors, was tempted to	

	quit studies. Some professors did not guarantee his rights or even intentionally put obstacles in his way.	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)		
Accessibility in distance education/online learning		
Employment Accessibility	No experience	
Spatial/Physical Accessibility in the work place		
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the work place and accessible material		
Cultural Heritage Accessibility		

Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	He can navigate a museum: he has learned to compensate.	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art	Videos and captions are not designed for people with learning disabilities (DSA) (font, text length, ...). Audio-guides are better, but you can't listen to them at 2X speed.	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	He finds it easier to orient himself abroad, comfortable with using a map for navigation. Difficulty learning English.	

	Uses subtitles even for watching movies in Italian, pauses because he reads slowly. Products translated too sweetly (especially anime).	
Accessibility in accommodation (hotel units, camps, camping)		
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches		
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Uses subtitles even for watching movies in Italian, pauses because he reads slowly. Products not well translated (especially anime).	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Approaches evacuation drills very calmly, with a cool head. Thinks he can handle emergencies quite well, anticipates emergencies rationally.	
Accessibility in Evacuation Planning		

(e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)		

Italy – Specific learning disabilities no 2

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Italy
3. **The type of learning disabilities** (official clinical diagnosis): Mixed disorders of learning skills (F81.3).
4. **Do you face other difficulties apart from the SLD per se?** Organizational problems, difficulty in organizing study activities.
5. **The age of diagnosis of learning disabilities:** 17
6. **Age:** 26
7. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Higher secondary school (very close to B.S. in Engineering)
8. **Do you use assistive technology?** Yes
9. **If yes, which means of assistive technology?** Mainstream technology like recording with a tablet
10. **What kind of educational material is more suitable for you? (you can choose more than one answers)**
 - d. Audio-visual (e.g., video)
11. **Do you use any kind of accessible educational material?**
 - b. No
12. **If yes, what kind of it?** Video-lectures with subtitles, speed 2X

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		

Physical/Spatial Accessibility of indoor and outdoor spaces		
Mobility with the means of transportation	No problems with transportation.	
Communication with and services of the public and private sectors	Uses voice conversion.	
Web accessibility	Difficulty in finding information on some websites.	
Digital accessible transformation		
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	No particular difficulties, positive about digital transformation.	
Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		

Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Feels lost with the new university app, preferred the old one (no more images, schedules were easier to understand, but the maps section has improved).	
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Accessible spaces, easy to find. Signs have been improved.	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Sometimes slides are not updated. Slides with few text are not helpful.	Asks for materials from other students, in some cases has asked for tutoring.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Tickets: long wait times for responses, waited a long time to collect the smart card.	
Accessibility in courses – modifications in teaching	Interaction with professors: some are very helpful, others	

practices and tools (devices, software/apps)	not; outdated slides sometimes. Exams: not always given extra time (oral or written).	
Accessibility in distance education/online learning	Video recordings are good, but he/she has difficulty in concentrating, experience is disorientating.	
Employment Accessibility	No experience	
Spatial/Physical Accessibility in the work place		
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the work place and accessible material		
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries,		

archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art	Uses audioguides. Likes audiovisual apps.	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Plans trips to see as much as possible. Uses social media a lot, watches other people's videos (she doesn't make videos).	
Accessibility in accommodation (hotel units, camps, camping)		
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches		

Accessible shows (theaters, cinemas, concerts...) & accessible movies		
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	In planned emergency tests no stress. He/she experienced a very dangerous situation and was able to escape following instinct.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)		

Italy – Visual impairments, no 1

Demographic data

1. **Gender** Male

2. **The place (country) of residence:** Italy

3. **The type of your disability and the cause of it** (official clinical diagnosis):

Congenital glaucoma

4. **The age at onset of visual impairments:** 7

5. **Age:**

6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): scientific high school graduation

7. **Severity of disability** Blindness

8. **What means do you use to read?** Braille or screen reader
9. **Visual acuity of the left eye** Total blindness, loss of light perception
10. **Visual acuity of the right eye** Total blindness, loss of light perception
11. **Visual field**
- a. Full visual field
 - b. Central vision loss
 - c. Peripheral vision loss
12. **You move alone or with the help of an attendant?** Alone
13. **How often do you move alone?** Most of the time
13. **Do you use assistive technology?** Yes
14. **If yes, which means of assistive technology?** Screen reader, a form of assistive technology that renders text and image content as speech or braille output
15. **What kind of educational material is more suitable for you? (you can choose more than one answer)** Text
16. **Do you use any kind of accessible educational material?** No
17. **If yes, what kind of it?** None

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces		Before I can independently turn an indoor or outdoor location I must know it.	I make use of someone who can explain to me what a place looks like or, for outsiders, GPS navigators.
Mobility with the means of transportation		If I don't know the line I'm on I can't understand when I got to the stop I have to get off at. I don't know which bus is the bus that stopped at the stop.	To know when I have arrived at the stop I need to get off at, I use GPS apps that notify me with a notification. To know which bus has arrived, if the driver doesn't tell me, I ask.

Communication with and services of the public and private sectors	One difficulty I have repeatedly encountered is the non-accessibility of totems in many companies, which allow you to take the number for the office you need.	Ask the people present. It would also be appropriate to make these totems accessible, for example, with a smartphone app
Web Accessibility	If a site is fully accessible and usable I have no problems. Problems occur when a site is not accessible for a screen reader.	Companies need to make sure their sites are usable by all people.
Digital accessible transformation		
E-commerce	I make use of e-commerce sites. Problems occur only if the site is not accessible.	Again, e-commerce companies need to make sure that their sites are usable by everyone. I would also add that it would be good for product descriptions to be accurate, to make up for not being able to see photos.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	If the documents and all the forms are accessible and usable I have no problem. Problems occur from the moment these are not accessible	The only way I can get around inaccessible documents is to use OCR software. Companies must also make sure that they have created a properly tagged PDF, otherwise, there may be graphics that do not contain explanations

Digital customer communication	I have no problem with digital communication unless the latter is accessible.	Provide a phone number that can assist people with disabilities.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	If the app and the bank's website are accessible there are no problems. For withdrawing the atm there are no problems if it is talking.	Many banks provide a smartphone withdrawal feature that allows you to be able to withdraw independently even in those items that do not have a speech synthesis or are completely touch
Digital libraries and repositories	No problems.	
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	I have no problem if the software is accessible.	Companies need to verify that their software is accessible, and as for hardware, they should include speech synthesis in their products like TVs.
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	I have to understand an environment before I can walk through it independently	I avail myself of someone who can explain it to me and try to understand it by finding points of reference
Accessibility in educational material (documents – text & images/maps and	Documents must be fully accessible, as mentioned above. This also applies to I	The company must surely expect that people with disabilities can participate in the courses and therefore

graphs, video, presentations, VR & AR) and assistive technology	videos and all other training materials.	must make the materials accessible at the outset, for example by describing the videos that are not understandable.
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Certainly, the various announcements should not only be in written (paper) form	Any notices should be said verbally or written on the service website as well.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	If they are not accessible, I cannot provide these tools	These tools should be accessible to all and tested.
Accessibility in distance education/online learning	If the online training software is accessible, I have no problem.	The company must equip itself with accessible software on which to organize the lesson. For the rest, the things said before for tools, Documents, etc. apply.
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	The workplace is usually not a problem for me. First, I just have to study it and understand it So that I can move there independent	Ask the employer to take some time to explain the structure of the workplace to me.
Accessible Services in the workplace (e.g.	No problem if these are accessible	Try to talk to the person with a disability so that together we

hiring processes, communication with different sectors)		can find a solution and test these services.
In-service training and career up-skilling	No problems	
Assistive Technology in the workplace and accessible material	If accessible technologies and accessible materials are available, there are no difficulties	Talk to the person to understand what they need
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)	I don't usually go to museums and similar places. In any case, the problems lie in the fact that accessible routes are often not provided	The museum should provide accessible routes, e.g., the possibility of being able to touch certain things, explanations by guides that are accurate so that even a person who cannot see can appreciate the various works, etc. Welcome the possibility of having a less leading to the entrance.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	As mentioned above	As mentioned above
Accessibility to museum exhibits and works of art	Sometimes, as mentioned, the museum does not present	The museum should provide alternative routes where there

	accessible or alternative routes	are artworks reproduced tactilely
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	No problems	
Accessibility to accommodation (hotel units, camps, camping)	I usually don't have too much difficulty in these facilities, I just have to have some time to get used to and understand them.	Maybe the facility manager can explain the facility itself to the blind person. Surely it is also helpful to get advice from other people who have already visited that facility to know if it is easy to understand.
Accessibility in transportation	What I said about transportation above applies.	What I said about transportation above applies.
Accessibility in sports & recreational facilities	Sometimes a sports and recreation facility is very large and scattered, which does not help orientation	Get help from someone and if possible try to learn it through landmarks
Accessibility at beaches	At beaches, the most common problem is finding one's umbrella either when arriving from the road or the sea	I have solved this problem by making use of GPS apps where I can sign points of interest, such as precisely the umbrella. Once I mark the point I can realize the distance to it and figure out when I got there. An always good solution is to ask.
Accessible shows (theaters, cinemas,	Many films provide audio descriptions and, in these	I try to choose audio-described films or shows. In

concerts...) & accessible movies	cases, the problem does not arise. In other cases, some scenes cannot be understood.	any case, you can often understand a lot even without audio description.
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Surely if the blind person has not seen these evacuation plans before, he or she may be in a lot of trouble	In the case of the office where one works, he or she should be shown through drills and rehearsals what the blind person should do in case of these emergencies.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	As mentioned before, you need to be sure that the blind person is fully familiar with these plans so that he or she will not have problems in case of evacuation	Surely it is helpful to view the evacuation plans together with the blind person and figure out with him if they need to be modified
Accessibility of emergency information (Multiple channels)	If evacuation plan instructions are only in paper form the blind user does not know they are there and cannot even read them	Someone must, as mentioned, illustrate and display these plans

Italy – Visual impairments, no 2

Demographic data

1. **Gender:** Female

2. **The place (country) of residence:** Italy

3. **The type of your disability and the cause of it** (official clinical diagnosis): Low vision, congenital glaucoma

4. **The age at onset of visual impairments:** 5

5. **Age:** 40

6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): master degree
7. **Severity of disability** Low vision
8. **What means do you use to read?** Large prints or magnifiers
9. **Visual acuity of the left eye** Better than 1/20 and worse than 1/10
10. **Visual acuity of the right eye** Better than 1/20 and worse than 1/10
11. **Visual field** Central vision loss
12. **You move alone or with the help of an attendant?** Alone
13. **How often do you move alone?** Always
13. **Do you use assistive technology?** Yes
14. **If yes, which means of assistive technology?** Video magnifier, software that allows you to enlarge anything that appears on the screen of a PC or phone
15. **What kind of educational material is more suitable for you? (you can choose more than one answers)**
- Audio
- Audio-visual (e.g., video)
16. **Do you use any kind of accessible educational material?** No
17. **If yes, what kind of it?** None

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces		I have difficulty moving to a place I don't know	I make use of someone who can explain to me what a place looks like or, for outsiders, GPS navigators.
Mobility with the means of transportation		I have difficulty using public transportation that takes a route I am not familiar with	I often use GPS to get my bearings
Communication with and services of the public and private sectors		No problems	

Web Accessibility	I have difficulty if I can't enlarge the screen	I can use video magnifiers or magnifying glasses
Digital accessible transformation		
E-commerce	No problem if I can use a video magnifier	Video magnifier or magnifying glasses
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	No problems	
Digital customer communication	I have no problem with digital communication unless the latter is accessible.	Provide a phone number that can assist people with disabilities.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	No problem if I can use a video magnifier	Video magnifier or magnifying glasses
Digital libraries and repositories	No problems.	
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	No problem if I can use a video magnifier	Video magnifier or magnifying glasses
Educational Accessibility		

Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	I have difficulty moving to a place I don't know	I usually ask someone to explain to me how the place is arranged in the space
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	No problem if I can use a video magnifier	Video magnifier or magnifying glasses
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	I have difficulty if the ads are written in a very small and inconspicuous font	Increase font size and enhance contrast
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	No problem if I can use a video magnifier	Video magnifier or magnifying glasses
Accessibility in distance education/online learning	No problem if I can use a video magnifier	Video magnifier or magnifying glasses
Employment Accessibility		

Spatial/Physical Accessibility in the Workplace	I have difficulty moving to a place I don't know	I usually ask someone to explain to me how the place is arranged in the space
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	I have difficulty if communications are written in a very small and inconspicuous font	Increase font size and enhance contrast
In-service training and career up-skilling	No problems	
Assistive Technology in the workplace and accessible material	If accessible technologies and accessible materials are available, there are no difficulties	Talk to the person to understand what they need
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)	I have difficulty moving to a place I don't know	I usually ask someone to explain to me how the place is arranged in the space
Accessibility in cultural heritage sites/environments	No problems	

(museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility to museum exhibits and works of art	No problems	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	No problems	
Accessibility to accommodation (hotel units, camps, camping)	No problems	
Accessibility in transportation	What I said about transportation above applies.	What I said about transportation above applies.
Accessibility in sports & recreational facilities	No problems	
Accessibility at beaches	I have difficulty moving to a place I don't know	I usually ask someone to explain to me how the place is arranged in the space
Accessible shows (theaters, cinemas, concerts...) & accessible movies	I have difficulty if there is no audio description	Audio description
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security	I have difficulty if I don't already know the evacuation plans	Know the evacuation plans in advance

systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	I have difficulty if I don't already know the evacuation plans	Know the evacuation plans in advance
Accessibility of emergency information (Multiple channels)	I have difficulty if communications are written in a very small and inconspicuous font	Increase font size and enhance contrast

Italy – Deaf- Hard of hearing, no 1

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Italy
3. **The type of your hearing loss and the cause of it** (official clinical diagnosis): bilateral profound deafness, head trauma
4. **The age at onset of hearing loss:** 13
5. **Age:** 66
6. **Educational level** (e.g., lower secondary school, tertiary level of education): high school graduation
7. **Do you have bilateral hearing loss?** Yes
8. **Degrees of hearing loss in left ear** Profound hearing loss (91+ dB)
9. **Degrees of hearing loss in right ear** Profound hearing loss (91+ dB)
10. **Level of difficulty in understanding the oral language (through lip reading)**
Neutral
11. **Do you read and understand the written form of the official language of your country?** Yes
12. **Level of difficulty in reading and understanding the written language:** Easy
13. **Do you know sign language?** No
14. **Do you use assistive technology?** No
15. **If yes, which means of assistive technology?**

16. What kind of educational material is more suitable for you? (*you can choose more than one answers*) Text

17. Do you use any kind of accessible educational material? No

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	No problems	
Mobility with the means of transportation	YES (high criticality)	Providing information in a text-based manner (e.g., using Apps on smartphones)
Communication with and services of the public and private sectors	YES (high criticality)	Availability of support services via chat or email
Web Accessibility	YES	Subtitling. “Search” function on sites to find information more easily
Digital accessible transformation		
E-commerce	YES (high criticality)	Problems especially for delivery: need to be able to agree on the exact time (SMS, email, whatsapp). This need to agree applies in general.
Digital documents and services of the public and private sectors (e.g.	No problems	

e-forms, informational material, tax or government sites/applications)		
Digital customer communication	YES (high criticality)	It is necessary to communicate knowing that this is a deaf person
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	No problems	
Digital libraries and repositories	No problems	
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	No problems	
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	No problems	
Accessibility in educational material (documents – text & images/maps and graphs, video,	YES	Materials as clear and simple as possible. Subtitling

presentations, VR & AR) and assistive technology		
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	YES	Always remember that there is a deaf person, so it is necessary to find an appropriate/alternative way to communicate
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	YES (high criticality)	App for transcription
Accessibility in distance education/online learning	YES (high criticality)	Need for software tools used for distance learning to be accessible
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	YES (high criticality)	Accessibility of alarm systems. Visibility of systems. Use of apps for alerts, chat, email.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	YES	Assignment of a mentor for deaf people in the workplace.
In-service training and career up-skilling	YES (high criticality)	Simplicity, text clarity. Subtitling.

Assistive Technology in the workplace and accessible material	YES (high criticality)	App for subtutling, transcription, translation (if in English)
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)	YES (high criticality)	All information must be provided in a usable mode for deaf people: captioning, plain language, transcription app, website accessibility (e.g., for purchasing tickets)
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	YES (high criticality)	All information must be provided in a usable mode for deaf people: captioning, plain language, transcription app, website accessibility (e.g., for purchasing tickets)
Accessibility to museum exhibits and works of art	YES (high criticality)	All information must be provided in a usable mode for deaf people: captioning, plain language, transcription app, website accessibility (e.g., for purchasing tickets)

<i>Tourism (including recreation and sports)</i> <i>Accessibility</i>		
Accessibility in Tourism Services	YES (high criticality)	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions. Subtitling of performances.
Accessibility to accommodation (hotel units, camps, camping)	YES (high criticality)	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions. Subtitling of performances.
Accessibility in transportation	YES (high criticality)	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people.

		Management of alarms and evacuation instructions. Subtitling of performances.
Accessibility in sports & recreational facilities	YES (high criticality)	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions. Subtitling of performances.
Accessibility at beaches	YES (high criticality)	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions. Subtitling of performances.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	YES (high criticality)	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people.

		Management of alarms and evacuation instructions. Subtitling of performances.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	YES (high criticality)	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	YES (high criticality)	
Accessibility of emergency information (Multiple channels)	YES (high criticality)	

Italy – Deaf- Hard of hearing, no 2

Demographic data

1. **Gender:** Male

2. **The place (country) of residence:** Italy

3. **The type of your hearing loss and the cause of it** (official clinical diagnosis):
bilateral profound deafness, congenital deafness

4. **The age at onset of hearing loss:** from the birth

5. **Age:** 61

6. **Educational level** (e.g., lower secondary school, tertiary level of education): high school graduation

7. **Do you have bilateral hearing loss?** Yes

8. **Degrees of hearing loss in left ear** Profound hearing loss (91+ dB)

9. **Degrees of hearing loss in right ear** Profound hearing loss (91+ dB)

10. Level of difficulty in understanding the oral language (through lip reading)

Neutral

11. Do you read and understand the written form of the official language of your country? Yes

12. Level of difficulty in reading and understanding the written language Easy

13. Do you know sign language? No

14. Do you use assistive technology? No

15. If yes, which means of assistive technology?

16. What kind of educational material is more suitable for you? (*you can choose more than one answers*) Text

17. Do you use any kind of accessible educational material? No

18. If yes, what kind of it?

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	No problems	
Mobility with the means of transportation	YES	Providing information in a text- based manner (e.g., using Apps on smartphones)
Communication with and services of the public and private sectors	YES	Availability of support services via chat or email
Web Accessibility	YES	Subtitling. “Search” function on sites to find information more easily
Digital accessible transformation		

E-commerce	YES	Problems especially for delivery: need to be able to agree on the exact time (SMS, email, whatsapp). This need to agree applies in general.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	No problems	
Digital customer communication	YES	It is necessary to communicate knowing that this is a deaf person
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	No problems	
Digital libraries and repositories	No problems	
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	No problems	
Educational Accessibility		
Spatial Accessibility in educational units (public	No problems	

and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	YES	Materials as clear and simple as possible. Subtitling
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	YES	Always remember that there is a deaf person, so it is necessary to find an appropriate/alternative way to communicate
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	YES	App for transcription
Accessibility in distance education/online learning	YES	Need for software tools used for distance learning to be accessible
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	YES	Accessibility of alarm systems. Visibility of systems.

		Use of apps for alerts, chat, email.
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	YES	Assignment of a mentor for deaf people in the workplace.
In-service training and career up-skilling	YES	Simplicity, text clarity. Subtitling.
Assistive Technology in the workplace and accessible material	YES	App for subtitling, transcription, translation (if in English)
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)	YES	All information must be provided in a usable mode for deaf people: captioning, plain language, transcription app, website accessibility (e.g., for purchasing tickets)
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological	YES	All information must be provided in a usable mode for deaf people: captioning, plain language, transcription app, website accessibility (e.g., for purchasing tickets)

sites) as for the services (physical and digital)		
Accessibility to museum exhibits and works of art	YES	All information must be provided in a usable mode for deaf people: captioning, plain language, transcription app, website accessibility (e.g., for purchasing tickets)
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	YES	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions. Subtitling of performances.
Accessibility to accommodation (hotel units, camps, camping)	YES	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions.

		Subtitling of performances.
Accessibility in transportation	Yes	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions. Subtitling of performances.
Accessibility in sports & recreational facilities	Yes	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions. Subtitling of performances.
Accessibility at beaches	Yes	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions.

		Subtitling of performances.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Yes	Availability of guides and adequate information (via app). Availability of trained staff to deal with deaf people. Management of alarms and evacuation instructions. Subtitling of performances.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	YES (high criticality)	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	YES (high criticality)	
Accessibility of emergency information (Multiple channels)	YES (high criticality)	

Italy – Mobility impairments, no 1

Demographic data

1. **Gender:** Male

2. **The place (country) of residence:** Italy

3. The type of your disability and the cause of it (official clinical diagnosis):

Dislocation of C5-C6 with tetraplegia

4. The age at onset of mobility impairments: 17

5. Age: 26

6. Educational level (e.g., lower secondary school, tertiary level of education, master degree): B.S. in Computer Science Engineering

7. Your disability occurs

c. In your lower and upper extremities

8. How would you most accurately describe the functionality of your hands?

c. I handle objects with difficulty, I need help to prepare or modify the activities. My performance is slow and can be achieved with limited success as regards the quantity and quality of activity. I can be independent, only if the activities have been adapted for me.

9. You move alone or with the help of an attendant?

b. Sometimes alone and sometime with help of an attendant

10. How often do you move alone?

c. Some times

11. How would you describe your commute?

e. In all cases and in all places, I use a wheelchair. At best, I can use an electric wheelchair. I always need special support in my waist, torso and head. I use many types of assistive devices for mobility impairments, but I still need the assistance of another person.

12. Do you use assistive technology?

a. Yes

13. If yes, which means of assistive technology?

Dictation, voice recognition, manual wheelchair, home automation to turn on/off lights.

14. What kind of educational material is more suitable for you?

b. Visual

15. Do you use any kind of accessible educational material?

b. No

16. If yes, what kind of it? None

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Architectural barriers, sidewalks often with obstacles, shops without access ramps, no automatic doors.	Home automation (he designed his own).
Mobility with the means of transportation		
Communication with and services of the public and private sectors	Public offices usually accessible, but sometimes elevators or stairlifts are broken.	Device on the wheelchair that allows selecting the floor of the elevator.
Web accessibility	No problems.	
Digital accessible transformation		
E-commerce	No problems.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	No problems.	
Digital customer communication	No problems.	
Digital Banking (including ATMs/cash points and Interactive	Unable to use ATMs with the wheelchair): too high and/or no space for legs.	

Teller Machines inside a bank)		
Digital libraries and repositories	No problems.	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	No problems.	
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Use wheelchairs, but problems in outdoor routes in case of rains: very slippery.	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		Videorecording of lectures.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	The ticketing service of the student services office is difficult to use.	

Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)		
Accessibility in distance education/online learning		Online learning is very helpful.
Employment Accessibility	No experience (student).	
Spatial/Physical Accessibility in the work place		
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the work place and accessible material		
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the	The only problem is architectural barriers.	

indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art	Most museums are accessible.	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services		
Accessibility in accommodation (hotel units, camps, camping)	Depends on countries. Rules for hotels are not clear.	US hotel chains are generally better (they have to be compliant to the American Disability Act).
Accessibility in transportation	Airlines do not allow him to travel alone (and no discount for accompanying person). Wheelchairs cannot stay in cabin, risk of damages: wheelchairs are fragile and customized, big problems in case of damage.	

Accessibility in sports & recreational facilities		
Accessibility at beaches	Area for people with disability: discrimination. Assistance in some public beaches.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	In theaters: limit on the number of people with disabilities who can participate (small reserved area, often with limited view). In concerts: enclosed area for people with disability, felt as discriminatory.	Inform in advance about architectural barriers and let people decide where to stay.
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)	Emergency rooms in hospitals often lack the expertise to handle certain types of disabilities.	Inform about the hospitals that have adequate emergency rooms.

Demographic data

1. **Gender:** Male

2. **The place (country) of residence:** Italy

3. **The type of your disability and the cause of it** (official clinical diagnosis):

Degenerative disease, quadriplegia

4. **The age at onset of mobility impairments:** 15

5. **Age:** 44

6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): high school graduation

7. **Your disability occurs** In your lower and upper extremities

8. **How would you most accurately describe the functionality of your hands?**

I can only handle selected (very specific) objects that are easy and only in adapted activities. Usually, I only perform parts of an entire activity with a lot of effort and with limited success. I need continuous support, assistance, and/or adapted equipment.

9. **You move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant

10. **How often do you move alone?** Some times

11. **How would you describe your commute?**

(Select only one of the following answers)

- a. In all cases and all places, I use a wheelchair. At best, I can use an electric wheelchair. I always need special support in my waist, torso, and head. I use many types of assistive devices for mobility impairments, but I still need the assistance of another person.

12. **Do you use assistive technology?**

- a. Yes

13. **If yes, which means of assistive technology?** Automatic dictation systems, speech recognition systems, eye pointer

14. **What kind of educational material is more suitable for you? (*you can choose more than one answer*)**

- d. Audio-visual (e.g., video)

15. **Do you use any kind of accessible educational material?**

- a. No

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Exterior architectural barriers entrance to premises, uneven sidewalks slide too steep or missing, or impediment vehicles	Barrier abatement, Stricter controls by authorities to use slides Availability of updated apps on the walkability of sidewalks and access to premises
Mobility with the means of transportation	Conditioned by telephone verification of accessibility	App updated in real-time on accessibility conditions
Communication with and services of the public and private sectors	Interpersonal communication difficulty	Facilitation in the use of email / PEC / and text messaging
Web Accessibility	Motor difficulties in using mouse, keyboard, and touchscreen.	Facilitation in the use of accessibility tools built into operating systems. An app that allows and facilitates navigation even with voice for people with dysarthria
Digital accessible transformation		
E-commerce	Motor difficulties in using digital tool input devices.	Facilitate the use of mouse accessibility tools for assistive tools for touchscreen interaction.
Digital documents and services of the public and private sectors (e.g. e-forms, informational	Motor difficulties in using digital tool input devices.	Facilitate the use of mouse accessibility tools for assistive tools for touchscreen interaction.

material, tax or government sites/applications)		
Digital customer communication	No problems.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Architectural barriers as the devices are not accessible to wheelchair users.	Place the devices at an appropriate height
Digital libraries and repositories	Motor difficulties in using digital tool input devices.	Facilitate the use of mouse accessibility tools for assistive tools for touchscreen interaction. Assistive tools for touchscreen interaction.
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	Motor difficulties in using digital instrument input devices. Difficulties in using virtual assistants via voice commands.	Facilitating the use of mouse accessibility tools for assistive tools for touchscreen interaction. Availability of alternative virtual assistant interaction apps.
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Not applicable	

Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Motor difficulties in using digital tool input devices.	Facilitate the use of mouse accessibility tools for assistive tools for touchscreen interaction. Assistive tools for touchscreen interaction.
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Not applicable	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Motor difficulties in using digital tool input devices.	Facilitate the use of mouse accessibility tools for assistive tools for touchscreen interaction. Assistive tools for touchscreen interaction.
Accessibility in distance education/online learning	Not applicable	
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	Need to have support in the workplace for daily activities and to have a companion	Provide laws that facilitate job inclusion Telecommuting regulations for companies that hire
Accessible Services in the workplace (e.g. hiring processes,		Having someone available at all times to drive me to my place of work

communication with different sectors)		Having economic benefits given the burden of the expense
In-service training and career up-skilling	Not applicable	
Assistive Technology in the workplace and accessible material	Not applicable	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)	Possible barriers	Have useful information about accessibility Have a companion Eliminate barriers where possible Have timely and quality information Have input
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	The same considerations as above apply to the physical aspects	
Accessibility to museum exhibits and works of art	The same considerations as above apply to the physical aspects	

<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	Difficulty in finding information	Quality of information that may not be true Ease of finding useful information Improving the truthfulness of information
Accessibility to accommodation (hotel units, camps, camping)	Quality of information that may not be true Unavailability of using the facility due to lack of appropriate aids Improve veracity of information	Availability of aids appropriate for physical disability
Accessibility in transportation	Absence of information related to the previous	See previous solutions
Accessibility in sports & recreational facilities	Not applicable	
Accessibility at beaches	Possible lack of adequate walkways and non-availability of appropriate aids	Availability of aids appropriate for physical disability
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Not applicable	
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the	Lack of adequate facilities for people in wheelchairs	Increased dissemination

evacuation and security systems in case of fire, earthquake, etc.)	Non-circulation of evacuation aids Adapt facilities	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Lack of adequate facilities for people in wheelchairs Non-circulation of evacuation aids Adapt facilities	Increased dissemination
Accessibility of emergency information (Multiple channels)	Lack of adequate facilities for people in wheelchairs Non-circulation of evacuation aids Adapt facilities	Increased dissemination

Italy – Mobility impairments, no 3

Demographic data

1. **Gender:** Male

2. **The place (country) of residence:** Italy

3. **The type of your disability and the cause of it** (official clinical diagnosis): Complete paraplegia AIS at the neurological level D5, with neurogenic bowel and bladder, as a result of a traffic accident

4. **The age at onset of mobility impairments:** 16

5. **Age:** 24

6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Higher secondary school

7. **Your disability occurs** In your lower extremities (including chest)

8. **How would you most accurately describe the functionality of your hands?**

- I handle all objects easily and successfully. I may have some difficulties in activities that require great speed or/and accuracy. However, these difficulties do not restrict my independence in my daily activities at all.

9. **You move alone or with the help of an attendant?** Alone

10. **How often do you move alone?** Always

11. How would you describe your commute?

c. Most of the time, I need walking aids to be able to walk anywhere. Usually, I need the assistance of another person or I need specialized equipment to get up from the floor, from the bed, or from the chair. When climbing stairs, I usually need assistance or at least supervision from someone else. I need a wheelchair for outdoor environments.

12. Do you use assistive technology? Yes

13. If yes, which means of assistive technology? Car, three-wheeled wheelchair.

14. What kind of educational material is more suitable for you? Audio-visual (e.g., video)

15. Do you use any kind of accessible educational material? No

16. If yes, what kind of it? None

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Few problems in daily life. Sometimes places are technically accessible but discriminatory (e.g., stairlifts). There are non-accessible places (restaurants, museums). Accessible elevators and restrooms are not always marked on maps.	
Mobility with the means of transportation	Public transport, buses, and urban buses are fine, trams not so much. Metro is very good (if elevators work).	

	Good support for traveling by train.	
Communication with and services of the public and private sectors	Public offices usually accessible, but sometimes elevators or stairlifts are broken.	
Web accessibility	Public services are not always accessible (e.g. police station in his town), but they help find a solution.	
Digital accessible transformation		
E-commerce	He/she likes to buy in shops, but trying on clothes is not easy, so e-commerce is better.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	No problems.	
Digital customer communication	No problems.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Can use ATMs.	
Digital libraries and repositories	No problems.	

Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	No problems.	The Google Maps function "prefer accessible routes" is very useful (shows steps, differences in elevation, accessible transportation).
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	The university is very accessible. Newer classrooms are better. Some do not have suitable desk, but people help to find solutions. Elevators are always an issue.	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	No problems.	
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	No problems with services.	

Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Professors are generally accommodating.	
Accessibility in distance education/online learning	No problems.	
Employment Accessibility	No experience (student).	
Spatial/Physical Accessibility in the work place		
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the work place and accessible material		
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the	Accessibility level depends on the country. In Italy, it's not always good (e.g., a ramp with a step in front of it); Austria and Germany are better.	

indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Historical buildings are more problematic.	
Accessibility in museum exhibits and works of art	Often, 30% of a museum is not accessible	He/she checks in advance.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services		
Accessibility in accommodation (hotel units, camps, camping)	Problems only in case of groups of people with wheelchairs.	
Accessibility in transportation	Trains in Italy are fine, but traveling from Italy to France in train is problematic. Traveling alone on Interrail would be a problem. He/she travels with friends. Paris public transportation is not very accessible. Planes are okay, airlines provide assistance, rest areas	He/she needs to plan in advance to get tickets and request assistance.

	in airports; he/she can travel alone.	
Accessibility in sports & recreational facilities	He/she practices sports: paracycling, gym, basketball. Wheelchair sports are great for meeting other people with disabilities (but it's difficult to move in a group due to hotel and facility limitations). His/her gym accessible with an old stairlift, but the staff helps: discomfort in new places.	
Accessibility at beaches	Beaches require a walkway to the sea, and there are only a few or poorly maintained ones; it's one of the places where he/she feels most uncomfortable and not independent. Liguria: few accessible beaches; in Calabria, all beaches are accessible.	Thicker wheels, someone carrying (but still uncomfortable).
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Cinemas are okay, theaters less so (small reserved area, often with limited view).	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the	To exit the university dormitory, an elevator is	

evacuation and security systems in case of fire, earthquake, etc.)	needed; in case of emergency, he/she would have to wait for help or be carried out. Being shorter than others (on a wheelchair), people don't see you, so there's a risk in tight spaces.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	No problems.	
Accessibility of emergency information (Multiple channels)	No problems.	

Italy – Mild intellectual disability, no 1

Demographic data

1. **Gender:** Female

2. **The place (country) of residence:** Italy

3. **The type of your disability** (official clinical diagnosis): Cognitive developmental deficit

4. **Level of intelligence** IQ: 70-85

5. **Other difficulties/disabilities** (difficulties in hearing, vision, movement etc): difficulties in vision

6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Tertiary level of education

7. **Do you use assistive technology?** Yes

8. **If yes, which means of assistive technology?** Screenreader

Do you find it difficult communicating with others? Sometimes

10. **Do you leave alone?** No, I leave with my parents

11. **You move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant

12. **How often do you move alone?** Sometimes

13. **Do you use a personal computer?** Yes

14. **If yes, how often do you use a PC?** More than 1 hour a day

15. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)**

a. Text

X Visual

X Audio

d. Audio-visual (e.g., video)

16. **Do you use any kind of accessible educational material?** No

17. **If yes, what kind of it?**

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	No problems	
Mobility with the means of transportation	No problems	
Communication with and services of the public and private sectors	Sometimes I have trouble understanding what others are saying	My parents help me
Web Accessibility	Sometimes I have trouble understanding the navigation of a site	My parents help me

Digital accessible transformation		
E-commerce	I often can't buy things online	It would be useful to have easier procedures
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Sometimes I have trouble understanding the meaning of a document	It would be useful to have more understandable documents
Digital customer communication	Sometimes I have trouble understanding what others are saying	My parents help me
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Sometimes I have trouble counting money	My parents help me
Digital libraries and repositories	No problems	
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	I have difficulty if I can't enlarge the screen	I use the screenreader
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and	No problems	

post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	I have difficulty understanding written texts	I use the screenreader
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	I have difficulty understanding written texts	I use the screenreader
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	No problems	
Accessibility in distance education/online learning	I have trouble understanding what people are saying	Clear and simple language
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	No problems	
Accessible Services in the workplace (e.g.	No problems	

hiring processes, communication with different sectors)		
In-service training and career up-skilling	No problems	
Assistive Technology in the workplace and accessible material	No problems	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)	No problems	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	No problems	
Accessibility to museum exhibits and works of art	No problems	

<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	No problems	
Accessibility to accommodation (hotel units, camps, camping)	No problems	
Accessibility in transportation	No problems	
Accessibility in sports & recreational facilities	No problems	
Accessibility at beaches	No problems	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	No problems	
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	No problems	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	No problems	
Accessibility of emergency information (Multiple channels)	No problems	

Italy – Mild intellectual disability, no 2

Demographic data

1. **Gender:** Male

2. **The place (country) of residence:** Italy

3. **The type of your disability** (official clinical diagnosis): Cognitive developmental deficit

4. **Level of intelligence** IQ: 70-85

5. **Other difficulties/disabilities** (difficulties in hearing, vision, movement etc): difficulties in vision

6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Tertiary level of education

7. **Do you use assistive technology?** Yes

8. **If yes, which means of assistive technology?** Screenreader

Do you find it difficult communicating with others? Sometimes

10. **Do you leave alone?** No, I leave with my family (wife and sons)

11. **You move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant

12. **How often do you move alone?** Sometimes

13. **Do you use a personal computer?** Yes

14. **If yes, how often do you use a PC?** More than 1 hour a day

15. **What kind of educational material is more suitable for you? (you can choose more than one answers)**

a. Text

X Visual

X Audio

d. Audio-visual (e.g., video)

16. **Do you use any kind of accessible educational material?** No

18. **If yes, what kind of it?**

Accessibility	Area		
- Sub-areas		Problems/difficulties	Solutions

Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	No problems	
Mobility with the means of transportation	No problems	
Communication with and services of the public and private sectors	No problems	
Web Accessibility	Sometimes I have trouble understanding the navigation of a site	
Digital accessible transformation		
E-commerce	I often can't buy things online	It would be useful to have easier procedures
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Sometimes I have trouble understanding the meaning of a document	It would be useful to have more understandable documents
Digital customer communication	Sometimes I have trouble understanding what others are saying	I can use the screenreader
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Sometimes I have trouble counting money	My parents help me

Digital libraries and repositories	No problems	
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	No problems	
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	No problems	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	I have difficulty understanding written texts	I can use the screenreader
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	I have difficulty understanding written texts	I can use the screenreader
Accessibility in courses – modifications in teaching	No problems	

practices and tools (devices, software/apps)		
Accessibility in distance education/online learning	I have trouble understanding what people are saying	Clear and simple language
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	No problems	
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	No problems	
In-service training and career up-skilling	No problems	
Assistive Technology in the workplace and accessible material	No problems	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance	No problems	

towards the main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	No problems	
Accessibility to museum exhibits and works of art	No problems	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	No problems	
Accessibility to accommodation (hotel units, camps, camping)	No problems	
Accessibility in transportation	No problems	
Accessibility in sports & recreational facilities	No problems	
Accessibility at beaches	No problems	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	No problems	

Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	No problems	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	No problems	
Accessibility of emergency information (Multiple channels)	No problems	

Italy – High functioning Asperger’s syndrome, no 1

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Italy
3. **The type of your disability and the cause of it** (official clinical diagnosis): Autism Spectrum Disorder Level 1, without cognitive impairment
4. **Level of intelligence** d. IQ>85
5. **Other difficulties/disabilities:** None
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): B.S. in Media Engineering
7. **Do you use assistive technology?** No
8. **If yes, which means of assistive technology?** None
9. **Do you find it difficult communicating with others?** Few times
10. **Do you use any kind of communication aid?** No
11. **If yes, which one?** None
12. **Do you leave alone?** No

13. **You move alone or with the help of an attendant?** Alone
14. **How often do you move alone?** Always
15. **Do you use a personal computer?** Yes
16. **If yes, how often do you use a PC?** More than 1 hour a day
17. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)**
- a. Text
 - d. Audio-visual (e.g., video) – classroom are very noisy, video-lectures are better
18. **Do you use any kind of accessible educational material?** No
19. **If yes, what kind of it?** None

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces		Very sensory-sensitive, most places lack decompression spaces. Noisy ventilation systems are unbearable. Cannot stay in places with neon lights, flickering, and noise (e.g., hospitals, bowling alley).	Uses headphones and sunglasses. Uses small earbuds in situations where headphones can't be used, e.g., at work.
Mobility with the means of transportation			
Communication with and services of the public and private sectors			
Web accessibility		No problems	

Digital accessible transformation		
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Everything that is digitized is fine. Anything that is not digitized is an issue; the person is too fast for it.	
Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	Problem: aggressive notifications (email, etc.) are distracting.	Customize the level of notifications, with the ability to filter them.
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and	As a student without a special needs certification (one and a half years): could not access study rooms due to	

post-secondary education including tertiary)	neurological problems, 17 exam failures. After a special needs certification: much better experience. Classrooms: video projection and microphone are important, need for electrical outlets, necessity to sit in the front row. Bullying episodes by classmates (because she asks many questions during lectures).	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Too much theory in courses, need to show more examples	Virtual reality closely matches how his/her mental structure works, (high spatial perception). Research on how to teach abstract concepts with VR and gamification.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Interaction with the special needs office very useful and helpful.	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)		

Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place	Works as a freelancer. Accessibility depending on the workplace (had bad and good experience). Needs a quiet work place: no calls Terrible work experience in Saudi Arabia.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	Interaction with clients is easy when in a suitable environment (no crowded places, no misogyny).	
In-service training and career up-skilling	Self-training, no safety training.	
Assistive Technology in the work place and accessible material		
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries,	No major issues, except in chaotic environments. Uses headphones.	A multisensory museum would be great.

archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	Prefers audiovisual and interactive content (not interested in text). Audio guides work very well.	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	Online booking platforms are very good.	
Accessibility in accommodation (hotel units, camps, camping)	Noise issues (in hotel rooms, ships). No problems in camping.	
Accessibility in transportation	On planes, there is not a quiet zone (it is very stressful). He/she avoids long trips or changes (moving from place to place is stressful). Quiet zones in airports are an excellent solution. There are no earphones in vending machines.	Headphones used in construction sites, blankets.

Accessibility in sports & recreational facilities	In the gym he/she always wears headphones, and if it's crowded it's a problem. Needs to wash often, paranoia issues.	
Accessibility at beaches	Avoids going to the beach in August, chooses uncrowded places. Bothered by saltwater.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Cinema is a problem, had issues with overstimulation.	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	Good listening skills, knows how to react in emergency situations.	Graphical to-do list to follow in case of emergency
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)	If a safety alarm goes on, it takes hours to recover.	

Italy – High functioning Asperger's syndrome, no 2

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Italy
3. **The type of your disability and the cause of it** (official clinical diagnosis): Autism Spectrum Disorder Level 1 (DSM-5; Asperger's Syndrome DSM-IV-TR)
4. **Level of intelligence** IQ>85
5. **Other difficulties/disabilities:** None
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): B.S. in Architecture
7. **Do you use assistive technology?** No
8. **If yes, which means of assistive technology?** None
9. **Do you find it difficult communicating with others?** Sometimes
10. **Do you use any kind of communication aid?** No
11. **If yes, which one?** None
12. **Do you leave alone?** No
13. **You move alone or with the help of an attendant?** Alone
14. **How often do you move alone?** Always
15. **Do you use a personal computer?** Yes
16. **If yes, how often do you use a PC?** More than 1 hour a day
17. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)** Audio – records everything
18. **Do you use any kind of accessible educational material?** No
20. **If yes, what kind of it?** None

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces		No problems.	
Mobility with the means of transportation		Metro is efficient.	

	Issues with paying for parking when driving.	
Communication with and services of the public and private sectors		
Web accessibility		
Digital accessible transformation	Positive about everything that can be done online. Technology is okay if it speeds up processes rather than just replacing them.	
E-commerce	Okay with mobile payments. Prefers to go to shops so he/she doesn't have to wait for things to be delivered.	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	Finds using SPID (Public Digital Identity System) complicated. Finds it easier to use services in person rather than online.	
Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		

Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)		
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Never had accessibility issues with spaces, easy to orient himself/herself. Always attends in-person classes, no problem.	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	He/she has a tutor. Prefers to use books rather than slides (too confusing) or others' notes (difficult to read). Listens audio from self-recorded lectures. Takes notes on a PC. Video lectures are redundant compared to audio lectures, unless there are many images. Finds slides difficult to understand (they result from the professor's mental processing, which is different from his/her).	
Accessibility in services provided by the educational units (e.g.	Can't find information on the university's website.	

communication with the administrative services, announcements by the teaching and the administrative staff)	The Teaching Portal is very well done, notifications are good. Okay with communication with the administration, including the ticketing service.	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Course descriptions are too verbose. More difficult to understand the course program and exam methods than following the course or learning: hard to grasp, needs to interact verbally with people. He/she is very shy, asks questions privately after class: no problems with professors.	
Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the work place		
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)		

In-service training and career up-skilling	Internship experience: difficult communication. He/she needs clear communication.	
Assistive Technology in the work place and accessible material		
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art	Audio-guides are okay if there's a fixed path. Doesn't like QR codes. When he leaves home, he doesn't want to look at his phone anymore: small screen.	

<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services		
Accessibility in accommodation (hotel units, camps, camping)	No issues.	
Accessibility in transportation	No issues, except for air travel (he needs help).	
Accessibility in sports & recreational facilities		
Accessibility at beaches		
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Okay with cinema.	
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	No direct experience. Thinks he would manage, no problem with maps.	

Accessibility of emergency information (Multiple channels)		

Italy – Older people, no 1

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Italy
3. **Do you face any kind of difficulties/disabilities:** Visual, hearing
4. **Do you face any kind of other difficulties/disabilities:**
5. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): master degree
6. **Do you use assistive technology?** No
7. **If yes, which means of assistive technology?**
8. **Do you leave alone?** No, I live with my wife
9. **You move alone or with the help of an attendant?** Alone
10. **How often do you move alone?** Most of the time
11. **Do you use a personal computer?** Yes
12. **If yes, how often do you use a PC?** More than 1 hour a day

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	No problems	
Mobility with the means of transportation	No problems	

Communication with and services of the public and private sectors	No problems	
Web Accessibility	I have difficulty if I can't enlarge the screen	I can use video magnifiers or magnifying glasses
Digital accessible transformation		
E-commerce	No problems	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	No problems	
Digital customer communication	No problems	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	No problems	
Digital libraries and repositories	No problems	
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	I have difficulty if I can't enlarge the screen	I can use video magnifiers or magnifying glasses
Educational Accessibility		

Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	No problems	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	No problems	
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	I have difficulty if I can't enlarge the screen	I can use video magnifiers or magnifying glasses
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	No problems	
Accessibility in distance education/online learning	YES	Need for software tools used for distance learning to be accessible
Employment Accessibility		

Spatial/Physical Accessibility in the Workplace	No problems	
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	I have difficulty if I can't enlarge the screen	I can use video magnifiers or magnifying glasses
In-service training and career up-skilling	No problems	
Assistive Technology in the workplace and accessible material	No problems	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)	No problems	
Accessibility in cultural heritage sites/environments	I have difficulty if I can't enlarge the screen	I can use video magnifiers or magnifying glasses

(museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility to museum exhibits and works of art	No problems	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	No problems	
Accessibility to accommodation (hotel units, camps, camping)	No problems	
Accessibility in transportation	No problems	
Accessibility in sports & recreational facilities	No problems	
Accessibility at beaches	No problems	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	No problems	
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security	No problems	

systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	No problems	
Accessibility of emergency information (Multiple channels)	No problems	

5.7. Summary of interviews from Spain - List of accessibility problem areas and solutions

a. Core accessibility

Physical/Spatial accessibility of indoor and outdoor spaces

- **Problems/Difficulties:**

- Insufficient Visual Signage: Lack of visual signage on how to navigate sites.
- Frequent Breakdowns: Accessibility features like escalators and lifts frequently break down.
- Steep Stairs: Steep stairs pose a problem, especially in crowded areas.
- Dangerous Configurations: Stair-mounting platforms are often installed in dangerous configurations.
- Weight Capacity Issues: Some ramp platforms do not support the weight of electric wheelchairs.
- Lack of Benches: Absence of benches for resting, especially in areas with many slopes.
- Crowded Spaces: Difficulty maintaining stability in crowded spaces.
- Inaccessible Underground Areas: Certain underground areas, like ruins, are not accessible.
- Inadequate Adaptations in Hotels: Many hotels have inadequate adaptations, such as inaccessible bathrooms and doors.
- Old Buildings: Churches and other old buildings have serious accessibility problems.
- Inaccessible Public Housing: Public housing is not accessible to those who already own a house.
- Maintenance Issues: Poor maintenance of ramps, vehicles, elevators, and escalators.

- **Solutions:**

- Improved Signage: Install more visual signs to aid navigation.
- Frequent Maintenance: Regular maintenance of escalators and lifts.

- Handrails and Lifts: Install more handrails and lifts to assist with steep stairs.
- Consultation with Disabled Persons: Seek consultancy from disabled persons when making adaptations to avoid wrong or dangerous modifications.
- Stronger Ramp Platforms: Ensure ramp platforms can support the weight of electric wheelchairs.
- Benches for Resting: Add benches in areas with many slopes for resting.
- Safety Elements in Facilities: Integrate safety elements in facilities for people with reduced mobility.
- Accessible Underground Areas: Consider adding ramps or other solutions to make underground areas accessible.
- Hotel Adaptations: Ensure hotel adaptations include accessible bathrooms and doors.
- Creative Solutions for Old Buildings: Use imaginative solutions to ensure accessibility without spoiling the environment or architecture.
- Accessible Public Housing: Make public housing accessible to those who already own a house.
- Regular Maintenance: Ensure regular maintenance of accessibility features like ramps, vehicles, elevators, and escalators.

Mobility with means of transportation

- **Problems/Difficulties:**

- Frequent Breakdowns: Accessibility features like escalators and lifts frequently break down, slowing down mobility.
- Audible Signals: The audible signals of the metro are announced very close to the arrival of the metro, not giving enough time to react.
- Safety in Crowded Metro: In the metro, safety is a concern due to the lack of safety facilities, especially when it is crowded.
- Standing on Escalators: In the Madrid metro, people are encouraged to stand on the right side of the escalators, which does not consider those with limited strength on the left side.
- Lack of Elevators: Not all stations have elevators, which is essential for those with leg difficulties.

- Adapted Taxis: There are too few adapted taxis (eurotaxis) where one can climb from the back with a wheelchair.
- Information Accessibility: Difficulty in getting information from signs and panels, such as at bus stations.
- Next Stop Information: Difficulty knowing the next stop or where the call button is to get out at the next station.
- Air Travel Policies: Lack of common policies among airlines regarding access times to check-in and boarding, and the adaptation of wheelchairs to company regulations.
- Bus Ramps: Bus ramps for wheelchairs often do not work.
- Equilibrium Problems: Some individuals experience equilibrium problems on buses.
- Accessible Seats in Trains: The number of accessible seats in trains is too limited compared to the growing number of persons with reduced mobility.

- **Solutions:**

- Frequent Maintenance: Regular maintenance of escalators and lifts to ensure they are operational.
- Improved Audible Signals: Announce metro arrivals earlier to give enough time to react.
- Safety Elements in Facilities: Integrate safety elements in metro facilities to provide safety for people with reduced mobility.
- Awareness for Standing on Escalators: Raise awareness that people can stand on the stairs in a place that guarantees their safety.
- Install More Elevators: Ensure all stations have elevators to assist those with leg difficulties.
- Increase Adapted Taxis: Increase the number of adapted taxis (eurotaxis) available.
- Clear Information on Signs: Improve the clarity of information on signs and panels at bus stations.
- Frequent Announcements: Make clearer auditory announcements for the next station, but some minutes in advance.

- Unified Air Travel Policies: Establish common policies among airlines regarding access times to check-in and boarding, and ensure wheelchairs are adapted to company regulations.
- Functional Bus Ramps: Ensure bus ramps for wheelchairs are functional.
- Equilibrium Support: Provide support for individuals with equilibrium problems on buses.
- Increase Accessible Seats in Trains: Increase the number of accessible seats in trains to meet the growing demand.

Communication with public and private sectors

• Problems/Difficulties:

- Dependence on Parents: Some individuals have always dealt with communication issues with the help of their parents.
- Misunderstanding Disabilities: People with disabilities are often misunderstood, being considered “distracted” or unwilling to listen.
- Hospital Communication: In hospitals, patients may miss their turn because they cannot hear loudspeaker announcements.
- Need for Assistance: Some individuals need their spouse or another person to help with communication, such as at the doctor’s office.
- Difficulty in Telephone Communication: Individuals with disabilities may have difficulty being understood over the phone.
- Lack of Personal Attention: In private management, there is often no personal attention for employees, and extended opening hours are needed.
- Crowded Public Transport: Difficulty interacting with people in crowded public transport, such as asking for a seat or space to hold onto poles.
- Web Accessibility: Many barriers exist, such as small font sizes and poor screen contrast, making it difficult to access information online.
- Timed Interactions: Institutions often time interactions, making it difficult for individuals to type responses on their phones.
- Lack of Accessible Signage: Insufficient visual signage and audio aids in public spaces.

• Solutions:

- Easier Language: Use simpler language to make communication easier.
- Visual Signs: Add more visual signs to aid understanding.
- Face-to-Face Assistance: Provide face-to-face assistance to make communication easier.
- Alternative Media: Use alternative media such as video conferencing and other computer applications.
- Extended Opening Hours: Extend opening hours to provide more personal attention in private management.
- Clearer Web Design: Improve web accessibility by increasing font sizes and enhancing screen contrast.
- Clear and Concise Information: Provide clear and concise information on services, especially in tourist services.
- Accessible Signage: Install more visual and audio signage in public spaces to facilitate navigation and understanding.
- Support for Timed Interactions: Allow more time for interactions with institutions, especially when using digital communication methods.

Web accessibility

- **Problems/Difficulties:**

- Inaccessible Web Pages: Many web pages are not accessible.
- Small Font Sizes: Font sizes on many websites are still very small.
- Poor Screen Contrast: Insufficient visual contrast on screens.
- Expensive Assistive Tools: Magnifying glasses and other assistive tools are quite expensive.
- Difficulty Blocking Inappropriate Content: Difficulty blocking inappropriate content on computers, such as dating or erotic pages.
- Lack of Subtitles: Regular TV does not have subtitles, and subtitles in movies and TV are sometimes missing.
- Difficulty with New Apps: New apps and app-based accessible solutions are difficult to use for elderly persons.
- Unnecessary Aids: The market tends to sell many aids that are not really needed.

- Orientation Issues: Difficulty knowing what to do and getting oriented online.
- Reliance on Helpers: Need to rely a lot on helpers, caregivers, friends, and family to teach how to use devices and support when they don't work.
- **Solutions:**
 - Braille and Screen Readers: Use of Braille bars and screen readers on PC/Laptop (JAWS) and VoiceOver on iOS phones.
 - Audio Support: Audio helps in understanding and maintaining attention.
 - Improved Web Design: Increase font sizes and enhance screen contrast.
 - Blocking Tools: Develop better tools to block inappropriate content on computers.
 - Subtitles: Ensure regular TV and movies have subtitles.
 - Simplified Apps: Create simpler, more user-friendly apps for elderly persons.
 - Clear Guidance: Provide clear guidance and support for using new technologies.
 - Accessible E-books: Increase the availability of e-books and e-book readers.
 - Plain Language: Use plain language to make web content more accessible.
 - Visual and Audio Support: Use videos and visual support to aid understanding.

b. Digital accessible transformation

Digital documents

- **Problems/Difficulties:**
 - Conversion for Accessibility: Books had to be converted into PDF format to use screen readers or Braille.
 - Lack of Adaptations: There is a need to increase the integration of persons with disabilities and recognize that they all require adaptations.
 - Difficulty with Paper Documents: Many documents are still on paper, making them inaccessible for those who rely on digital formats.

- Understanding Forms: Difficulty in understanding and filling out forms without assistance.
- Non-Intuitive Programs: Programs used for work are not very intuitive, requiring frequent resets or help.
- Voice Recognition Issues: Assistive digital voice systems do not recognize certain voices, making them unusable for some individuals.

- **Solutions:**

- Screen Readers and Braille: Use screen readers and Braille lines to make digital documents accessible.
- Adaptations for Disabilities: Increase the integration of persons with disabilities and ensure all necessary adaptations are made.
- Digital Conversion: Convert paper documents into digital formats to make them accessible.
- Simplified Forms: Create easy-to-understand and fill-out forms with clear instructions.
- Intuitive Programs: Develop more intuitive programs and provide training to use them effectively.
- Voice System Improvements: Improve voice recognition systems to accommodate a wider range of voices.

Digital services

- **Problems/Difficulties:**

- Difficulty with Digital Customer Communication: Some individuals do not use digital customer communication services.
- Preference for In-Person Banking: Preference for visiting the bank in person rather than using digital banking services.
- Difficulty Using New Apps: New apps and app-based accessible solutions are difficult to use for elderly persons.
- Unnecessary Aids: The market tends to sell many aids that are not really needed.
- Orientation Issues: Difficulty knowing what to do and getting oriented online.

- Reliance on Helpers: Need to rely a lot on helpers, caregivers, friends, and family to teach how to use devices and support when they don't work.
- Voice Recognition Issues: digital assistive voice systems do not recognize certain voices, making them unusable for some individuals.
- Difficulty with Digital Forms: Difficulty in understanding and filling out digital forms without assistance.
- Timed Interactions: Institutions often time interactions, making it difficult for individuals to type responses on their phones.
- Entrance Barriers: Entrance doors to banks can be obstacles for wheelchair users.

- **Solutions:**

- Simplified Apps: Create simpler, more user-friendly apps for elderly persons.
- Clear Guidance and Support: Provide clear guidance and support for using new technologies.
- Accessible E-books: Increase the availability of e-books and e-book readers.
- Voice System Improvements: Improve voice recognition systems to accommodate a wider range of voices.
- Simplified Forms: Create easy-to-understand and fill-out forms with clear instructions.
- Support for Timed Interactions: Allow more time for interactions with institutions, especially when using digital communication methods.
- Automatic Doors: Install automatic doors for bank entrances to facilitate access for wheelchair users.

E-commerce

- **Problems/Difficulties:**

- Lack of Confidence in E-commerce: Some individuals do not trust e-commerce and prefer traditional shopping methods, especially those who are old-fashioned and prefer to go to physical stores

- Many web pages are not accessible, which can hinder the e-commerce experience for individuals with disabilities.
- The letters on many e-commerce websites are so small that it is difficult for some users to read them, making the process lengthy and challenging.

- **Solutions:**

- Explain the safe steps to follow for e-commerce, ensuring that websites are secure and protected against external attacks.
- Verify that e-commerce websites are authorized and certified, ensuring they are secure against identity theft and financial fraud.
- Increase font sizes on e-commerce websites to make them more readable.
- Enhance the accessibility of e-commerce web pages to ensure they are usable by individuals with disabilities.
-

Digital customer communication

This sections problem areas and solutions overlaps and are covered in **Communication with public and private sectors.**

Digital banking and payment

- **Problems/Difficulties:**

- High ATMs: Some ATMs are too high for wheelchair users.
- Preference for In-Person Banking: Some individuals prefer to visit the bank in person rather than using digital banking services.
- Entrance Barriers: Entrance doors to banks can be obstacles for wheelchair users.
- Lack of Understanding: Some individuals are not very fluent in digital banking and rely on others to inform them about their accounts.
- Complexity of Digital Procedures: Digital banking procedures can be complex, leading to a preference for in-person services or paper forms.

- **Solutions:**

- Lower ATMs: Ensure ATMs are at a height accessible to wheelchair users.
- Automatic Doors: Install automatic doors for bank entrances to facilitate access for wheelchair users.
- Simplified Digital Procedures: Simplify digital banking procedures to make them more user-friendly.
- In-Person Service Options: Provide the option for in-person services or paper forms for those who find digital procedures too complex.
- Improved Accessibility: Consider making digital banking more accessible for people with disabilities, such as those with visual impairments.

c. Educational accessibility

Spatial accessibility in educational units

- **Problems/Difficulties:**

- Lack of Elevators: Not all schools have elevators, which is essential for individuals with difficulty in walking.
- Crowded Spaces: Crowded spaces can make it difficult for individuals with balance or stability issues to navigate.
- Insufficient Visual Signage: There is insufficient visual signage on how to get around educational sites.
- Lack of Consideration for Cognitive and Sensory Disabilities: Cognitive and sensory disabilities are not yet fully considered in educational units.
- Architectural Barriers: Some progress has been made, but architectural barriers still exist.

- **Solutions:**

- Install Elevators and Handrails: Ensure that all educational units have elevators and handrails to aid individuals with mobility issues.
- Improve Visual Signage: Increase the number of signs to help individuals navigate educational sites more easily.

- Extend Arrival Margins: Extend the arrival margin to allow individuals with reduced mobility more time to navigate spaces.
- Consult with Disabled Persons: When making adaptations, always seek consultancy from disabled persons to avoid insufficient or dangerous modifications.

Accessibility in services provided by educational units:

- **Problems/Difficulties:**

- Lack of Accessible Training Courses: After a certain age, there are no training courses available for individuals with disabilities.
- No Accommodations for Disabilities: Educational institutions often do not make accommodations for students with disabilities, even when they have a disability certificate.
- Lack of Accessible Communication: Communication with administrative services and announcements by teaching and administrative staff are not always accessible.
- No Accessible Means for Hearing Impairments: Schools are not prepared to follow deaf students, and there are no accessible means for people with hearing impairments.
- Lack of Training for Teachers: Teachers often do not understand the needs of students with disabilities and are not trained to provide the necessary support.
- No Curricular Adaptations: Curricular adaptations are not allowed or provided to meet the specific needs of students with disabilities.

- **Solutions:**

- Offer Accessible Training Courses: Ensure that training courses are available and accessible to individuals with disabilities, regardless of age.
- Increase Teacher Awareness: Invest in teacher awareness and training to better support students with disabilities.
- Provide Accessible Training: Ensure that accessible training programs are available and that they meet the specific needs of individuals with disabilities.

- Make Accommodations for Disabilities: Educational institutions should make necessary accommodations for students with disabilities, including extended time for exams and other supports.
- Improve Communication Accessibility: Enhance the accessibility of communication with administrative services and announcements by teaching and administrative staff.
- Prepare Schools for Hearing Impairments: Schools should be equipped to follow and support deaf students, including providing accessible means for communication.
- Train Teachers: Invest in training for teachers to understand and support the needs of students with disabilities.
- Allow Curricular Adaptations: Adapt curricula to meet the specific needs of students with disabilities.

Accessibility in educational material

- **Problems/Difficulties:**

- Lack of Accessible Educational Material: Educational materials are not always provided in accessible formats, such as easy-to-read formats or with necessary adaptations.
- Lack of Motivating Content: The contents could be more motivating to keep the attention of students.
- Lack of Illustrative Examples: There is a need for more illustrative examples, especially those representing people with disabilities.
- Difficulty in Taking Notes: Students with hearing impairments have difficulty taking notes in time and miss many sentences from the teacher.
- No Accessible Formats: Educational materials are not always provided in accessible formats, such as easy-to-read formats or with necessary adaptations.
- Lack of Visual Material: There is a need for more visual material to aid understanding.
- Conversion of Books: Students had to convert books into PDF to use screen readers or Braille.

- No Permission to Record Lectures: Students were not given permission to record lectures, which would have provided better access to information.
- Reliance on Friends for Notes: Students with hearing impairments had to rely on friends to get notes.

- **Solutions:**

- Motivating Content: Create content that is more motivating to keep students' attention.
- Add Illustrative Examples: Include more illustrative examples in educational materials, especially those representing people with disabilities.
- Provide Accessible Formats: Ensure that educational materials are available in accessible formats, such as easy-to-read formats and with necessary adaptations.
- Use Visual Material: Incorporate more visual material to aid understanding.
- Permission to Record Lectures: Allow students to record lectures to provide better access to information.
- Provide Notes: Teachers should provide lecture notes or ask students to hand over their notes for photocopying.
- Use Assistive Technology: Use recorders, videos, tablets, and computers to make educational materials more accessible.
- Transcribe Books into Audio: Organizations like ONCE can transcribe university books into audio formats.

d. Employment accessibility

Spatial/Physical accessibility in the workplace

- **Problem areas:**

- Posture-Related Complications: Work would be complicated due to pain, especially because of posture issues.
- COVID Masks: COVID masks created a big issue because individuals with hearing impairments couldn't read lips.

- Lack of Empathy from Co-workers: Co-workers do not understand that they need to speak louder and articulate better to be understood.
- Colleagues do not empathize and do not make much effort to communicate effectively.
- Adaptation of Workplace and Bathroom: The workplace and bathroom had to be adapted to meet accessibility needs.

- **Solutions:**

- Adapt Workstations: Adapt the desk, chair, and workstation to meet the specific needs of individuals with disabilities.
- Improve Communication: Train co-workers to understand the communication needs of colleagues with hearing impairments and encourage empathy and effort in communication.
- Adapt Bathrooms: Ensure that bathrooms in the workplace are adapted to meet accessibility needs.
- Awareness and Training: Conduct training sessions to inform co-workers on how to deal and collaborate with colleagues with disabilities.

Assistive technology in the workplace

- **Problems areas:**

- High Cost of Hearing Aids: Hearing aids are extremely expensive, making them inaccessible for some individuals.
- Lack of Intuitive Programs: Programs and software used for work are not very intuitive, requiring individuals to reset or ask for help frequently.
- Difficulty with PowerPoint Materials: PowerPoint materials are difficult or impossible to render vocally for visually impaired individuals.
- Documents Still on Paper: Many documents are still on paper, which poses a challenge for visually impaired individuals.
- Voice Recognition Issues: some systems do not recognize the voices of some individuals, making them unusable.

Solutions:

- Financial Support for Hearing Aids: Offer financial support or subsidies to make hearing aids more affordable.
- Training and Support for Programs: Provide training and support to help individuals use work programs and software more effectively.
- Digital Conversion of Documents: Convert paper documents to digital formats to make them accessible for visually impaired individuals.
- Improve Voice Recognition Systems: Enhance voice recognition systems to better recognize and respond to the voices of individuals with disabilities.
- Clear Explanation of Functions: Ensure that the functions of assistive technology are explained clearly and that individuals understand how to use them.

Accessible services in the workplace

- **Problems areas:**

- Preconceptions About Work Capabilities: There are preconceptions about the types of work a visually impaired person can do.
- Lack of Personal Attention in Private Management: In private management, there is no personal attention for employees, and it would be necessary to extend the opening hours to the public.
- Difficulty in Online Communication: Online communication can be challenging, causing nervousness and difficulty in understanding the conversation.

- **Solutions:**

- Adaptation and Willingness: Both sides (employers and employees) should be willing to adapt and find suitable tasks that the person can perform.
- Use of Alternative Media: Use alternative media such as video conferencing and other computer applications to facilitate communication.
- Training and Awareness: Conduct training sessions to inform co-workers on how to deal and collaborate with colleagues with disabilities, encouraging empathy and effective communication.

- Clear Explanation of Information: Explain information and responsibilities very well, several times, and in written form to ensure understanding.

e. Tourism and recreation accessibility

Accessibility in sports & recreational facilities

- **Problems/Difficulties:**

- Lack of Adaptation in Facilities: Very few sports and recreational facilities are adapted for people with disabilities.
- Overcrowding at Festivals: It is often difficult at festivals due to overcrowding.
- Lack of Rest Areas at Festivals: When individuals get tired, there are few rest areas available.
- Placement of Reduced Mobility Individuals in Stadiums: In stadiums, people with reduced mobility are often put in a corner where they cannot see the show.

- **Solutions:**

- Fitting Handrails: Install handrails in sports and recreational facilities to improve accessibility.
- Create Areas at Festivals for People with Reduced Mobility: Create designated areas at festivals for people with reduced mobility to ensure they have a good view and access to rest areas.
- Improve Quality of Existing Areas: Enhance the quality of existing areas for people with reduced mobility at festivals to ensure they are of high quality and meet their needs.

Accessibility in tourism services

- **Problems areas:**

- General Poor Accessibility: In general, accessibility in Spain for touristic venues of all kinds is very poor.
- Lack of Adapted Public Toilets: There is a lack of adapted public toilets in cities.

- Inaccessible Touristic Sites: Many touristic sites were found to be inaccessible for people with reduced mobility.
- Difficulty in Buying Tickets Online: In some cases, tickets for disabled persons must be bought at the counter and cannot be bought online.
- Lack of Information on Accessibility: It is not easy to understand the degree of accessibility of the service without sufficient information.
- Interaction Challenges: On a personal level, the interaction person-to-person can be difficult because it is not easy to understand the individual's voice.

- **Solutions:**

- Provide Clear and Concise Information: Clear and concise information on tourist services should be provided.
- Add Extra Information Online: Adding extra information such as photos and specific information on accessibility in the web information provided for services.
- Raise Awareness Among Tourism Sector: Raise awareness of accessibility among tour operators, hotels, and the tourism sector.
- Improve Accessibility Information: Accessibility information for tourist areas can be made available online.
- Ensure Compliance with Regulations: Ensure that the private and public sector complies with accessibility regulations.
- Provide Recommendations Based on Experience: Travel agencies can recommend services based on years of experience from other clients who have done similar trips.

Accessibility in transportation for tourism

- **Problems areas:**

- Frequent Breakdowns of Elevators/Escalators: Many elevators and escalators are broken, making it difficult to move or plan routes.
- Lack of Common Policies in Air Travel: It is difficult for air travel not to have common policies in all airlines regarding access times to check-in and boarding.

- Inconsistent Wheelchair Regulations: Wheelchairs must be adapted to the company's regulations, not the other way around, leading to many claims for not allowing access to passengers with wheelchairs.
- Insufficient Accessible Seats in Trains: The number of accessible seats in trains is too limited compared to the growing number of persons with reduced mobility.
- Broken Bus Ramps: Bus ramps for wheelchairs often do not work.
- Lack of Adapted Taxis: There are too few adapted taxis (eurotaxis) where you can climb from the back with your wheelchair.
- Difficulty in Getting Information from Signs and Panels: It is difficult to get information from signs and panels, such as at a bus station.
- Announcements in Planes: Announcements in planes cannot be heard or understood.
- No Shuttles in Airports: In airports, there are no shuttles, and passengers arrive late at the gate due to slow movements or wheelchair paths.
- Digital Taxi Applications: A digital application for ordering a taxi does not have the option for ordering an adapted car.

- **Solutions:**

- Frequent Maintenance: Frequent maintenance of escalators and lifts to ensure they are operational.
- Clear and Agreed Information for Air Travel: Clear and agreed information about the requirements of the seats for flights should be provided by the companies, not depending on the arbitrariness of the commander.
- Increase Accessible Seats in Trains: Increase the number of accessible seats in trains to accommodate the growing number of persons with reduced mobility.
- Improve Bus Ramp Functionality: Ensure bus ramps for wheelchairs are functional and well-maintained.
- Increase Adapted Taxis: Increase the number of adapted taxis (eurotaxis) available.
- Improve Signage and Information Panels: Improve the clarity and accessibility of information from signs and panels at transportation hubs.

- Improve Plane Announcements: Make clearer auditory announcements for the next station or stop, but some minutes in advance.
- Provide Airport Shuttles: Provide shuttles in airports to assist passengers with reduced mobility.
- Update Digital Taxi Applications: Update digital applications for ordering taxis to include options for adapted cars.

Events and shows

- **Problems/Difficulties:**

- Placement of Reduced Mobility Individuals in Stadiums: In stadiums, people with reduced mobility are often put in a corner where they cannot see the show.
- Overcrowding at Festivals: It is often difficult at festivals due to overcrowding.
- Lack of Rest Areas at Festivals: When individuals get tired, there are few rest areas available.
- Accessibility in Nightclubs and Restaurants: Many nightclubs and restaurants with shows do not comply with accessibility regulations, making it difficult for people with disabilities to access these venues.
- Accessible Seating in Theaters and Cinemas: In theaters, the accessible sites are often in aisles, separated from their peers.
- In cinemas, accessible seating is often placed at the front, which may not be the preferred location for viewing.
- Auditory Accessibility in Theaters and Cinemas: Regular TV and movies often lack subtitles, making it difficult for people with hearing impairments to follow along.
- In theaters and cinemas, there is often no accessibility for hearing the dialogues, requiring individuals to ask friends for explanations.

- **Solutions:**

- Create Areas at Festivals for People with Reduced Mobility: Create designated areas at festivals for people with reduced mobility to ensure they have a good view and access to rest areas.

- Improve Quality of Existing Areas: Enhance the quality of existing areas for people with reduced mobility at festivals to ensure they are of high quality and meet their needs.
- Compliance with Accessibility Regulations: Ensure that nightclubs and restaurants comply with accessibility regulations to make them accessible for people with disabilities.
- Better Placement of Accessible Seating: In theaters and cinemas, provide accessible seating options in various locations, not just at the front or in aisles, to allow individuals to choose their preferred viewing spot.
- Provide Subtitles and Auditory Support: Regular TV and movies should include subtitles to improve accessibility for people with hearing impairments.
- In theaters and cinemas, provide auditory support such as hearing loops or captioning devices to help individuals follow the dialogues.

f. Cultural heritage accessibility

- **Problems/Difficulties:**

- Some places, such as churches, are very old and have serious accessibility problems.
- Not many museums have elevators.
- In heritage sites, accessibility is not guaranteed due to other heritage laws that do not allow modifications.
- In some museums, there are no Braille signs for people with visual disabilities.
- Many museums do not have signs, labels, subtitles, or pictograms, making it difficult for people with disabilities to understand the exhibits.
- Wheelchair users are often put in places with bad visibility or poor sound quality.
- Some underground areas in cultural centers cannot be accessed due to the nature of the site (e.g., ruins).
- People with disabilities often have to go with a companion because they are not provided with personal assistants from the museum itself.

- Many descriptions in cultural sites cannot be read, requiring a friend or family member to assist.
- Audio guides can be very long and not always helpful.
- **Solutions:**
 - Install more elevators in museums and cultural heritage sites.
 - Ensure that accessibility regulations are complied with in cultural heritage sites.
 - Use virtual reality glasses to help people experience inaccessible areas.
 - Provide scaled models that can be touched for a better understanding of the exhibits.
 - Be more imaginative in solutions that ensure accessibility without spoiling the environment or architecture of the building.
 - Museums should provide personal assistants to guide disabled visitors, allowing them to enjoy the exhibits independently.
 - Use Braille signs and pictograms in museums to help people with visual disabilities.
 - Ensure that audio guides are concise and helpful.
 - Raise awareness and train the staff of cultural heritage sites to better assist visitors with disabilities.

g. Security and emergency situations

- **Problems/Difficulties:**
 - Evacuation plans do not differentiate between people with reduced mobility and people with disabilities.
 - In some places, there is no provision for how to get down the stairs in case of fire if you cannot use the lift.
 - Normally, exit signs or guiding lines are a visual-only signal, which is not helpful for everyone.
 - In Mexico, people with disabilities are told to stay until the last one by protocol so that others can leave first.
 - In some places, the public address system does not work well during emergencies.

- There are many messages given in many contexts (e.g., sports), but very few in emergency situations (e.g., a fire in a soccer game).
- There is a lack of regulation and awareness regarding the needs of people with disabilities in emergency situations.
- People are not very willing to open doors or assist in emergencies, making evacuations complicated.
- Teachers and staff often do not know what to do with cases involving disabilities.
- People are not aware of the options for evacuation in case of fire.
- Emergency information is not always provided through multiple channels.
- In Spain, there is no phone number provided for emergencies that people with disabilities can call.

- **Solutions:**

- Emergency plans should address the cases of persons with disabilities and persons with reduced mobility separately.
- Ensure that evacuation plans include provisions for getting down the stairs in case of fire if the lift cannot be used.
- Use multiple channels to provide emergency information, ensuring it is accessible to everyone.
- Provide clear and concise information on how to evacuate in case of fire, especially for people with mobility difficulties who cannot use the lift.
- Conduct education and awareness campaigns to ensure people grow up with an understanding of absolute inclusion.
- Train staff and people related to services on how to assist individuals with disabilities during emergencies.
- Invest in constant training of all situations with all kinds of disabled persons to ensure preparedness.
- Ensure that public address systems work well during emergencies.
- Provide emergency information through multiple channels to reach everyone.
- In the workplace, provide detailed explanations and templates on how to handle emergencies.

5.8. Interviews (Spain)

Spain – Specific learning disabilities no 1

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** España
3. **The type of learning disabilities** ADD.
4. **Do you face other difficulties apart from the SLD per se?**
Asperger's Syndrome
5. **The age of diagnosis of learning disabilities.** 40
6. **Age.** 42
7. **Educational level** (e.g., lower secondary school). Higher vocational training course.
8. **Do you use assistive technology?** No
9. **If yes, which means of assistive technology?** None
10. **What kind of educational material is more suitable for you? (*you can choose more than one answers*):** Audio-visual (e.g., video)
11. **Do you use any kind of accessible educational material?** No
12. **If yes, what kind of it?**

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces		No problems	Not applicable
Mobility with the means of transportation		No problems	Not applicable
Communication with and services of the public and private sectors		Maybe yes, probably yes. Because I've always dealt with these issues with my parents	I know there is, because there is a solution for everything, but right now I don't.

		Easier language make communication easier.
Web accessibility	No problem. He is concerned about the financial side of accessing the internet because he is not financially independent.	Videos and visual support
Digital accessible transformation		
E-commerce	E-commerce doesn't give me confidence. I'm not a fan of e-commerce, it's just that I'm old-fashioned, I like to go to stores and stuff. I would have to really need something that I might not be able to find here in town, to use e-commerce	Not applicable
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	No problem	Not applicable
Digital customer communication	I do not use it	Not applicable
Digital Banking (including ATMs/cash points and Interactive	I do have it, the thing is that as I told you I'm also kind of... I'm old-fashioned and I prefer to go to the office	

Teller Machines inside a bank)		
Digital libraries and repositories	I do not use it	
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	No problems, I use the mobile phone, then we also have digital TV	Not applicable
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	No problem	I do not use it
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	The contents could be more motivating to keep my attention.	I would need more illustrative examples and in those examples people with disabilities are represented.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the	Accessible material available. I think... it's not enough, but it covers the needs that they think are necessary to meet the	Maybe add more illustrative examples

teaching and the administrative staff)	objectives of the course we are taking. He has been offered job search services	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	I am the only boy in the class and... and, before I remember that in these courses, I was the quietest and now, I make jokes and they laugh at what I do... and so on... and that, with the course I am taking now I am calm, my classmates treat me well, the teacher too, with that	Maybe add more illustrative examples
Accessibility in distance education/online learning	No problems, but I found it cold because I'm used to doing it face-to-face, online when you're alone or in a room with other people and that, well, it seems to me like what I've told you, a bit cold, a bit boring. He does not have a computer suitable for accessing online training.	Maybe add more illustrative examples. Using the mobile phone
Employment Accessibility	Used a job placement agency for internship	
Spatial/Physical Accessibility in the work place	No problem	Not applicable

Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	It hasn't been difficult for me because I am registered with several job agencies and all that, if it's not in one, they send me offers in another. Online interviews make you nervous. In online communication he goes blank and finds it difficult to understand the conversation.	They should explain the information and responsibilities to me very well, several times, and in written form
In-service training and career up-skilling	Yes, continuous training is good	I would need job training aligned with the current offerings.
Assistive Technology in the work place and accessible material	He needs to have its functions explained clearly and be able to understand it.	Support person
Cultural Heritage Accessibility	No problems	
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	No problem	Maybe virtual reality glasses could help. Promoting playful activities in heritage is easier for him to understand.

Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	It is not interesting to him	
Accessibility in museum exhibits and works of art	It is not interesting to him	
<i>Tourism (including recreation and sports) Accessibility</i>	The more information he can access, the more interesting the tourist services are to him.	
Accessibility in tourism Services	The more information and explanations I have to use tourist services, the easier it is for me. I prefer to go to the travel agency because they can recommend me so much based on the years of experience, they have from other clients who have done the trip I want to do	The accessibility of services for people with disabilities should be improved. Clear and concise information on tourist services should be provided.
Accessibility in accommodation (hotel units, camps, camping)	very beautiful, but maybe they are not prepared for people with disabilities, especially for people with	Clearer and more specific information

	reduced mobility who use wheelchairs. it has actually been difficult for me to understand the instructions even though they were clear and simple	
Accessibility in transportation	No problems	Not applicable
Accessibility in sports & recreational facilities	No problem	Not applicable
Accessibility at beaches	No problem	Not applicable
Accessible shows (theaters, cinemas, concerts...) & accessible movies	It's not that I go very often. I would like to go more, especially to the cinema because there are certain movies, certain genres of movies that I do like, but between the fact that I'm bad at organizing myself, because I'm really bad at organizing my schedule and all that, and many times because I can't get together with friends or family...	The content has to motivate attention and use content that is easy to attend to.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security	In some places I try to know them, especially when I go out with friends for nightlife.	Not applicable

systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	they have explained it to me several times and all that, the thing is that... as you don't practice it in a way... you don't do drills or anything, so I'm afraid that the day something happens, there will be confusion in the groups, in the crowd of people, the exits will be blocked... and a misfortune will happen even knowing the... the protocol of... what to do	Not applicable
Accessibility of emergency information (Multiple channels)	We have never had to experience it as a drill, nor in real life.	Not applicable

Spain – Specific learning disabilities, no 2

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Spain
3. **The type of learning disabilities** Hyperactivity and attention deficit
4. **Do you face other difficulties apart from the SLD per se?** Social skills , Klinefelter syndrome.
5. **The age of diagnosis of learning disabilities.** 14 years old
6. **Age.** 39
7. **Educational level** (e.g., lower secondary school). Master's degree.
8. **Do you use assistive technology?** No
9. **If yes, which means of assistive technology?**

10. What kind of educational material is more suitable for you? (*you can choose more than one answers*): Visual

11. Do you use any kind of accessible educational material? No

12. If yes, what kind of it?

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	No problems	Visual and audio signals would facilitate their access.
Mobility with the means of transportation	No problems	Not applicable
Communication with and services of the public and private sectors	No problems	Not applicable
Web accessibility	No problems	Audio helps with understanding and attention retention
Digital accessible transformation		
E-commerce	No problems	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		

Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)		
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	No problems	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		

Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Personally, I have no problems	Programs adapted to people with disabilities and their specific needs.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Problems: The way of evaluation, the type of courses, the interaction you have with my classmates. The teachers have been unsympathetic in my school days. And... I suffered bullying for fourteen years in school. Now it is true that that has improved. That we are in a different time, okay? But in my time, which was thirty-something years ago, it was not even close to what it is now. And that has been something I have suffered a lot from. I have a master because I studied it in Switzerland. And Switzerland has nothing to do with us, with Spain. They are worlds apart.	More visual material
Accessibility in distance education/online learning		

Employment Accessibility		
Spatial/Physical Accessibility in the work place		
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	I am ok, but I'm not the example for this. I mean, I'm the president of the association, okay? But I'm one of many, okay? That's not the reality. I mean, I come and speak for the generality. In Klinefelter syndrome, employment is almost nil. I mean, I've been very lucky to be born into the family I was born into and into what is the reality.	More tax deductions for hiring people with disabilities. Expand the quotas for people with disabilities that currently exist.
In-service training and career up-skilling		
Assistive Technology in the work place and accessible material		
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the	No problem	

indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>	When you have a disability above 60 or 70%, they don't let you get your driver's license. I have a lot of people in the association whose dream is to drive a car, because we are men and you have to understand us.	
Accessibility in tourism Services		
Accessibility in accommodation (hotel units, camps, camping)		
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches		

Accessible shows (theaters, cinemas, concerts...) & accessible movies	There's a big problem there, in partying. That is, there are many nightclubs and restaurants with shows that do not comply, and we all know it, right? They do not comply with regulations, for whatever reason. But many people can't. I have disabled friends who couldn't get into many nightclubs in Spain. Because they were either downstairs or upstairs and there was no elevator.	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	No problems	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)		

Spain – Visual impairments, no 1

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Spain
3. **The type of your disability and the cause of it** (official clinical diagnosis): total blindness due to being born premature at six months
4. **The age at onset of visual impairments:** Since born
5. **Age:** 36
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Degree in Law
7. **Severity of disability** Blindness
8. **What means do you use to read?** Braille or screen reader
9. **Visual acuity of the left eye** Total blindness, loss of light perception
10. **Visual acuity of the right eye** Total blindness, loss of light perception
11. **Visual field** No visual field
12. **You move alone or with the help of an attendant?** Alone
Depending on the situation, but in general I move around on my own. I use a mobility aid, in this case a cane, which is what I use. I am not a guide dog user, but I usually manage quite well.
13. **How often do you move alone?** Most of the time
13. **Do you use assistive technology?** Yes
14. **If yes, which means of assistive technology?** VoiceOver, Google maps (mainstream technology)
15. **What kind of educational material is more suitable for you? (you can choose more than one answer)**

Audio

Braille

16. **Do you use any kind of accessible educational material?** Yes
17. **If yes, what kind of it?** Especially when I was a child, I learned Braille. I read in Braille and today, for example, you can use what is called a Braille line, which is a device that connects to the computer and also transforms what appears on the monitor into Braille, you can also use it. But I mainly use auditory, through the screen reader. A computer, a laptop and the screen reader, which is what ultimately helps me both on the laptop and on the phone. On the laptop, the screen reader I use is iOS and, on the phone, which is iOS, the operating system it uses, what is called VoiceOver, which is

a program that iOS already has installed as such and that reads the screen to you, verbalizes everything that appears on the screen.

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces		
Mobility with the means of transportation		
Communication with and services of the public and private sectors		
Web Accessibility	Many web pages are not accessible	Braille bar Screen reader on PC/Laptop (JAWS) VoiceOver on iOS phone
Digital accessible transformation		
E-commerce	Many web pages are not accessible	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		

Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)		Increase of availability of e-books and e-book readers
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Had to convert the books in PDF to use screen reader or Braille	Need to increase the integration of persons with disability and recognize that they all require “adaptations”

Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Inability to see the blackboard, or visual content (e.g. formulas) non explained in a way that it can be understood	In School, Support of an additional teacher, thanks to the membership in ONCE. In University, often agreed to take oral exams. ONCE was also able to transcribe university books into Audio.
Accessibility in distance education/online learning		
<i>Employment Accessibility</i>		
Spatial/Physical Accessibility in the Workplace		
Accessible Services in the workplace (e.g. hiring processes, communication with different	Some pre-conceptions about the kind of works a visually impaired person can do	Willingness by both sides to adapt and find what the person can do

sectors)		
In-service training and career up-skilling		
Assistive Technology in the workplace and accessible material	PowerPoint materials are difficult or impossible to render vocally Many documents are still on paper.	After installing a screen reader, he could perform his work normally
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Most sites do not offer an accessible option	Sometimes they have "Navi Lens" Sometimes scaled models that can be touched

Accessibility to museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	Many cities do not have auditory traffic lights	
Accessibility to accommodation (hotel units, camps, camping)		
Accessibility in transportation	Difficult to get information from signs and panels (e.g. at a bus station). Difficult to know what is the next stop, or where is the call button to get out at next station.	Uses a cane. Many improvements currently in transportation services (e.g. in trains there are people who accompany you to the tracks or to the desired exit).
Accessibility in sports & recreational facilities		
Accessibility at beaches		
Accessible shows (theaters, cinemas, concerts...) & accessible movies		Streaming platforms include an audio track describing the situation
<i>Accessibility in Security and Evacuation Situations</i>		

Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Normally very poor. Exit signs or guiding lines are a visual-only signal.	Needs training, exercise drills, since the school times.
Accessibility of emergency information (Multiple channels)		

Spain – Visual impairments, no 2

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Spain
3. **The type of your disability and the cause of it** (official clinical diagnosis): My disability is mainly motor, visual and cognitive problems, Dual vision, astigmatism, and myopia
4. **The age at onset of visual impairments:** 9 years
5. **Age:** 24
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Studying at the university (primary education degree)
7. **Severity of disability** Moderate visual impairments
8. **What means do you use to read?** Large prints or magnifiers
9. **Visual acuity of the left eye** (not replied)
10. **Visual acuity of the right eye** (not replied)
11. **Visual field** (not replied)
12. **You move alone or with the help of an attendant?** (not replied)
13. **How often do you move alone?** (not replied)
13. **Do you use assistive technology?** Yes

14. **If yes, which means of assistive technology?** To read I use auditory support, that is, a program that reads me what is written to support the reading that I am doing at the same time, because I have the problem of double vision and apart from that I always ask for the letters of everything to be enlarged, the texts and everything, and if possible, with double spacing.

15. **What kind of educational material is more suitable for you? (you can choose more than one answer)**

Text

Audio

Audio-visual (e.g., video)

16. **Do you use any kind of accessible educational material?** Yes

17. **If yes, what kind of it?** Now many people at university take their notes on computers and that makes it much easier, but the ideal would be for the teachers to give you the notes in some way, at university you have these Moodle-type platforms where they can upload their notes and explanations. Sometimes they have also let me record the classes in audio or video when they have been online classes and then I can watch them again and take my own notes, pausing the class whenever I see fit, but I don't know what else to say.

Accessibility Area	Problems/difficulties	Solutions
- Sub-areas		
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	There is insufficient visual signage on how to get around the sites.	Putting up more signs
Mobility with the means of transportation	Despite the accessibility in my city, frequent breakdowns slow down mobility. The audible signals of the metro are said very close to	Frequent maintenance of escalators and lifts. Signal train and metro departures more frequently.

	the arrival of the metro and do not give time to react.	
Communication with and services of the public and private sectors		
Web Accessibility		Screen reader Magnifying glass (quite expensive)
Digital accessible transformation		
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		
Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)		

<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	No problem detected	Not specified
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	They have not allowed her to make curricular adaptations adapted to her needs.	Adapting curricula to the specific needs of persons with disabilities
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Difficulty with teachers to understand her needs	Require teachers to give lecture notes, or asking students to hand over they notes and photocopy them (now with computers it's much easier).

		Recording lectures and listening to study.
Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	She has not worked, she does not know this field well.	
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	She has not worked, she does not know this field well.	
In-service training and career up-skilling	She has not worked, she does not know this field well.	
Assistive Technology in the workplace and accessible material	She has not worked, she does not know this field well.	
Cultural Heritage Accessibility		

Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)	No problem. In Madrid is very good	Need some chairs/benches to rest in museums or cultural places
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Many descriptions cannot be read (need friend or family to read for her)	Audio guides may help, but sometimes are very long
Accessibility to museum exhibits and works of art	It is not easy to read the posters on the wall.	Faithful audio guides
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	It is not easy to understand the degree of accessibility of the service without sufficient information.	Adding extra information such as photos, and specific information on accessibility, in the web

		information provided for services
Accessibility to accommodation (hotel units, camps, camping)		
Accessibility in transportation	Generally well accessible in Madrid	Many elevators/escalators are broken, difficult to move or to plan your route Increase the sign on board of the train to tell the direction and the next station. Make clearer auditory announcements for the next station, but some minutes in advance.
Accessibility in sports & recreational facilities	Very few are adapted	Fitting handrails
Accessibility at beaches		
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Cannot go unaided into dark places	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security	There are improvements, but they are not always taken into account.	Information on how to evacuate in case of fire, for people with mobility

systems in case of fire, earthquake, etc.)	Not aware of the options for evacuation in case of fire.	difficulties who cannot use the lift.
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)		

Spain – Deaf/hard of hearing, no 1

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Spain
3. **The type of your hearing loss and the cause of it** (official clinical diagnosis):
Congenital and atrophy of the auditory nerve in the right ear since birth
4. **The age at onset of hearing loss:** Right ear since birth, left ear progressive since 13 years of age
5. **Age:** 46
6. **Educational level** (e.g., lower secondary school, tertiary level of education):
University Psychology (Specialty H.R) and MBA People Analytics and Digital Management Human Resources (IA)
7. **Do you have bilateral hearing loss?** Yes
8. **Degrees of hearing loss in left ear** Slight hearing loss (25-40 dB)
9. **Degrees of hearing loss in right ear** No hearing
10. **Level of difficulty in understanding the oral language (through lip reading)**
Easy. Lip reading
11. **Do you read and understand the written form of the official language of your country?** Yes
12. **Level of difficulty in reading and understanding the written language** Very Easy
13. **Do you know sign language?** No

14. Do you use assistive technology? Yes

15. If yes, which means of assistive technology? Hearing aid

16. What kind of educational material is more suitable for you? (*you can choose more than one answers*) Audio-visual (e.g., video)

17. Do you use any kind of accessible educational material? No

18. If yes, what kind of it?

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Hearing with only one hear prevents you from understanding the direction the sound are coming from. For many years she didn't wear a hearing aid. Many people are not wearing aids or implants because they are expensive.	At the age of 17 she got a hearing aid, and daily life got much better.
Mobility with the means of transportation		
Communication with and services of the public and private sectors	She was considered "distracted", or she didn't want to listen, because they didn't understand her disability. In Hospitals, they call you at the loudspeaker, and you may miss your turn.	Hearing aid. Add more visual signs.

Web Accessibility		
Digital accessible transformation		
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		
Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	New apps and app-based accessible solutions are difficult to use for elderly persons. The market tends to sell you many things or aids that you don't really need. It's very difficult for people to know what to do and to get oriented.	Need to rely a lot on helpers, caregivers, friend and family to teach how to use devices, and also to support when they don't work for some reason.

<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	When teachers turn around, she can't lip read.	Needs to sit in the front row to be able to read lips
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	Couldn't take notes in time, she missed many sentences from the teacher	She relied on getting notes from her friends
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	Children are also impaired; they go to public school	Rely on cochlear implants for hearing in class
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	There are no accessible means for people with hearing impairments, in school	

Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace		
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the workplace and accessible material		
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space,		She relied of reading lips of people around her for understanding.

guidance towards the main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Many museums don't have signs, labels, subtitles, pictograms.	Must go with a friend who can read.
Accessibility to museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	In general, very poor accessibility in Spain for touristic venues of all kinds. When traveling and getting sick, it's very important to avoid "ototoxic" medications.	
Accessibility to accommodation (hotel units, camps, camping)		

Accessibility in transportation	Very little problems because traveling is full of signs and visuals. No problems in driving a car. Announcements in the plane cannot be heard or understood.	
Accessibility in sports & recreational facilities	No particular problems with sports, apart from the lack of signs in many locations.	
Accessibility at beaches	No problems	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	No accessibility, she didn't hear the dialogue	Had to ask to a friend what happened and what they said in the movie
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	In emergencies, the public address system doesn't work well	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	There are many messages given in many contexts (ex. Sports), but very little in emergency situations (e.g. A fire in a soccer game)	

Accessibility of emergency information (Multiple channels)		

Spain – Deaf/hard of hearing, no 2

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Spain
3. **The type of your hearing loss and the cause of it** (official clinical diagnosis):
Sensory hearing disability
4. **The age at onset of hearing loss:** not specified
5. **Age:** 39
6. **Educational level** (e.g., lower secondary school, tertiary level of education):
Secondary School
7. **Do you have bilateral hearing loss?** Yes
8. **Degrees of hearing loss in left ear** Mild hearing loss (41-55 dB)
9. **Degrees of hearing loss in right ear** Severe hearing loss (71-90 dB)
10. **Level of difficulty in understanding the oral language (through lip reading)**
Neutral. Lip reading
11. **Do you read and understand the written form of the official language of your country?** Yes
12. **Level of difficulty in reading and understanding the written language** Neutral
13. **Do you know sign language?** No
14. **Do you use assistive technology?** Yes, only on one ear
15. **If yes, which means of assistive technology?** Hearing aid
16. **What kind of educational material is more suitable for you? (you can choose more than one answers)**
Text
Visual
17. **Do you use any kind of accessible educational material?** No
19. **If yes, what kind of it?**

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces		
Mobility with the means of transportation		
Communication with and services of the public and private sectors	Need to have her husband to help with communication, e.g. at the doctor.	
Web Accessibility		
Digital accessible transformation		
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		
Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		

Digital libraries and repositories	Regular TV doesn't have subtitles	Subtitles in movies and TV (sometimes)
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)		
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		

Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Schools are not prepared at all to follow deaf students. Teachers not facing the student (turning back) Problems with dictation exams	Better in written exams
Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	There was a big issue with COVID masks because you can't read lips Co-workers don't understand that they have to speak louder, and articulate better, to be understood. Colleagues don't empathize and don't make much effort.	
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		

Assistive Technology in the workplace and accessible material	Hearing aid are Extremely Expensive	
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility to museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services		

Accessibility to accommodation (hotel units, camps, camping)		
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches		
Accessible shows (theaters, cinemas, concerts...) & accessible movies	The sound is what it is, and you don't hear, and the theater neglects the problem.	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)		

Spain – Mobility impairments, no 1

Demographic data

1. **Gender:** Male

2. **The place (country) of residence:** Spain
3. **The type of your disability and the cause of it** Disability due to depression, fibromyalgia, and since July 2023 I have chondromalacia.
4. **The age at onset of mobility impairments.** 29 years old.
5. **Age.** 54
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree). University degree. Social Integration
7. **Your disability occurs** Other: All over the body
8. **How would you most accurately describe the functionality of your hands?**
(Select only one of the following answers)
- b. I handle all objects easily and successfully. I may have some difficulties in activities that require great speed or/and accuracy. However, these difficulties do not restrict my independence in my daily activities at all.
10. **How often do you move alone?** Some times
11. **How would you describe your commute?**
(Select only one of the following answers)
- a. Almost everywhere, I use a wheelchair on my own (either electric or manual wheelchair). However, almost always, I need the assistance of another person. Usually, I need special support on my torso (e.g., waist) and/or my head. I can walk at home for a while but only with the assistance of another person.
12. **Do you use assistive technology?** Yes
13. **If yes, which means of assistive technology?** Manual wheelchair and walking sticks.
14. **What kind of educational material is more suitable for you? (you can choose more than one answers)** Audio-visual (e.g., video)
15. **Do you use any kind of accessible educational material?** No
16. **If yes, what kind of it?**

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			

Physical/Spatial Accessibility of indoor and outdoor spaces	Difficulty	
Mobility with the means of transportation	Difficulty	
Communication with and services of the public and private sectors	Difficulty	
Web accessibility		
Digital accessible transformation	More difficulty in everything that has to do with paperwork, because in the end they do require either someone's help or going to the office.	
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		
Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		

Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)		
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	Problems	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		

Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)		
Accessibility in distance education/online learning	Because of the transportation issue I had to do in private and online because I had no other option.	
Employment Accessibility		
Spatial/Physical Accessibility in the work place	In the workplace, with the pain I have, work would be complicated. Especially because of the posture.	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the work place and accessible material	But it is true that at the level of programs and things like that, to do work, it progresses very quickly and there I have had to reset or ask for help because the programs that are there to	

	work with them are not very intuitive.	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	I have just visited the Hortensia Herrero Cultural Center, I don't know if you are familiar with it. The Modern Art Cultural Center that Hortensia Herrero has opened in Valencia. Everything is adapted very well. Also, wide elevators. They have done it very well. But there is an underground area that cannot be accessed because it is in ruins. Maybe I understand that they put a ramp there or they couldn't... there was only one space that could not be visited. But they have taken into account all the regulations.	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological		

sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services		
Accessibility in accommodation (hotel units, camps, camping)	On the trips I take, there is a ramp adapted, but you can't open the door or the bathroom is not there. I mean, I haven't found anything 100% adapted.	
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches		
Accessible shows (theaters, cinemas, concerts...) & accessible movies		
<i>Accessibility in Security and Evacuation Situations</i>		

Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	And seeing what I have seen in the environments I have been to, bad, because if the spaces are not even accessible, the evacuations can be terrible. And neither are people very willing, not even in an emergency, that is, to open a door, so it would be complicated.	Since I have been working on the issue of disability for many years, what I do see is that the first thing that would have to be done is education, and through education, awareness campaigns so that people grow up in absolute inclusion, which is not what is happening. Then, do a lot with what there is not, with respect to all these situations, because if there are accessibility regulations, why are they not being complied with? Training for staff, because as much as regulations are put in place, I find it even in education, because I also have a child with a disability and I see it. That is, the teachers tell you, I don't know what to do with this case.

Accessibility of emergency information (Multiple channels)	Where I worked was a protected building, they couldn't put in an elevator and every time a student broke a leg, all the classrooms in an entire university had to be changed to get to that ground floor.	

Spain – Mobility impairments, no 2

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Spain
3. **The type of your disability and the cause of it** (official clinical diagnosis). Spastic paraparesis secondary to infantile cerebral palsy.
4. **The age at onset of mobility impairments.** From birth
5. **Age.** 55
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree). Master Degree, Accessibility.
7. **Your disability occurs**
 - a. In your lower extremities
 - b. In your upper extremities
 - c. Other: Lenguaje
8. **How would you most accurately describe the functionality of your hands?**

B I handle all objects with somewhat reduced quality (accuracy) or/and speed. Certain activities need to be done in alternative ways. Usually, these difficulties do not restrict my independence in my daily activities.
9. **You move alone or with the help of an attendant?** Alone
10. **How often do you move alone?** Always
11. **How would you describe your commute?**
(Select only one of the following answers)

- b. I walk on any place without restrictions and assistance. I may have balance, speed or motor-coordination difficulties.

12. **Do you use assistive technology?** No

13. **If yes, which means of assistive technology?**

14. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)**

- a. Text
- b. Visual
- c. Audio
- d. Audio-visual (e.g., video)

15. **Do you use any kind of accessible educational material?** No

16. **If yes, what kind of it?**

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility	Let's see, in the 80's I was not aware of what accessibility is. I started to be aware of accessibility when, in college, I joined a disability organization, of which I ended up being President	
Physical/Spatial Accessibility of indoor and outdoor spaces	In building it has no difficulty. Steep stairs can be a problem. When it is very crowded it is difficult to maintain stability.	Installing more handrails and lifts
Mobility with the means of transportation	In the metro with many people, he does not feel safe because of the lack of safety facilities,	Integrate elements of the facilities that provide safety for people with reduced mobility.

	In the Madrid metro they have encouraged people to stand on the right side of the escalators, and they do not take into consideration that people who have little strength on the left have limitations and do not feel safe on that side of the escalator.	Underground should allow and raise awareness of the fact that people can stand on the stairs in a place that guarantees their safety.
Communication with and services of the public and private sectors	In telephone communication he has a lot of difficulty to be understood. Face-to-face assistance makes it easier for him to be understood.	Use alternative media, video conferencing, and other computer apps. In private management there is no personal attention for the people who work, and it would be necessary to extend the opening hours to the public.
Web accessibility	No difficulty	Not applicable
Digital accessible transformation		
E-commerce	He has no difficulty, and considers it a great help.	Not applicable
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or	It has no difficulty, and is easy to handle.	Online access is a help.

government sites/applications)		
Digital customer communication	It is easier because it is adapted to your needs and you have solved the access to the service. And if there is access, making it accessible is easier.	Accessibility must comply with regulations.
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	No problem. And it gives him easy access.	It considers that it can be more accessible for other people with disabilities, for example for people with visual impairment.
Digital libraries and repositories	It has no accessibility problem. And it makes great use of these services.	Considers that accessibility has been improved
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)	He doesn't use voice systems because they don't recognize his voice. These would be useful for his daily life.	Cannot find a solution to this problem
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and	He has not had any accessibility problems.	The arrival marginal was extended to allow him to get to class on time, his reduced mobility requires him more time to navigate the spaces.

post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	He was not provided with notes by the teaching staff. But he was helped by his classmates. He did not get permission to record the lectures. Recordings would have given him better access to information in the long term, as he could not take notes.	Use recorders, videos and tablets so that students can feel part of the class. Also the computer.
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	He has no difficulty	More digital media can be used to gain access. For example, a video conference.
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	He has no difficulty	Not applicable
Accessibility in distance education/online learning	He has no difficulty	Not applicable
Employment Accessibility		

Spatial/Physical Accessibility in the work place	He has no problem, because his workplace is accessible. He works at the Spanish Confederation of people with physical and organic disabilities.	Not applicable
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	Not applicable	Not applicable
In-service training and career up-skilling	Not applicable	Not applicable
Assistive Technology in the work place and accessible material	Not applicable	Not applicable
Cultural Heritage Accessibility	His work is related to inclusive tourism and leisure, so he brings his personal and professional point of view.	
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	In cultural spaces there is no difficulty. In heritage sites, accessibility is not guaranteed, because there are other heritage laws that do not allow accessibility. For example, in the Sagrada Familia he could not go up because the stairs did not	As a user, he needs heritage sites to be accessible, as a professional he understands that it is not possible to change the regulations, but it is possible to offer experiences that allow the enjoyment of the services. Such as; interpretation

	comply with accessibility conditions.	centers, virtual reality glasses.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	No difficulty in his personal case. It is mostly not accessible for blind people. The main problem he detects is that the regulations are not complied upon.	Ensure that the private and public sector complies with the regulations. Raise awareness, train the staff of the sites. It understands that in order to comply with the regulations, prior awareness must be raised among staff and people related to the services across the board.
Accessibility in museum exhibits and works of art	No difficulty. If it is not overcrowded.	Not applicable
<i>Tourism (including recreation and sports) Accessibility</i>	His work is related to inclusive tourism and leisure, so he brings his personal and professional point of view.	
Accessibility in tourism Services	On a personal level the interaction person - person because it is not easy to understand his voice.	Accessibility information for tourist areas can be made available online. Raise awareness of accessibility among tour

	At the professional level there is no accessible tourism, but islands. There is no access to information about the accessibility of tourist areas.	operators, hotels, and the tourism sector. Consider that the lack of accessibility is largely due to a lack of information about the importance of complying with the regulations.
Accessibility in accommodation (hotel units, camps, camping)	Slippery floors in hotel swimming pools, pool areas usually do not have handrails. Slippery floors in bathing rooms.	As discussed in the previous section
Accessibility in transportation	In general, there is accessibility. Especially in long-distance transport. It is difficult for air travel not to have common policies in all airlines. The access times to the check-in and the entrance to the plane. Use the support services. In transporting the suitcase. Although he doesn't need it, wheelchairs must be adapted to the company's regulations and not the other way round. There are companies that have many claims for not	It is a very complicated issue. But the information should be clear and agreed by the companies regarding access to the characteristics of the chairs. And not depend on the arbitrariness of the commander. The passenger should have specific information about the requirements of the seats for the flights.

	allowing access to passengers with wheelchairs.	
Accessibility in sports & recreational facilities	He does not do much sport.	Has used specific classes for people with disabilities
Accessibility at beaches	He has to choose the beaches he visits because not all beaches are easy for him and he does not feel safe. He always goes to the same beaches where he feels safe, so he doesn't usually go to new places.	Accessible spaces on beaches with handrail systems and boundaries for people with disabilities. Such models already exist, but there could be more.
Accessible shows (theaters, cinemas, concerts...) & accessible movies	It is often difficult at festivals, because of the overcrowding. Also, because when he gets tired there are few rest areas.	Create areas at festivals for people with reduced mobility. Those that already exist are not yet of high quality.
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	In his case, it is very difficult to move around in crowds, and the emergency systems do not currently provide for reduced mobility. Evacuation plans do not differentiate between people with reduced mobility and people with disabilities.	That emergency plans should address the cases of persons with disabilities and persons with reduced mobility separately.

	In your flat, which is on the seventh floor, there is no provision for how to get down the stairs in case of fire if you cannot get down the lift.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	Lack of regulation Lack of awareness	They are beginning to work on it. Up to now, accessibility has been discussed in terms of how to get in, but now it is starting to be discussed how to get out in case of an emergency. But it is still very much in its beginnings.
Accessibility of emergency information (Multiple channels)	Same answer as above.	

Spain – Mild intellectual disability, no 1

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** España
3. **The type of your disability** (official clinical diagnosis):.....
4. **Level of intelligence IQ>85**
5. **Other difficulties/disabilities** (difficulties in hearing, vision, movement etc): Vision, movement
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree). Master Degree
7. **Do you use assistive technology?** No
8. **If yes, which means of assistive technology?**
9. **Do you find it difficult communicating with others?** Few times
10. **Do you leave alone?** I almost always am alone

11. **You move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant

12. **How often do you move alone?** Most of the time

13. **Do you use a personal computer?** Yes I use a personal computer

14. **If yes, how often do you use a PC?** More than 1 hour a day

15. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)**

b. Visual

c. Audio

d. Audio-visual (e.g., video)

16. **Do you use any kind of accessible educational material?** No

17. **If yes, what kind of it?**

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces		
Mobility with the means of transportation	Not all stations have an elevator. So, although I have difficulty with my legs, not all of them also have handrails, which is essential for me to have.	
Communication with and services of the public and private sectors	Interacting with people, many times when I want to get on the metro, people don't move until I tell them to please move because I need to hold onto the metro poles or when the whole metro is	

	full, I'm the one who has to say "can you give me the seat so I can sit down?"	
Web accessibility	Many barriers because, for example, the font size is still very small, and for the contrast of the screens	
Digital accessible transformation		
E-commerce	Many times, the letters are so small that it is difficult for me to read them. So, it takes me a long time to read and the whole process that I have to do	
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		
Digital customer communication	Another barrier is that when you talk to these types of institutions, they time you. And many times, I can't type on my phone what they are asking for.	
Digital Banking (including ATMs/cash		

points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)		
<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	For example, I asked that a teacher would give me the content in an easy-to-read format so that I could get rid of the fluff and all that. And they told me no, that since it's a private institution, I couldn't get that.	
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the	Significant barrier because I have attended, I think, five educational institutions. They gave me a 20% scholarship for showing that I already had a disability	

teaching and the administrative staff)	certificate at that time, but they didn't make any kind of accommodations for me. More time for exams.	
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	No support. I took the same exams as all my classmates. And they told me that until I showed a psychoeducational evaluation that said I had learning difficulties, they would not make the accommodations I requested, that the only thing they could do for me was to extend my time (on exams) because I had the certificate, which said that I had a motor disability, but not a cognitive difficulty.	
Accessibility in distance education/online learning	I do university online. I also do it online in order to avoid having to move from home.	
Employment Accessibility		
Spatial/Physical Accessibility in the work place		
Accessible Services in the work place (e.g. hiring processes,		

communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the work place and accessible material		
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	In terms of accessibility, not many museums have elevators. And, well, there are many economic discounts, but you always have to go with a companion because you are disabled. I feel that dependence continues to be generated there, not autonomy.	I think it would be great if there was a personal assistant from the museum itself who can take the disabled person on a guided tour of what they want to see or something like that so that they can also go on their own and not have to depend on their close context, for example, a cousin, a friend, or their partner.
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	I think there is still a long way to go before people with disabilities can really enjoy leisure activities like any other person. In terms of, for example, cognitive aspects, I have never seen pictograms in any museum where they	

	help you to see how... in other words, there are no pictograms in a museum where they can help people to understand what is there. In very few museums I have also seen Braille signage so that people with visual disabilities can read it.	
Accessibility in museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services		
Accessibility in accommodation (hotel units, camps, camping)	In hotels there are very few, hotels, hostels, there are very few that are accessible. Signage is not accessible.	
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches		

Accessible shows (theaters, cinemas, concerts...) & accessible movies	In concerts, there are already areas for people with reduced mobility. I don't want to sound like a complainer, but they always put you in the corner where you can't see the stage. And you're like, well, if I came to the concert to enjoy myself and they put me in the corner where I can't see anything, well, my companion either, I mean, my friend, my girlfriend, or simply my personal assistant, it won't be so much fun going to the concert with you either, because I already have an assigned seat where you can't see everything. can't see the stage. And you're like, well, if I came to the concert to enjoy myself and in cinemas, which is also a part of leisure, I find it super absurd that they always put you up front. So, I mean, why are you putting me up front? Just because there is a space for the wheelchair there, but there should also	

Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	In Mexico they have told me that people with disabilities stay until the last one by protocol so that the others can leave. In the United States, when I went to study in Hawaii, something, never in my life had they done that to me. They called me to ask me if there was an earthquake or whatever, how I would react and what they had to do with me. That had never happened to me. And the truth is that it gave me peace of mind because it was like "I'm not going to die, they are going to get me out, they are going to think of me".	
Accessibility of emergency information (Multiple channels)	Here in Spain, they never gave me a phone number of, if something happens you can call here	

Spain – Mild intellectual disability, no 2

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Spain
3. **The type of your disability** (official clinical diagnosis): Intellectual disability
4. **Level of intelligence:** IQ: 50-69
5. **Other difficulties/disabilities** (difficulties in hearing, vision, movement etc.): None

6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree). Secondary
7. **Do you use assistive technology?** No
8. **If yes, which means of assistive technology?**
9. **Do you find it difficult communicating with others?** Sometimes. Depends on the content
10. **Do you leave alone?** No, with parents
11. **You move alone or with the help of an attendant?** With help of an attendant
12. **How often do you move alone?** Never
13. **Do you use a personal computer?** Yes
14. **If yes, how often do you use a PC?**
- a. Once a week
 - b. 2-3 time a week
 - c. 1h a day
 - d. More than 1 hour a day
15. **What kind of educational material is more suitable for you? (*you can choose more than one answers*)**
- a. Text
 - b. visual
16. **Do you use any kind of accessible educational material?** Yes
17. **If yes, what kind of it?**

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces		No physical problems. When we go somewhere she doesn't know, she doesn't leave my side because she's afraid of getting lost.	

Mobility with the means of transportation	Here in Coimbra, it's very small, and there is very little public transport. We live in the center, so we move around on foot, we barely use the car here. She's going with four other kids on the public bus, but they don't go alone, they go together. First, a monitor took them, a person taught them, and now they go and come back together.	She would need someone on the bus to teach her or on the transport, to say, "you need to get off here,"
Communication with and services of the public and private sectors	Of course, she doesn't go alone. She needs to go with someone, plus she gets lost.	
Web accessibility	Well, the computer issue is very bad because I bought her a computer and had to take it away because she accessed pages she shouldn't. And I've had a lot of difficulty because there was no one to tell me how I could block those pages so she wouldn't see them. I'm talking about dating pages, erotic pages, there's no way to block those on her computer, I had to take it away because it was too much.	

	Not because she sees something erotic, that's not a problem, the problem is meeting people.	
Digital accessible transformation		
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	She doesn't know how to do those things.	I don't know what to tell you because when filling out a form, she starts and asks you questions while filling it out. I think she could do it, but it has to be very easy and explained. She needs someone to help her, tell her to put here, go here, where you live, here, this. And she could fill it out, but alone, I don't think she can.
Digital customer communication	No, I don't see her doing that.	
Digital Banking (including ATMs/cash points and Interactive	She doesn't understand money, she doesn't get it. The money she has, she doesn't know, she has a lot	

Teller Machines inside a bank)	of difficulty with that, and she doesn't have digital banking. I handle all that.	
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)		
Educational Accessibility	She's currently receiving private education	
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	No problem	
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	They gave her photocopies and things like that because they didn't give her books like the other students. They said they couldn't take them away, and I fought a lot to get them but they didn't want to give them, they only wanted to give her worksheets and such.	

Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	No, they're not accessible. There's no training. I've signed her up for everything that's come out, but accredited training, nothing. She's not currently receiving any education. Well, yes, I'm taking her to a psychologist. I've been with this last professional for eight or nine years. And she also sends her math worksheets, a bit of language. So, she's autonomous in doing them and every two weeks she goes and the psychologist corrects them, so she's at least doing something and doesn't forget because the problem is that if she stops, she forgets everything.	

Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	From 21, she has no rights, not even to an institute because she had a hard time leaving the institute because she wanted to continue, but after 21, there are no training courses for her. She's not currently receiving any education. Well, yes, I'm taking her to a psychologist. I've been with this last professional for eight or nine years. And she also sends her math worksheets, a bit of language. So, she's autonomous in doing them and every two weeks she goes and the psychologist corrects them, so she's at least doing something and doesn't forget because the problem is that if she stops, she forgets everything. She participated in a bakery course. But that's through the association, and the association doesn't have accredited qualifications.	
Accessibility in distance education/online learning		

Employment Accessibility		
Spatial/Physical Accessibility in the work place	No problems	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	She did internships, packing pickles and olives and such. She also worked for six months as a gardener for the municipality.	
In-service training and career up-skilling	For her to do things, you either have to teach her to do it automatically or have someone telling her what to do, step by step. Once she learns, she does it, but she needs encouragement and reminders.	
Assistive Technology in the work place and accessible material	In her case, support technology would be a support person.	
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and		

proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		
Accessibility in museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	I let Marina attend activities if there's someone guaranteeing supervision. I've sent her to activities knowing a trusted person was there.	
Accessibility in accommodation (hotel units, camps, camping)		
Accessibility in transportation		
Accessibility in sports & recreational facilities		

Accessibility at beaches	She can go to a beach; it's not a physical disability.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	Yes, she has accessibility.	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)	I don't think so. She wouldn't know how to act.	
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)		

Spain – High functioning autism, no 1

Demographic data

1. **Gender:** Female
2. **The place (country) of residence:** Spain
3. **The type of your disability** (official clinical diagnosis). level 1 autism spectrum disorder
4. **Level of intelligence** She doesn't know it
5. **Other difficulties/disabilities:** None

6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree).

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility	Not asked in interview	
Physical/Spatial Accessibility of indoor and outdoor spaces		
Mobility with the means of transportation		
Communication with and services of the public and private sectors		
Web accessibility		
Digital accessible transformation	I can handle technology very well. Use computers and applications such as AutoCAD, CYPE, Presto., and Word.	
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		

Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)		
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)		
Educational Accessibility	Schools are not prepared to assist, help and support disabled people	
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		

Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Teachers do not know about autism, and not able to adapt teaching. Adaptation only means lowering the level, which is not good. And that about groups, for me, group work didn't work.	understanding and the way of evaluating is different, but it doesn't mean that people don't understand or don't get it, but they have another way of seeing things, another way of processing that data and what is needed is to adapt to that.
Accessibility in distance education/online learning		
Employment Accessibility	I got jobs because I live in a town and people know me, so of course, if I had lived in a city, I think I wouldn't have had work so easily, because facing an interview is very difficult.	
Spatial/Physical Accessibility in the work place		

Accessible Services in the work place (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the work place and accessible material		
<i>Cultural Heritage Accessibility</i>	Not asked in interview	
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		

Accessibility in museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>	Not asked in interview	
Accessibility in tourism Services		
Accessibility in accommodation (hotel units, camps, camping)		
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches		
Accessible shows (theaters, cinemas, concerts...) & accessible movies		
<i>Accessibility in Security and Evacuation Situations</i>	Never experienced directly.	
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		

Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	And when it comes to building design, now there are regulations and such, but I still see places where it is not met. And during evacuation, of course, they are not taken into account. I don't know if the Fire Department has a protocol. They never said what to do in drills, never.	People should follow the rules and regulations, literally.
Accessibility of emergency information (Multiple channels)		

Spain – High functioning autism, no 2

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Spain
3. **The type of your disability** (official clinical diagnosis). Asperger's syndrome
4. **Level of intelligence** IQ>85
5. **Other difficulties/disabilities:**
6. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree).
University degree
7. **Do you use assistive technology?** No
8. **If yes, which means of assistive technology?**
9. **Do you find it difficult communicating with others?** Sometimes
10. **Do you use any kind of communication aid?** No
11. **If yes, which one?**
12. **Do you leave alone?** No
13. **You move alone or with the help of an attendant?** Alone

14. **How often do you move alone?** Always
15. **Do you use a personal computer?** Yes
16. **If yes, how often do you use a PC?** More than 1 hour a day
17. **What kind of educational material is more suitable for you? (you can choose more than one answers)** Text
18. **Do you use any kind of accessible educational material?** No
19. **If yes, what kind of it?**

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	I don't have any problems	
Mobility with the means of transportation	I can manage well in that aspect	
Communication with and services of the public and private sectors	Well, I do well there, but it's true that sometimes if I talk to someone new or someone I don't know at all, I can get nervous, I don't know how to interact, I can get blocked, but it's in some cases, but if the situation requires it I can go ahead	If you see that the person is nervous or something, ask them what they need.
Web accessibility	I don't have any problems. Audiovisual makes it more understandable and accessible	Plain language would make web accessibility easier for me

Digital accessible transformation		
E-commerce	If they said it was safe, that it was protected, then ok	you have to explain the safe steps to follow, that you verify that what is being said is safe, that it is authorized and certified, that they are secure websites and that they are protected against external attacks, that they do not steal your identity, for example, or that they do not take money from you anywhere.
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		
Digital customer communication	I don't have experience in that aspect.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	I'm not very fluent in that aspect. It's good that I have already opened a bank account, but I'm not very informed about it. Well, my parents know what I have, they tell me what's there and such.	

Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phone, smart TV, home appliances)		
Educational Accessibility		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)	sometimes places can go unnoticed or that they are not well indicated	visible and understandable places
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)	There are emails in the university that do explain.	

Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	All right. It's true that at the beginning of each course of each semester I have talked to the teacher to explain that I had Asperger's syndrome because this condition is not very visible in many aspects. My need is that sometimes I can get distracted in class and they have to pay attention to me or at least tell me that I have to say this and I tried to sit in the front row so as not to get distracted.	
Accessibility in distance education/online learning	I have never had online training.	
Employment Accessibility		
Spatial/Physical Accessibility in the work place	No problems	
Accessible Services in the work place (e.g. hiring processes, communication with different sectors)	Help from a janitor at the Cultural Center of my town who told me about this type of work and I have made the application and it has progressed and he has informed me of what I had to do, what the interview was going to be like and how.	

In-service training and career up-skilling	Continuing to study there. In the jobs I have had so far, I have done some courses	
Assistive Technology in the work place and accessible material	No, I have performed like everyone else	
<i>Cultural Heritage Accessibility</i>		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards main entrance)	In the museums I have been to, I have never had any difficulty. I can always find out what they are explaining and what is happening around me and I have never had any problem in that aspect.	
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)		

Accessibility in museum exhibits and works of art	Plaques that put what the author was, why he did it and how helps you to understand, to better understand the work	
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in tourism Services	No problems.	
Accessibility in accommodation (hotel units, camps, camping)	Need to be in a place where there is not so much noise or that is as quiet as possible	Provide headphones
Accessibility in transportation	I can manage well without any problem.	
Accessibility in sports & recreational facilities	I am not a very sporty person, but what is recreational, leisure, well, I have not had problems. Attend a soccer game or a basketball game: I have not had any problem with that. But, again, the noise issue can also be too much for that person when they need to go out to clear their head or something to mitigate the noise.	
Accessibility at beaches	I don't think there's any problem there	

Accessible shows (theaters, cinemas, concerts...) & accessible movies	I don't have any problems there	
Accessibility in Security and Evacuation Situations		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)	In the workplace that has been explained to me in detail. In fact, just a while ago we did a drill of what we have to do in case of fire.	The best thing would be for them to tell you or for there to be a template that tells you how to do it
Accessibility of emergency information (Multiple channels)		

Spain – Older people, no 1

Demographic data

1. **Gender:** Female (age 71)
2. **The place (country) of residence:** Spain
3. **Do you face any kind of difficulties/disabilities:** hearing, vision
4. **Do you face any kind of other difficulties/disabilities:** (n.a.)
5. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): Secondary and Vocational training business management.
6. **Do you use assistive technology?** Yes

7. If yes, which means of assistive technology? Glasses

8. Do you leave alone? Yes

9. You move alone or with the help of an attendant? Alone

10. How often do you move alone? Always

11. Do you use a personal computer? Yes

12. If yes, how often do you use a PC? More than 1 hour a day

Accessibility Area - Sub-areas	Problems/difficulties	Solutions
Core Accessibility		
Physical/Spatial Accessibility of indoor and outdoor spaces	Many slopes, gets tired easily, there are no benches to rest. Accessibility is implemented by following the regulations and not taking into account expert advice... the result does not work and must be re-done. Many persons in the older parts of the city cannot leave their house. Public houses (accessible) cannot be given because they already own a house. Some ramp platforms do not carry the weight of an electric wheelchair.	Maintenance of ramps, vehicles, elevators, escalators, etc etc is essential The existence of voluntary associations may help persons to overcome difficulties and to prepare beforehand. When making some adaptations, always seek consultancy from disabled persons, to avoid doing wrong, insufficient or dangerous modifications.

	Stair-mounting platforms are often mounted in dangerous configuration (when you enter or exit the stair)	
Mobility with the means of transportation		
Communication with and services of the public and private sectors	Even if you file a lot of complaints, they don't listen and nothing happens	
Web Accessibility	Some websites are not accessible at all (also search engines do not give the desired results). Insufficient visual contrast.	
Digital accessible transformation		
E-commerce	No issues	

Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)	No issues	Must adapt the language to be more accessible. Some elderly people are not familiar with digital technologies.
Digital customer communication	It's a barrier because it's difficult to find contact information, and also response times are too long.	
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	No issues ATMs require some time to understand how they work (there are many different types)	The use of digital banking is increasing because they close many bank offices. There is the possibility of going in person if the digital procedure is too complex, in-person service or paper forms would be preferable.
Digital libraries and repositories	Not used	
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)	No issues	
Educational Accessibility		
Spatial Accessibility in educational units (public and private)	Cognitive and sensory disabilities are not considered yet.	Some progress has been made on the architectural barriers.

education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology	No information	Should produce accessible material
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		Adapting syllabi and exams to persons with difficulties
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)	Many children cannot attend many classes because	Should invest in teacher awareness
Accessibility in distance education/online learning	Many children cannot participate unless the teacher has particular care for their special needs.	

	Online classes are difficult for children with chronic fatigue (or other)	
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	She had to leave her job, because it was incompatible with her disability (real estate job on land development)	
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)	She goes only on locations that are accessible (as a volunteer).	
In-service training and career up-skilling		Training to the co-workers to inform how to deal and collaborate with colleagues with disabilities
Assistive Technology in the workplace and accessible material		The desk, chair and workstation were adapted.
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries,	Some places still don't have an elevator.	They have improved a lot.

archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Most archeological sites are not accessible.	Some speleology activities are accessible with special chairs
Accessibility to museum exhibits and works of art		
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	Many touristic sites were found to be inaccessible for people with reduced mobility. In some cases, tickets for disabled persons must be bought at the counter and cannot be bought online.	

Accessibility to accommodation (hotel units, camps, camping)	Many structures are not prepared, you must always ask and check before. Even if restaurants are accessible, in many cases bathrooms are not. The majority of hotels do not have adapted rooms	
Accessibility in transportation	Some equilibrium problems on buses Bus ramps (for wheelchairs) often don't work In airports there are no shuttles, and you arrive late at the gate due to slow movements or wheelchair paths A digital application for ordering a taxi does not have the option for ordering an adapted car. The number of accessible seats in trains is too limited (compared to the growing number of persons with reduced mobility)	Need to sit. If the bus is very full, take the next one or take a taxi. Structures (trains, metro) are accessible, but maintenance is a problem: if something (elevator, ramp, ...) breaks, they become inaccessible.

Accessibility in sports & recreational facilities	In stadiums, reduced mobility people are often put in a corner, and they cannot see the show.	
Accessibility at beaches	Very few beaches are adapted to be able to reach the water.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies	In theaters the accessible sites are often in aisles, separated from their peers.	
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		Courses and information with the Civil Protection help defining how to treat people with disabilities in emergency situations. Constant training of all situation with all kinds of disabled persons is a necessity
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		
Accessibility of emergency information (Multiple channels)	No issue related to her disabilities, there may be problems with cognitive or sensory disabilities.	

Spain – Older people, no 2

Demographic data

1. **Gender:** Male
2. **The place (country) of residence:** Spain
3. **Do you face any kind of difficulties/disabilities:** hearing
4. **Do you face any kind of other difficulties/disabilities:** Yes, I am a paraplegic with a D7 dorsal (spinal cord injury) since 1981, over 40 years ago. Reduced mobility.
5. **Educational level** (e.g., lower secondary school, tertiary level of education, master degree): University degree. Business administration
6. **Do you use assistive technology?** Yes
7. **If yes, which means of assistive technology?** Wheelchair. Support for moving from wheelchair to bed and to car.
8. **Do you leave alone?** Yes
9. **You move alone or with the help of an attendant?** Sometimes alone and sometimes with help of an attendant
10. **How often do you move alone?** Most of the time
11. **Do you use a personal computer?** Yes
12. **If yes, how often do you use a PC?** More than 1 hour a day

Accessibility - Sub-areas	Area	Problems/difficulties	Solutions
Core Accessibility			
Physical/Spatial Accessibility of indoor and outdoor spaces			Eliminate architectural barriers.
Mobility with the means of transportation		Too few adapted taxis (Eurotaxi, where you can climb from the back with your wheelchair)	All public transport in Palma is already adapted.

Communication with and services of the public and private sectors		
Web Accessibility		
Digital accessible transformation		
E-commerce		
Digital documents and services of the public and private sectors (e.g. e-forms, informational material, tax or government sites/applications)		Making documents easier to understand
Digital customer communication		
Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)	Some ATM are too high for wheelchair users. Entrance doors to the bank are an obstacle.	Automatic doors for bank entrance
Digital libraries and repositories		
Digital devices and their software/apps (e.g. mobile phones, smart TVs, home appliances)		

<i>Educational Accessibility</i>		
Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)		
Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology		
Accessibility to services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)		
Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)		

Accessibility in distance education/online learning		
Employment Accessibility		
Spatial/Physical Accessibility in the Workplace	His workplace and bathroom had to be adapted.	
Accessible Services in the workplace (e.g. hiring processes, communication with different sectors)		
In-service training and career up-skilling		
Assistive Technology in the workplace and accessible material		
Cultural Heritage Accessibility		
Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space,	Churches are very old and have serious accessibility problems.	Museums are generally well adapted. Being more imaginative in solutions that ensure accessibility without spoiling the environment or the architecture of the building.

guidance towards the main entrance)		
Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)	Wheelchair users are often put in a place where the visibility is bad, or the sound quality is not good. Sometimes they are put onto an elevated platform (that is good), but that platform tends to be filled by other persons because they have a better view.	
Accessibility to museum exhibits and works of art		Museums are generally very accessible.
<i>Tourism (including recreation and sports) Accessibility</i>		
Accessibility in Tourism Services	Lack of adapted public toilets in cities.	
Accessibility to accommodation (hotel units, camps, camping)	Many “adapted” or “accessible” rooms are not really accessible, especially the bathroom. Common spaces in hotels often have steps or other barriers.	Shower instead of bathtub. Shower should be open and flush (no step to enter) Bathroom door should be wide enough to enter with wheelchair

		The universal accessibility law should be followed by the hotel industry, and local administration should be more rigorous.
Accessibility in transportation		
Accessibility in sports & recreational facilities		
Accessibility at beaches	Only a few beaches are fully equipped to let you enter and reach the sea.	
Accessible shows (theaters, cinemas, concerts...) & accessible movies		
<i>Accessibility in Security and Evacuation Situations</i>		
Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)		
Accessibility in Evacuation Planning (e.g. accessible evacuation plan)		Quite good, since the places for wheelchair users are already flush with the street level.
Accessibility of emergency information (Multiple channels)		

Quantitative research

1. Introduction

Building upon the findings of the qualitative interview study, the quantitative research component was designed to measure the prevalence and intensity of accessibility barriers experienced by persons with disabilities and older people across multiple domains of daily life. While the interviews provided in-depth exploratory insights, the quantitative phase enabled a systematic statistical assessment of these challenges. A comprehensive questionnaire was therefore developed, informed by qualitative findings, relevant literature, and expert input, to assess difficulties across the seven accessibility areas addressed by AccessCoVE.

2. Objective

The objective of the present study is to document the accessibility challenges and difficulties faced by individuals with disabilities and older people, as well as the extent of these challenges/ difficulties concerning all areas of expertise on accessibility:

1. Core Accessibility,
2. Digital accessible transformation,
3. Educational Accessibility,
4. Employment Accessibility,
5. Cultural Heritage Accessibility,
6. Tourism Accessibility, and
7. Accessibility in Security and Evacuation Situations.

3. Instruments

After transcribing the interviews described in the previous chapter, an analysis was performed to identify the challenges and barriers participants faced regarding accessibility. Key difficulties were summarized to create a set of questions for each accessibility field, designed to be as responsive as possible to all target groups (disability groups or older people). To address any areas or challenges not covered in the interviews, additional questions were included or combined with the existing ones based on a review of relevant literature and the researchers' expertise. Specifically, 61

questions were derived directly from the interviews, 23 from a combination of interview insights and relevant literature (Alsalem & Doush 2018; Bezyak et.al. 2017; Clemente et.al., 2022; Eusébio et al., 2021; Goodman, 2002; Gray et al., 2012; Gudlavalleti et.al., 2014; Johansson et al., 2021; Jonsson et al., 2023; Kruczek et.al., 2023; Mastrogiuseppe et al., 2021; Pettersson et al., 2023; Woolfson, 2007; Woolfson, et al., 2007), 14 solely from literature (Alsalem & Doush, 2018; Bezyak et.al. 2017; Clemente K. et.al., 2022; Goodman et al, 2002; Gray et al., 2012; Johansson et al., 2021; Kim & Chang, 2018; Kruczek et.al., 2023; Pochstein, 2022; Wan, 2022), and 2 were based on researchers' expertise. The final questionnaire created in English, was then translated into Greek, Swedish, Italian, and Spanish. The resulting questionnaire comprised 100 questions across seven accessibility areas, with the number of questions in each category presented below:

General Accessibility (n=30)

Physical Accessibility (n=11)

Digital Accessibility (n=18)

Employment Accessibility (n=8)

Cultural Heritage Accessibility (n=9)

Tourism Accessibility (including recreation and sports) (n=19)

Accessibility in Security and Evacuation Situations (n=5)

Participants were asked to respond to each question using a Likert scale, with options ranging from 0 (totally disagree) to 4 (totally agree). Two additional options—"I don't know" and "Not relevant to my disability"—were provided for questions that might not apply to all participants. The full questionnaire can be found below.

Additionally, the participants answered to questions concerning their demographic/individual characteristics. These questions, answered at the beginning of the questionnaire, concerning the participant's gender, age, educational level and use of assistive technology and accessible materials, including naming specific means used. Participants were also asked to select one of the 7 target groups to which they resonated most with, as well as information on the severity of visual impairments, the type/cause of hearing impairment or motor disability. Moreover, questions were included about the ability of participants with visual or motor impairments to move

independently. Specific disability-related questions appeared only to participants who indicated the corresponding target group.

“General Accessibility”

- **Physical accessibility:**

Outdoor places:

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.

2. It is difficult for me to navigate external spaces without someone to accompany me due to a lack of signage.

3. Insufficient lighting in external spaces is challenging for me.

4. I have difficulty finding accessible parking spaces.

Indoor places:

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.

6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.

7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.

8. Indoor places are challenging for me when there are not standardized lighting levels.

9. Overcrowded and noisy internal spaces are frustrating for me.

- **Mobility with the means of transportation:**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).

11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.

12. When public transportation is overcrowded and noisy, it is difficult for me to cope with.

13. I find it challenging to access bus stops due to the inaccessible routes leading to them.

14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.

- **Communication with and services of the public and private sectors:**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.

16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.

17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.

18. I cannot communicate and understand the information explained to me in public services without assistance.

19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.

20. Monitors for clients (e.g., in banks or hospitals) are not accessible to people with disabilities.

21. Communication is challenging for me in public or private services where glass barriers are used, or people wear face masks.

22. There is a lack of accessible information in public services (e.g. tactile maps, Braille labels, audible information, easy-to-read texts etc.).

23. I encounter difficulties in health care services due to organizational and transport barriers.

● **Web accessibility:**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

24. I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.

25. I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition)

26. I find it difficult to understand information in digital interfaces due to too much complex content involved.

27. I have difficulty using chat windows or digital bots on websites.

28. Navigation paths and searching on websites are too complicated for me.

29. Using passwords on digital platforms or apps is challenging for me.

30. I struggle with access to social media (e.g. blogging and Facebook).

“Digital accessible transformation”

● **E-commerce**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).

32. E-commerce is challenging because I worry about online shopping security.

● **Digital documents and services of the public and private sectors (e.g.- forms, informational material, tax or government sites/applications)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.

34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.

35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands).

- **Digital customer communication**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

36. I find communicating with technical assistance services challenging and hesitate to ask for help.

- **Digital Banking (including ATMs/cash points and Interactive Teller Machines inside a bank)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.

38. It is challenging for me to make digital payments and manage my finances.

39. ATMs are challenging for me due to the lack of specific accessibility features.

- **Digital libraries and repositories**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.

- **Digital devices and their software/apps (e.g. mobile phones, smart TV, home appliances)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.

“Educational Accessibility”

- **Spatial Accessibility in educational units (public and private education, primary, secondary and post-secondary education including tertiary)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).

43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).

44. It is difficult for me to attend a course in a crowded educational environment.

45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom.

46. I find it difficult when lecture locations change.

- **Accessibility in educational material (documents – text & images/maps and graphs, video, presentations, VR & AR) and assistive technology**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

47. I find it difficult to access educational material when it is not given in an accessible text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).

48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations, accessible videos).

49. There is not accessible educational material with the use of VR/AR technology.

50. There is a lack of information about useful tools for teachers and students.

51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).

- **Accessibility in services provided by the educational units (e.g. communication with the administrative services, announcements by the teaching and the administrative staff)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

52. Communication with the administrative services is inadequate, and I don't have the chance to express my needs.

53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.

54. The library in the educational institution I attend is not equipped appropriately (e.g., assistive technology, devices, etc.) to support students with disabilities.

- **Accessibility in courses – modifications in teaching practices and tools (devices, software/apps)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.

56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions)

57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.

- **Accessibility in distance education/online learning**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.

59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.

“Employment Accessibility”

- **Spatial/Physical Accessibility in the workplace**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

60. I cannot reach my workplace easily due to poor structure in external spaces.

61. At my workplace, in internal spaces there are accessibility issues concerning spatial accessibility (e.g. there are no ramps and elevators, facilities, toilets, or narrow spaces).

62. Noise and unstructured environment in the workplace cause me stress.

- **Accessible services in the workplace (e.g., hiring processes, communication with different sectors)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of documents and websites.

64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).

- **In-service training and career up-skilling**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.

- **Assistive Technology in the workplace and accessible material**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

66. At my job, no assistive technology or special equipment is available to support me.

67. The machines I have to use in my job are not accessible.

“Cultural Heritage Accessibility”

- **Physical accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites, religious sites) as for the indoor environment and proximity areas (e.g. parking space, guidance towards the main entrance)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.

69. At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.

70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.

• **Accessibility in cultural heritage sites/environments (museums, art galleries, archaeological sites) as for the services (physical and digital)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

71. There are no trained staff members who can support me in archaeological and cultural sites and museums.

72. Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).

• **Accessibility in museum exhibits and works of art**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

73. Most places of cultural heritage don't have tour guides available for people with disabilities.

74. A tour guide is not always enough for me to have access to cultural heritage environments.

75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.

76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.

“Tourism (including recreation and sports) Accessibility”

● **Accessibility in Tourism Services**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.

78. There is no tourist signage for the direction of tourist attractions and service facilities.

● **Accessibility in accommodation (hotel units, camps, camping)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

79. Booking a room in a hotel is difficult for me as I do not have access to the information needed (e.g. pictures).

80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.

- **Accessibility in transportation**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.

82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).

83. Staff in transportation means are not well trained to serve people with disabilities.

84. I find it difficult to book a ticket online due to the inaccessible websites .

- **Accessibility in sports & recreational facilities**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.

86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).

87. There is no consideration for safety measures in sports facilities regarding people with disabilities.

88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.

- **Accessibility at beaches**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

89. Beach ramps are not available on the beach, or they are not functional.

90. I find it difficult to locate my belongings when leaving the water.

91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.

- **Accessible shows (theaters, cinemas, concerts...) & accessible movies**

92. There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.

93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).

94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.

95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader).

“Accessibility in Security and Evacuation Situations”

- **Accessibility in Security Systems (e.g. the evacuation and security systems in case of fire, earthquake, etc.)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).

• **Accessibility in Evacuation Planning (e.g. accessible evacuation plan)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.

98. There is no training for handling emergency situations involving people with disabilities.

• **Accessibility of emergency information (Multiple channels)**

0. Totally disagree	1. Disagree	2. Neutral	3. Agree	4. Totally agree	DN: I don't know	DA: Not relevant to my disability

99. Applications that have the services of the fire department, hospital, and police are not accessible enough.

100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other accessible formats).

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4. Data gathering procedures

A Google Form link to the questionnaire was sent to individuals willing to participate in the research. At the beginning of the questionnaire, participants were briefly informed about the project, the responsible partners, the aims of the study, and the anonymous and voluntary nature of participation. Participants provided informed consent before proceeding to the demographic questions and the 100-item accessibility questionnaire.

In some cases, participants expressed willingness to contribute but required support due to the digital format or length of the survey. When needed, members of the research team provided assistance in completing the questionnaire, for example by reading items aloud, clarifying wording, or entering responses on behalf of the participant. Assistance was offered strictly in a neutral manner to avoid influencing participants' answers, and only when explicitly requested by a participant.

Given the large number of questions, information was also in some cases provided to allow participants to divide their responses across multiple sessions. Participants were able to pause and return to the questionnaire at a later time, ensuring they could complete the survey at a comfortable pace and reducing potential fatigue.

Questions were formulated to avoid being overly specialized or too simplistic, allowing researchers to identify relevant difficulties across multiple questions without causing participant fatigue. In hindsight, some aspects of the questionnaire design could be improved in future iterations to better meet the accessibility needs of participants. The length of the questionnaire, 100 questions, proved demanding for some participants, particularly in the area of cognitive accessibility. A shorter version or also allowing participants to complete only the sections they regarded as relevant to them, could mitigate fatigue and increase usability. For the categories provided in the demographic section, some participants expressed the wish to tick more than one box as they identified with multiple categories. In some cases, it was also expressed that people would like to write the "group" in which they belong/their disability with their own words. Finally, the option to save progress and clearer communication of this feature within the interface would allow participants to resume the survey at another time, which could provide further agency of managing the workload of answering more independently.

5. Participants

The research participants were recruited from seven (7) different groups of individuals: 1) individuals with learning disabilities, 2) individuals with visual impairments, 3) individuals with hearing impairments, 4) individuals with physical disabilities/ mobility impairments, 5) individuals with mild intellectual disability, 6) individuals with high functioning autism, and 7) older people.

The objective of the researchers was to recruit a sample consisting of five (5) participants from each Programme Country (Greece, Italy, Spain, and Sweden) for each of the seven (7) different groups of individuals. Therefore, 20 participants with learning disabilities, 20 with visual impairments (blindness or low vision), 20 with hearing impairments, 20 with mobility impairments, 20 with mild intellectual disabilities, 20 participants with autism (High Functioning / Asperger's Syndrome) and 20 older people were intended to participate in the assessment.

However, the final research sample comes from five countries (Greece, Spain, Italy, Sweden, and Denmark), with approximately 77% of the participants drawn from Greece and Spain. A total of 206 individuals participated in the research: 103 females (50.0%), 100 males (48.5%), 2 non-binary participants (1.0%), and 1 participant identifying as 'other' (0.5%). The age of participants ranged from 15 to 93 years ($M = 46.6$, $SD = 17.4$).

The total number of participants from each country was as follows: Greece ($n = 71$), Spain ($n = 88$), Italy ($n = 15$), Sweden ($n = 30$), and Denmark ($n = 2$).

Although Denmark was not part of the original recruitment plan, two Danish participants accessed the questionnaire through wider dissemination. While the small number prevents country-level comparisons, including them contributes to the understanding of accessibility experiences from the groups in which they answered. Their responses were therefore kept as valuable data entries.

Additionally, the number of participants from each target group was: 25 individuals with visual impairments, 81 individuals with physical disabilities/ mobility impairments, 23 deaf individuals/with hearing impairments, 24 individuals with specific learning

disabilities, 12 individuals with Autism (High Functioning / Asperger's Syndrome), 16 with mild intellectual disability and 25 older people.

Visual impairments: responses on mobility and independence

More specifically, as for the severity of visual impairments, 9 participants were individuals with blindness, 9 with severe visual impairments, 2 with moderate visual impairments, and 5 participants were individuals with low vision.

Among them, 13 moved independently, while 11 moved sometimes alone and sometimes with the help of an attendant, 1 person moved with the help of an attendant.

Physical/ mobility impairments: responses on mobility and independence

In the group of people with mobility impairments, 31 participants mentioned that their disability occurred in their lower and upper extremities, 20 in their lower extremities, 7 in their upper extremities, 8 on one side of their body, 1 only in one of their extremities and 14 other areas affected.

In total, 61 participants with mobility impairments reported moving alone, 12 moved sometimes alone and sometimes with the help of an attendant, and 8 only with the help of an attendant.

Educational levels

Regarding the educational levels of the full data sample, 15 participants had not completed school education, 61 were secondary school graduates, 37 held a vocational school diploma, 60 were undergraduate degree holders, 32 were postgraduate degree holders and 1 was PhD holder.

Use of assistive technology

Concerning assistive technology use, 113 participants did not use assistive technology means, while 93 did. The means of assistive technology mentioned by survey participants are presented below, although some of them do not formally belong to assistive technology, but are part of mainstream technology. However, these means are presented here in order to faithfully reflect the participants' responses:

- Accensors
- Computer (PC or laptop)
- Tablet
- Smartphone
- Keyboard and mouse
- Smartphone accessibility services
- Audio applications (software)
- Audio processing apps
- Accessible keyboard
- Accessible screen
- Text to speech
- Screen reader
- Smartphone with VoiceOver
- Eye gaze control
- Wheelchair
- Stand up wheelchair
- Lifting wheelchair
- Electric wheelchair
- Walker
- Canes
- Crutches
- Hearing aids
- Cochlear implant
- App to communicate by subtitles
- White cane
- Braille technology

- Magnifying lenses
- CCTV
- Screen magnifiers
- Accessible bathrooms
- Shower chair
- Grab handles
- In-vehicle driving brake
- Can opener
- Mixer taps
- DAISY players
- Vision-supporting apps (Be My Eyes)
- Predictive keyboards
- Spell-check and writing-support software
- Digital magnification software
- Cognitive support tools (Timetimer, reminders)
- Safety alarms
- Eye tracking

Use of accessible materials

Concerning the use of accessible materials, 173 participants stated that they do not use any accessible materials, while 33 participants reported that they do. Specifically, the kinds of accessible material mentioned were:

- Accessible digital material
- Online programs and courses
- Accessible digital documents
- Large prints
- Enlarged texts (digital material)

- Accessible books
- Audiobooks
- Material with subtitles
- Braille texts
- Tactile maps

6. Data analysis procedures

6.1. Descriptive statistical analysis

Descriptive statistical analyses were conducted to summarize the demographic characteristics of the participants and to provide an overview of their responses to the questionnaire items across all accessibility areas. Before analysis, the dataset was examined for completeness, variable type accuracy, and appropriate labelling. Additionally, “I don’t know” and “Not relevant to my disability” responses were treated as missing values and excluded from calculations involving means, medians and standard deviations.

For the tables presenting the questionnaire items, the resulting descriptive outputs were sorted by the mean score in descending order. This ordering gives an indication of which accessibility problems are, on average, most strongly endorsed. To further examine the importance of these areas, exploratory inferential analyses were conducted (see Section 6.2), assessing whether the level of agreement for each item was statistically above the neutral midpoint of the scale.

6.2. Inferential statistical analysis

To investigate which aspects of accessibility were relevant and important for the different user groups in the questionnaire the responses on each question were assessed for the number of participants who answered them (removing responses from participants who said it was not relevant to them or that they did not know). For the remaining responses, the Wilcoxon one sample signed rank test was used to investigate whether the distribution of responses was significantly above the neutral midpoint of the response scale (which was 0 = totally disagree, 1 = disagree, 2 = neutral, 3 = agree, 4 = totally agree). The results for the different groups are shown in

tables 12 to 18 which include only those aspects which participants rated as significantly important. These show interesting patterns of important aspects of accessibility for the different groups.

7. Results

The quantitative results are presented in two parts. The first part offers descriptive statistics, providing means, medians and standard deviations of participants' responses across all questionnaire items and accessibility areas. The second part introduces exploratory inferential analyses, conducted to investigate the areas which participants rated as significantly important. Together, the descriptive and inferential results provide both an overview of commonly experienced accessibility barriers and insight into which barriers are statistically significant for different groups.

7.1. Descriptive statistics

To interpret the following tables of descriptive statistics of the data, the 5-points Likert scale used for the responses should be considered. According to this, a value of 0 corresponds to the total disagreement (totally disagree) with the statement of the person answering the questionnaire, while a value of 4 corresponds to the total agreement of the person answering the questionnaire. A value of 1 means disagree with the item, a value of 2 means neither agree nor disagree (neutral), and a value of 3 means agree with the item.

Mean, median, and standard deviation are provided in the tables for participants' responses to each item of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the item. This number is different for each item and is less than 206, which corresponds to the total number of participants in the survey. The difference between the N-value and 206 is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options.

Table 1: Descriptive statistics for all questionnaire items (full sample)

Table 1 presents descriptive statistics for the responses of the total responses of participants, with items sorted by mean score from highest to lowest. This ordering gives an indication of which accessibility problems are most strongly endorsed. The items with higher mean scores appear at the top of the table. For example, item 98 of the questionnaire (“There is no training for handling emergency situations involving people with disabilities”) shows the highest mean value ($M = 3.09$), meaning that, on average, participants agree more strongly with this statement than with the other statements that follow in the table.

Table 1

Item	N	Mean	Median	SD
98. There is no training for handling emergency situations involving people with disabilities.	129	3.09	3.00	1.05
97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.	127	3.04	3.00	1.13
96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	131	2.93	3.00	1.09
22. There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	133	2.89	3.00	1.19
88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.	115	2.83	3.00	1.09
50. There is a lack of information about useful tools for teachers and students.	127	2.80	3.00	1.09
9. Overcrowded and noisy internal spaces are	169	2.79	3.00	1.22

frustrating for me.

92. There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	124	2.78	3.00	1.08
1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.	146	2.77	3.00	1.25
73. Most places of cultural heritage don't have tour guides available for people with disabilities.	119	2.77	3.00	1.19
85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	123	2.76	3.00	1.12
89. Beach ramps are not available on the beach, or they are not functional.	121	2.75	3.00	1.11
87. There is no consideration for safety measures in sports facilities regarding people with disabilities.	114	2.71	3.00	1.12
15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.	151	2.70	3.00	1.09
12. When public transportation is overcrowded and noisy, it is difficult for me to cope with.	162	2.69	3.00	1.20
81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	151	2.68	3.00	1.22
83. Staff in transportation means are not well trained to serve people with disabilities.	147	2.64	3.00	1.10
62. Noise and an unstructured environment in the	145	2.61	3.00	1.11

workplace cause me stress.

94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	131	2.61	3.00	1.18
8. Indoor places are challenging for me when there are not standardized lighting levels.	129	2.60	3.00	1.29
99. Applications that have the services of the fire department, hospital, and police are not accessible enough.	115	2.60	3.00	1.14
47. I find it difficult to access educational material when it is not given in an accessible text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).	130	2.59	3.00	1.25
4. I have difficulty finding accessible parking spaces.	107	2.58	3.00	1.32
86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).	114	2.58	3.00	1.12
91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.	112	2.58	3.00	1.21
70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	155	2.56	3.00	1.15
72. Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	122	2.56	3.00	1.15
10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	137	2.55	3.00	1.36

34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	162	2.55	3.00	1.15
3. Insufficient lighting in external spaces is challenging for me.	138	2.54	3.00	1.28
7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	124	2.52	3.00	1.46
69. At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	138	2.52	3.00	1.15
6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	135	2.50	3.00	1.43
16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	118	2.49	3.00	1.31
49. There is not accessible educational material with the use of VR/AR technology.	80	2.48	2.50	1.26
32. E-commerce is challenging because I worry about online shopping security.	163	2.45	3.00	1.26
68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	139	2.45	3.00	1.14
23. I encounter difficulties in health care services	135	2.42	3.00	1.18

due to organizational and transport barriers.

48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	130	2.42	3.00	1.33
55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	122	2.42	3.00	1.30
74. A tour guide is not always enough for me to have access to cultural heritage environments.	133	2.41	3.00	1.20
51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	97	2.40	3.00	1.27
5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.	139	2.39	3.00	1.31
17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	160	2.39	3.00	1.19
20. Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities.	142	2.39	2.50	1.33
44. It is difficult for me to attend a course in a crowded educational environment.	139	2.39	3.00	1.32
46. I find it difficult when lecture locations change.	142	2.38	3.00	1.26

36. I find communicating with technical assistance services challenging and hesitate to ask for help.	153	2.37	3.00	1.33
78. There is no tourist signage for the direction of tourist attractions and service facilities.	126	2.36	2.00	1.09
21. Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	147	2.35	3.00	1.26
25. I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition).	130	2.35	2.00	1.26
11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.	148	2.34	3.00	1.27
56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions).	130	2.34	3.00	1.38
71. There are no trained staff members who can support me in archaeological and cultural sites and museums.	135	2.34	3.00	1.15
53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	126	2.33	2.00	1.24
59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	128	2.33	2.00	1.29
45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the	134	2.32	3.00	1.31

classroom.

26. I find it difficult to understand information in digital interfaces due to too much complex content involved.	151	2.30	3.00	1.30
35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	138	2.30	2.00	1.22
76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	118	2.30	3.00	1.20
24. I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.	158	2.29	3.00	1.31
52. Communication with the administrative services is inadequate, and I don't have the chance to express my needs.	133	2.25	2.00	1.25
13. I find it challenging to access bus stops due to the inaccessible routes leading to them.	137	2.24	2.00	1.22
33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	149	2.24	2.00	1.28
41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	151	2.22	2.00	1.34

31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).	130	2.20	2.00	1.24
54. The library in the educational institution I attend is not equipped appropriately (e.g., assistive technology, devices, etc.) to support students with disabilities.	103	2.19	2.00	1.18
40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.	127	2.17	2.00	1.31
60. I cannot reach my workplace easily due to poor structure in external spaces.	114	2.17	2.00	1.28
77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	150	2.16	2.00	1.28
100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other accessible formats).	132	2.16	2.00	1.20
43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).	105	2.15	2.00	1.32
84. I find it difficult to book a ticket online due to the inaccessible websites.	148	2.14	2.00	1.23
29. Using passwords on digital platforms or apps is challenging for me.	162	2.09	2.00	1.34
57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.	138	2.07	2.00	1.40

64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).	113	2.07	2.00	1.29
63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of documents and websites.	128	2.06	2.00	1.20
66. At my job, no assistive technology or special equipment is available to support me.	94	2.05	2.00	1.33
39. ATMs are challenging for me due to the lack of specific accessibility features.	139	2.04	2.00	1.43
58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	125	2.04	2.00	1.32
27. I have difficulty using chat windows or digital bots on websites.	150	2.03	2.00	1.31
14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.	149	2.00	2.00	1.19
65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.	112	2.00	2.00	1.26
79. Booking a room in a hotel is difficult for me as I do not have access to the necessary information (e.g., pictures).	158	2.00	2.00	1.26
38. It is challenging for me to make digital payments and manage my finances.	160	1.99	2.00	1.41

61. At my workplace, in internal spaces, there are accessibility issues concerning spatial accessibility (e.g., there are no ramps and elevators, facilities, toilets, or narrow spaces).	104	1.98	2.00	1.30
80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.	146	1.97	2.00	1.21
90. I find it difficult to locate my belongings when leaving the water.	123	1.97	2.00	1.27
95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader)	134	1.96	2.00	1.21
42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).	99	1.95	2.00	1.27
93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).	120	1.95	2.00	1.33
2. It is difficult to navigate external spaces without someone to accompany me due to a lack of signage.	129	1.94	2.00	1.26
19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.	153	1.94	2.00	1.32
82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	137	1.92	2.00	1.20
67. The machines I have to use in my job are not accessible.	99	1.86	2.00	1.24

28. Navigation paths and searching on websites are too complicated for me.	164	1.85	2.00	1.28
37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.	149	1.82	1.00	1.31
75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.	137	1.78	2.00	1.26
18. I cannot communicate and understand the information explained to me in public services without assistance.	153	1.76	2.00	1.28
30. I struggle with access to social media (e.g., blogging and Facebook).	92	1.33	1.00	1.20

Table 2

Table 2 below presents the results of the descriptive statistics regarding the responses of the total sample of study participants, comparing each of the seven categories of participants: 1) Visual Impairments, 2) Physical/Mobility Impairments, 3) Deaf-Hard of hearing, 4) Specific Learning Disabilities, 5) Autism (High Functioning/ Asperger's Syndrome), 6) Mild Intellectual disability, and 7) Older people.

The value of N corresponds to the number of participants who responded to what extent they agreed with the item. This number is different for each item and is less than number of participants belonging to each of the seven categories. The difference between the N-value and the number of participants belonging to each category is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options

Table 2

Item		N	Mean	Median	SD
1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.	1 Visual Impairments	25	2.600	3.000	1.225
	2 Physical/Mobility Impairments	66	3.121	4.000	1.183
	3 Hearing Impairments	10	2.300	2.000	1.494
	4 Specific Learning Disabilities	5	2.800	3.000	1.304
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.600	3.000	1.140
	6 Mild Intellectual disability	12	2.000	2.500	1.414
	7 Older people	23	2.565	3.000	1.121
2. It is difficult to navigate external spaces without someone to accompany me due to a lack of signage.	1 Visual Impairments	24	2.208	2.000	1.382
	2 Physical/Mobility Impairments	51	2.216	2.000	1.189
	3 Hearing Impairments	8	1.625	2.000	1.506
	4 Specific Learning Disabilities	6	1.833	2.000	1.169
	5 Autism (High Functioning / Asperger's Syndrome)	7	1.857	1.000	1.069
	6 Mild Intellectual disability	13	1.385	1.000	1.325
	7 Older people	20	1.450	1.000	1.099
3. Insufficient lighting in external spaces is challenging for me.	1 Visual Impairments	22	2.727	3.000	1.316
	2 Physical/Mobility Impairments	51	2.451	3.000	1.316
	3 Hearing Impairments	16	2.563	3.000	1.413
	4 Specific Learning Disabilities	5	2.800	3.000	1.304

4. I have difficulty finding accessible parking spaces.	5 Autism (High Functioning / Asperger's Syndrome)	8	1.875	2.000	1.126
	6 Mild Intellectual disability	12	2.750	3.000	1.485
	7 Older people	24	2.625	3.000	1.056
	1 Visual Impairments	9	1.778	2.000	1.394
	2 Physical/Mobility Impairments	56	2.982	3.000	1.272
	3 Hearing Impairments	12	1.917	2.500	1.311
	4 Specific Learning Disabilities	5	2.000	2.000	1.414
5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.	5 Autism (High Functioning / Asperger's Syndrome)	5	2.600	3.000	1.140
	6 Mild Intellectual disability	9	1.889	2.000	0.782
	7 Older people	11	2.727	3.000	1.348
	1 Visual Impairments	24	2.792	3.000	1.250
	2 Physical/Mobility Impairments	55	2.236	2.000	1.401
	3 Hearing Impairments	12	2.417	3.000	1.240
	4 Specific Learning Disabilities	8	2.875	3.000	0.835
6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	5 Autism (High Functioning / Asperger's Syndrome)	8	3.000	3.000	0.756
	6 Mild Intellectual disability	11	2.273	2.000	1.555
	7 Older people	21	1.952	2.000	1.203
	1 Visual Impairments	19	1.579	1.000	1.539
	2 Physical/Mobility Impairments	64	3.250	4.000	1.127
	3 Hearing Impairments	8	1.375	0.500	1.685

7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	4 Specific Learning Disabilities	6	2.667	3.000	1.033
	5 Autism (High Functioning / Asperger's Syndrome)	5	1.000	1.000	0.707
	6 Mild Intellectual disability	12	1.583	1.000	0.996
	7 Older people	21	2.286	3.000	1.231
	1 Visual Impairments	17	1.765	2.000	1.640
	2 Physical/Mobility Impairments	65	3.169	4.000	1.193
	3 Hearing Impairments	9	1.778	3.000	1.716
8. Indoor places are challenging for me when there are not standardized lighting levels.	4 Specific Learning Disabilities	5	2.200	2.000	1.304
	5 Autism (High Functioning / Asperger's Syndrome)	4	1.750	1.500	0.957
	6 Mild Intellectual disability	10	2.200	2.500	1.135
	7 Older people	14	1.500	1.500	1.286
	1 Visual Impairments	22	2.409	3.000	1.469
	2 Physical/Mobility Impairments	48	2.667	3.000	1.310
	3 Hearing Impairments	12	2.833	3.000	1.403
9. Overcrowded and noisy internal spaces are frustrating for me.	4 Specific Learning Disabilities	6	3.167	3.500	1.169
	5 Autism (High Functioning / Asperger's Syndrome)	7	3.143	3.000	0.690
	6 Mild Intellectual disability	12	2.667	3.000	1.231
	7 Older people	22	2.136	2.000	1.167
	1 Visual Impairments	22	2.364	3.000	1.364
	2 Physical/Mobility Impairments	64	2.859	3.000	1.246

	3 Hearing Impairments	20	2.850	3.000	1.226	
	4 Specific Learning Disabilities	12	3.333	3.500	0.888	
	5 Autism (High Functioning / Asperger's Syndrome)	12	3.417	3.500	0.669	
	6 Mild Intellectual disability	15	2.133	3.000	1.246	
	7 Older people	24	2.792	3.000	1.141	
	10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	1 Visual Impairments	15	1.600	2.000	1.352
	2 Physical/Mobility Impairments	71	3.141	4.000	1.099	
	3 Hearing Impairments	9	1.889	2.000	1.537	
	4 Specific Learning Disabilities	5	2.400	2.000	1.140	
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.000	2.000	0.816	
	6 Mild Intellectual disability	11	2.000	2.000	1.673	
	7 Older people	22	1.955	2.000	1.214	
	11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.	1 Visual Impairments	25	2.560	3.000	1.387
	2 Physical/Mobility Impairments	55	2.345	2.000	1.294	
	3 Hearing Impairments	15	2.800	3.000	0.941	
	4 Specific Learning Disabilities	9	2.778	3.000	1.093	
	5 Autism (High Functioning / Asperger's Syndrome)	10	2.300	3.000	0.949	
	6 Mild Intellectual disability	13	2.077	2.000	1.498	
	7 Older people	21	1.762	2.000	1.221	
	12. When public	1 Visual Impairments	22	2.409	2.500	1.260

transportation is overcrowded and noisy, it is difficult for me to cope with.	2 Physical/Mobility Impairments	64	2.844	3.000	1.130
	3 Hearing Impairments	16	2.688	3.000	1.078
	4 Specific Learning Disabilities	10	2.900	3.000	1.370
	5 Autism (High Functioning / Asperger's Syndrome)	12	3.083	3.500	1.240
	6 Mild Intellectual disability	14	2.000	2.000	1.177
	7 Older people	24	2.667	3.000	1.239
13. I find it challenging to access bus stops due to the inaccessible routes leading to them.	1 Visual Impairments	24	1.958	2.000	1.268
	2 Physical/Mobility Impairments	63	2.683	3.000	1.060
	3 Hearing Impairments	9	2.000	2.000	1.581
	4 Specific Learning Disabilities	5	2.400	2.000	1.140
	5 Autism (High Functioning / Asperger's Syndrome)	4	1.500	1.500	0.577
	6 Mild Intellectual disability	11	1.545	1.000	1.128
	7 Older people	21	1.810	1.000	1.209
14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.	1 Visual Impairments	23	1.826	2.000	1.267
	2 Physical/Mobility Impairments	63	2.095	2.000	1.266
	3 Hearing Impairments	16	2.375	2.000	1.147
	4 Specific Learning Disabilities	6	1.833	2.000	1.169
	5 Autism (High Functioning / Asperger's Syndrome)	7	1.571	2.000	0.976
	6 Mild Intellectual disability	13	2.000	2.000	1.291
	7 Older people	21	1.810	2.000	0.928

15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.	1 Visual Impairments	25	2.800	3.000	1.000
	2 Physical/Mobility Impairments	67	2.642	3.000	1.227
	3 Hearing Impairments	15	3.067	3.000	0.704
	4 Specific Learning Disabilities	9	2.667	3.000	0.866
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.200	2.000	0.837
	6 Mild Intellectual disability	10	2.500	3.000	1.269
	7 Older people	20	2.700	3.000	1.031
16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	1 Visual Impairments	18	1.944	2.000	1.305
	2 Physical/Mobility Impairments	66	2.833	3.000	1.197
	3 Hearing Impairments	12	1.833	2.000	1.267
	4 Specific Learning Disabilities	3	2.333	2.000	1.528
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.200	2.000	1.095
	6 Mild Intellectual disability	8	2.500	2.500	1.512
	7 Older people	6	2.000	1.500	1.673
17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	1 Visual Impairments	24	2.292	2.000	1.233
	2 Physical/Mobility Impairments	70	2.343	2.000	1.089
	3 Hearing Impairments	20	2.400	3.000	1.501
	4 Specific Learning Disabilities	10	2.400	3.000	1.075
	5 Autism (High Functioning / Asperger's Syndrome)	8	3.125	3.000	0.835
	6 Mild Intellectual disability	14	2.429	3.000	1.555

	7 Older people	14	2.286	2.500	1.069
18. I cannot communicate and understand the information explained to me in public services without assistance.	1 Visual Impairments	21	1.619	2.000	1.244
	2 Physical/Mobility Impairments	53	1.604	1.000	1.291
	3 Hearing Impairments	18	2.278	3.000	1.565
	4 Specific Learning Disabilities	14	1.714	1.000	1.267
	5 Autism (High Functioning / Asperger's Syndrome)	12	1.500	1.000	0.905
	6 Mild Intellectual disability	13	2.154	2.000	1.281
	7 Older people	22	1.773	2.000	1.232
19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.	1 Visual Impairments	24	2.250	2.000	1.189
	2 Physical/Mobility Impairments	58	1.517	1.000	1.232
	3 Hearing Impairments	17	2.118	2.000	1.317
	4 Specific Learning Disabilities	12	2.083	2.500	1.443
	5 Autism (High Functioning / Asperger's Syndrome)	8	1.500	2.000	1.069
	6 Mild Intellectual disability	12	2.417	3.000	1.564
	7 Older people	22	2.409	3.000	1.333
20. Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities.	1 Visual Impairments	23	3.087	4.000	1.276
	2 Physical/Mobility Impairments	65	2.185	2.000	1.391
	3 Hearing Impairments	14	2.143	2.000	1.406
	4 Specific Learning Disabilities	9	2.667	3.000	0.866
	5 Autism (High Functioning / Asperger's Syndrome)	7	2.143	2.000	0.690

21. Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	6 Mild Intellectual disability	11	2.455	3.000	1.368
	7 Older people	13	2.308	3.000	1.316
	1 Visual Impairments	22	2.273	3.000	1.420
	2 Physical/Mobility Impairments	53	2.245	2.000	1.314
	3 Hearing Impairments	22	3.091	3.000	1.151
	4 Specific Learning Disabilities	8	2.750	3.000	0.886
	5 Autism (High Functioning / Asperger's Syndrome)	9	2.333	2.000	1.000
22. There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	6 Mild Intellectual disability	13	1.923	2.000	1.115
	7 Older people	20	2.050	2.500	1.191
	1 Visual Impairments	24	3.333	4.000	1.007
	2 Physical/Mobility Impairments	53	2.868	3.000	1.225
	3 Hearing Impairments	16	2.875	3.000	1.310
	4 Specific Learning Disabilities	11	2.545	3.000	1.128
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.600	3.000	0.548
23. I encounter difficulties in health care services due to organizational and transport barriers.	6 Mild Intellectual disability	9	2.667	3.000	1.581
	7 Older people	15	2.800	3.000	1.146
	1 Visual Impairments	22	2.273	2.500	1.316
	2 Physical/Mobility Impairments	63	2.587	3.000	1.200
	3 Hearing Impairments	12	2.250	2.500	1.357
	4 Specific Learning Disabilities	6	2.167	2.000	1.169

24. I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.	5 Autism (High Functioning / Asperger's Syndrome)	5	2.400	2.000	0.548
	6 Mild Intellectual disability	10	2.500	2.500	1.080
	7 Older people	17	2.176	2.000	1.074
	1 Visual Impairments	25	2.440	3.000	1.356
	2 Physical/Mobility Impairments	54	1.926	2.000	1.330
	3 Hearing Impairments	16	2.063	2.000	1.181
	4 Specific Learning Disabilities	18	2.778	3.000	1.309
25. I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition).	5 Autism (High Functioning / Asperger's Syndrome)	10	2.000	2.000	1.054
	6 Mild Intellectual disability	12	2.167	2.500	1.403
	7 Older people	23	2.957	3.000	1.065
	1 Visual Impairments	24	2.958	3.000	1.122
	2 Physical/Mobility Impairments	48	2.104	2.000	1.341
	3 Hearing Impairments	13	2.231	2.000	1.092
	4 Specific Learning Disabilities	12	2.167	2.500	1.193
26. I find it difficult to understand information in digital interfaces due to too much complex	5 Autism (High Functioning / Asperger's Syndrome)	6	1.500	2.000	0.837
	6 Mild Intellectual disability	13	2.692	3.000	1.182
	7 Older people	14	2.500	3.000	1.345
	1 Visual Impairments	23	1.870	2.000	1.254
	2 Physical/Mobility Impairments	54	2.185	2.000	1.402
	3 Hearing Impairments	14	2.357	3.000	1.447

content involved.	4 Specific Learning Disabilities	17	2.765	3.000	1.200
	5 Autism (High Functioning / Asperger's Syndrome)	11	1.909	2.000	1.044
	6 Mild Intellectual disability	12	2.750	3.000	1.055
	7 Older people	20	2.650	3.000	1.137
	1 Visual Impairments	22	1.818	2.000	1.181
	2 Physical/Mobility Impairments	53	2.019	2.000	1.380
	3 Hearing Impairments	15	1.533	1.000	1.187
27. I have difficulty using chat windows or digital bots on websites.	4 Specific Learning Disabilities	16	2.000	2.000	1.265
	5 Autism (High Functioning / Asperger's Syndrome)	10	1.600	1.000	1.350
	6 Mild Intellectual disability	13	2.231	3.000	1.363
	7 Older people	21	2.762	3.000	1.179
	1 Visual Impairments	25	1.560	2.000	1.083
	2 Physical/Mobility Impairments	54	1.907	2.000	1.307
	3 Hearing Impairments	17	1.647	1.000	1.272
28. Navigation paths and searching on websites are too complicated for me.	4 Specific Learning Disabilities	20	1.650	1.000	1.309
	5 Autism (High Functioning / Asperger's Syndrome)	11	1.091	1.000	0.831
	6 Mild Intellectual disability	14	2.143	2.500	1.351
	7 Older people	23	2.565	3.000	1.308
	1 Visual Impairments	24	1.875	2.000	1.116
	2 Physical/Mobility Impairments	55	2.145	2.000	1.367
29. Using passwords on digital platforms or apps is challenging for					

me.	3 Hearing Impairments	17	1.471	1.000	1.231
	4 Specific Learning Disabilities	19	1.789	2.000	1.475
	5 Autism (High Functioning / Asperger's Syndrome)	10	1.800	2.000	1.476
	6 Mild Intellectual disability	14	2.500	3.000	1.225
	7 Older people	23	2.739	3.000	1.251
	1 Visual Impairments	22	1.091	1.000	1.192
	2 Physical/Mobility Impairments	14	1.214	1.000	1.188
30. I struggle with access to social media (e.g., blogging and Facebook).	3 Hearing Impairments	12	1.000	1.000	0.739
	4 Specific Learning Disabilities	15	0.867	1.000	0.834
	5 Autism (High Functioning / Asperger's Syndrome)	8	1.125	1.000	1.126
	6 Mild Intellectual disability	6	1.000	1.000	0.632
	7 Older people	15	2.733	3.000	1.163
	1 Visual Impairments	24	2.458	2.500	1.062
	2 Physical/Mobility Impairments	48	2.021	2.000	1.280
31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).	3 Hearing Impairments	14	1.857	1.500	1.231
	4 Specific Learning Disabilities	16	2.250	2.500	1.342
	5 Autism (High Functioning / Asperger's Syndrome)	6	1.667	2.000	1.033
	6 Mild Intellectual disability	9	2.556	3.000	1.333
	7 Older people	13	2.692	3.000	1.182
	1 Visual Impairments	22	1.864	2.000	1.125
32. E-commerce is	1 Visual Impairments	22	1.864	2.000	1.125

challenging because I worry about online shopping security.	2 Physical/Mobility Impairments	60	2.333	3.000	1.323
	3 Hearing Impairments	17	2.647	3.000	1.272
	4 Specific Learning Disabilities	19	2.158	2.000	1.167
	5 Autism (High Functioning / Asperger's Syndrome)	12	2.667	3.000	0.985
	6 Mild Intellectual disability	11	2.545	3.000	1.508
	7 Older people	22	3.273	3.000	0.935
	1 Visual Impairments	24	1.792	2.000	1.215
33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	2 Physical/Mobility Impairments	52	2.385	3.000	1.301
	3 Hearing Impairments	15	2.067	2.000	1.223
	4 Specific Learning Disabilities	16	2.125	2.000	1.147
	5 Autism (High Functioning / Asperger's Syndrome)	10	1.600	1.500	1.174
	6 Mild Intellectual disability	11	2.727	3.000	1.104
	7 Older people	21	2.667	3.000	1.390
	1 Visual Impairments	19	2.053	2.000	1.224
34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	2 Physical/Mobility Impairments	56	2.589	3.000	1.233
	3 Hearing Impairments	19	2.316	3.000	1.336
	4 Specific Learning Disabilities	20	2.650	3.000	1.040
	5 Autism (High Functioning / Asperger's Syndrome)	12	2.667	3.000	1.155
	6 Mild Intellectual disability	13	2.769	3.000	0.927
	7 Older people	23	2.783	3.000	0.902

35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	1 Visual Impairments	24	2.625	3.000	1.209
	2 Physical/Mobility Impairments	52	2.327	2.000	1.264
	3 Hearing Impairments	14	1.714	2.000	0.994
	4 Specific Learning Disabilities	15	2.267	3.000	1.280
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.400	2.000	1.140
	6 Mild Intellectual disability	11	1.909	2.000	1.446
	7 Older people	17	2.529	3.000	1.068
36. I find communicating with technical assistance services challenging and hesitate to ask for help.	1 Visual Impairments	19	2.368	2.000	1.212
	2 Physical/Mobility Impairments	52	2.250	2.500	1.412
	3 Hearing Impairments	19	2.632	3.000	1.342
	4 Specific Learning Disabilities	18	2.500	3.000	1.150
	5 Autism (High Functioning / Asperger's Syndrome)	11	2.545	3.000	1.214
	6 Mild Intellectual disability	14	2.143	2.000	1.610
	7 Older people	20	2.350	3.000	1.348
37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.	1 Visual Impairments	25	1.800	1.000	1.258
	2 Physical/Mobility Impairments	52	1.827	1.500	1.382
	3 Hearing Impairments	20	1.750	1.000	1.164
	4 Specific Learning Disabilities	15	1.667	2.000	1.345
	5 Autism (High Functioning / Asperger's Syndrome)	9	1.333	1.000	1.118
	6 Mild Intellectual disability	11	2.091	2.000	1.578

	7 Older people	17	2.118	2.000	1.269
38. It is challenging for me to make digital payments and manage my finances.	1 Visual Impairments	24	1.958	2.000	1.429
	2 Physical/Mobility Impairments	55	2.000	2.000	1.414
	3 Hearing Impairments	18	1.667	1.000	1.372
	4 Specific Learning Disabilities	19	1.579	1.000	1.502
	5 Autism (High Functioning / Asperger's Syndrome)	11	2.000	2.000	1.549
	6 Mild Intellectual disability	11	2.273	3.000	1.348
	7 Older people	22	2.455	3.000	1.299
39. ATMs are challenging for me due to the lack of specific accessibility features.	1 Visual Impairments	23	2.783	3.000	1.380
	2 Physical/Mobility Impairments	60	2.300	3.000	1.453
	3 Hearing Impairments	15	1.467	1.000	1.246
	4 Specific Learning Disabilities	10	1.500	1.500	1.080
	5 Autism (High Functioning / Asperger's Syndrome)	6	1.167	1.000	1.169
	6 Mild Intellectual disability	11	1.727	1.000	1.348
	7 Older people	14	1.286	1.000	1.204
40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.	1 Visual Impairments	22	2.500	3.000	1.263
	2 Physical/Mobility Impairments	45	2.044	2.000	1.364
	3 Hearing Impairments	13	2.077	2.000	1.256
	4 Specific Learning Disabilities	16	2.250	3.000	1.342
	5 Autism (High Functioning / Asperger's Syndrome)	7	1.714	2.000	1.380

41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	6 Mild Intellectual disability	10	2.300	2.500	1.337
	7 Older people	14	2.214	2.500	1.311
	1 Visual Impairments	23	1.826	2.000	1.114
	2 Physical/Mobility Impairments	54	2.426	3.000	1.354
	3 Hearing Impairments	17	2.059	2.000	1.345
	4 Specific Learning Disabilities	18	2.111	2.000	1.367
	5 Autism (High Functioning / Asperger's Syndrome)	10	1.200	1.000	1.229
42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).	6 Mild Intellectual disability	11	2.273	2.000	1.272
	7 Older people	18	2.889	3.000	1.278
	1 Visual Impairments	15	1.600	2.000	1.183
	2 Physical/Mobility Impairments	48	2.333	3.000	1.374
	3 Hearing Impairments	10	1.700	2.000	1.160
	4 Specific Learning Disabilities	6	1.667	1.000	1.033
	5 Autism (High Functioning / Asperger's Syndrome)	3	1.667	1.000	1.155
43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators,	6 Mild Intellectual disability	11	1.545	2.000	1.036
	7 Older people	6	1.333	1.000	1.033
	1 Visual Impairments	17	1.824	2.000	1.334
	2 Physical/Mobility Impairments	53	2.585	3.000	1.307
	3 Hearing Impairments	10	1.500	1.500	1.080
	4 Specific Learning Disabilities	6	2.667	2.500	1.211

signage).	5 Autism (High Functioning / Asperger's Syndrome)	2	1.000	1.000	0.000
	6 Mild Intellectual disability	10	1.400	1.000	0.843
	7 Older people	7	1.571	1.000	1.397
	1 Visual Impairments	17	1.706	2.000	1.359
	2 Physical/Mobility Impairments	52	2.538	3.000	1.350
	3 Hearing Impairments	17	3.118	3.000	1.111
	4 Specific Learning Disabilities	20	2.600	3.000	1.046
44. It is difficult for me to attend a course in a crowded educational environment.	5 Autism (High Functioning / Asperger's Syndrome)	11	2.545	3.000	1.368
	6 Mild Intellectual disability	14	1.857	2.000	1.231
	7 Older people	8	1.500	1.000	1.069
	1 Visual Impairments	19	2.474	3.000	1.219
	2 Physical/Mobility Impairments	45	2.333	3.000	1.331
	3 Hearing Impairments	19	3.158	3.000	1.015
	4 Specific Learning Disabilities	19	2.053	3.000	1.353
45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom.	5 Autism (High Functioning / Asperger's Syndrome)	9	2.222	3.000	1.716
	6 Mild Intellectual disability	15	1.600	1.000	1.056
	7 Older people	8	2.000	2.500	1.195
	1 Visual Impairments	22	2.636	3.000	1.329
	2 Physical/Mobility Impairments	52	2.500	3.000	1.245
	3 Hearing Impairments	17	2.294	2.000	1.312
46. I find it difficult when lecture locations change.					

	4 Specific Learning Disabilities	18	1.833	2.000	1.150
	5 Autism (High Functioning / Asperger's Syndrome)	12	2.750	3.000	1.288
	6 Mild Intellectual disability	12	2.250	2.000	1.288
	7 Older people	9	2.000	3.000	1.225
	1 Visual Impairments	22	3.227	3.500	1.066
	2 Physical/Mobility Impairments	45	2.356	2.000	1.264
	3 Hearing Impairments	16	2.625	3.000	1.360
47. I find it difficult to access educational material when it is not given in an accessible text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).	4 Specific Learning Disabilities	19	2.579	3.000	1.346
	5 Autism (High Functioning / Asperger's Syndrome)	8	3.000	3.000	0.535
	6 Mild Intellectual disability	11	2.182	2.000	1.328
	7 Older people	9	2.333	3.000	1.225
	1 Visual Impairments	22	3.136	3.500	1.125
	2 Physical/Mobility Impairments	42	2.071	2.000	1.386
	3 Hearing Impairments	17	2.471	3.000	1.419
48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	4 Specific Learning Disabilities	19	2.737	3.000	1.240
	5 Autism (High Functioning / Asperger's Syndrome)	9	2.778	3.000	0.833
	6 Mild Intellectual disability	12	1.667	2.000	1.371
	7 Older people	9	2.222	3.000	1.093
	1 Visual Impairments	12	2.417	2.000	1.311
	2 Physical/Mobility Impairments	39	2.615	3.000	1.310
49. There is not accessible educational material with the use of					

VR/AR technology.	3 Hearing Impairments	7	2.429	3.000	1.272
	4 Specific Learning Disabilities	8	2.250	2.500	1.282
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.500	3.000	1.915
	6 Mild Intellectual disability	7	2.571	3.000	0.535
	7 Older people	3	1.333	2.000	1.155
50. There is a lack of information about useful tools for teachers and students.	1 Visual Impairments	20	2.950	3.000	0.999
	2 Physical/Mobility Impairments	47	2.809	3.000	1.227
	3 Hearing Impairments	12	3.000	3.000	1.128
	4 Specific Learning Disabilities	20	3.000	3.000	0.725
	5 Autism (High Functioning / Asperger's Syndrome)	9	2.556	3.000	1.130
	6 Mild Intellectual disability	12	2.417	2.000	1.165
	7 Older people	7	2.286	3.000	1.113
51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	1 Visual Impairments	18	2.278	2.000	1.320
	2 Physical/Mobility Impairments	38	2.342	2.000	1.381
	3 Hearing Impairments	14	2.857	3.000	1.351
	4 Specific Learning Disabilities	11	2.545	3.000	0.820
	5 Autism (High Functioning / Asperger's Syndrome)	4	3.000	3.000	0.816
	6 Mild Intellectual disability	8	2.125	2.000	1.246
	7 Older people	4	1.500	2.000	1.000
52. Communication	1 Visual Impairments	20	2.300	2.000	1.031

with the administrative services is inadequate, and I don't have the chance to express my needs.	2 Physical/Mobility Impairments	52	2.308	2.000	1.336
	3 Hearing Impairments	17	2.353	2.000	1.320
	4 Specific Learning Disabilities	18	2.167	2.000	1.295
	5 Autism (High Functioning / Asperger's Syndrome)	9	2.444	3.000	1.236
	6 Mild Intellectual disability	9	2.000	2.000	1.225
	7 Older people	8	1.750	1.500	1.165
53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	1 Visual Impairments	18	2.111	2.000	1.183
	2 Physical/Mobility Impairments	47	2.149	2.000	1.268
	3 Hearing Impairments	18	2.500	2.500	1.249
	4 Specific Learning Disabilities	17	2.176	2.000	1.380
	5 Autism (High Functioning / Asperger's Syndrome)	9	2.778	3.000	1.202
	6 Mild Intellectual disability	10	3.100	3.000	0.738
	7 Older people	7	2.286	3.000	1.380
54. The library in the educational institution I attend is not equipped appropriately (e.g., assistive technology, devices, etc.) to support students with disabilities.	1 Visual Impairments	20	2.350	2.500	1.182
	2 Physical/Mobility Impairments	40	2.050	2.000	1.239
	3 Hearing Impairments	15	2.400	3.000	1.121
	4 Specific Learning Disabilities	10	2.500	3.000	1.080
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.250	2.000	1.258
	6 Mild Intellectual disability	9	2.444	2.000	1.130
	7 Older people	5	1.000	1.000	0.707

55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	1 Visual Impairments	20	2.500	2.500	1.051
	2 Physical/Mobility Impairments	45	2.267	3.000	1.405
	3 Hearing Impairments	16	2.563	3.000	1.504
	4 Specific Learning Disabilities	17	2.941	3.000	1.144
	5 Autism (High Functioning / Asperger's Syndrome)	11	2.455	3.000	1.214
	6 Mild Intellectual disability	9	2.222	2.000	1.202
	7 Older people	4	1.250	1.500	0.957
56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions).	1 Visual Impairments	19	2.421	2.000	0.902
	2 Physical/Mobility Impairments	53	2.264	3.000	1.456
	3 Hearing Impairments	17	2.529	3.000	1.546
	4 Specific Learning Disabilities	19	2.579	3.000	1.305
	5 Autism (High Functioning / Asperger's Syndrome)	9	2.667	3.000	1.225
	6 Mild Intellectual disability	10	1.600	1.500	1.647
	7 Older people	3	2.000	2.000	2.000
57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.	1 Visual Impairments	20	2.050	2.000	1.191
	2 Physical/Mobility Impairments	54	1.981	2.000	1.460
	3 Hearing Impairments	17	2.588	3.000	1.228
	4 Specific Learning Disabilities	19	2.000	2.000	1.491
	5 Autism (High Functioning / Asperger's Syndrome)	10	2.100	2.000	1.663
	6 Mild Intellectual disability	14	1.786	1.000	1.424

	7 Older people	4	2.250	2.000	1.500
58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	1 Visual Impairments	21	1.952	2.000	1.359
	2 Physical/Mobility Impairments	42	1.738	2.000	1.345
	3 Hearing Impairments	17	2.353	3.000	1.320
	4 Specific Learning Disabilities	19	2.579	3.000	1.017
	5 Autism (High Functioning / Asperger's Syndrome)	7	2.286	2.000	1.113
	6 Mild Intellectual disability	13	1.769	1.000	1.481
	7 Older people	6	2.167	2.500	1.472
59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	1 Visual Impairments	21	2.048	2.000	1.203
	2 Physical/Mobility Impairments	46	2.217	2.000	1.228
	3 Hearing Impairments	15	3.000	3.000	1.134
	4 Specific Learning Disabilities	17	2.765	3.000	1.437
	5 Autism (High Functioning / Asperger's Syndrome)	12	2.250	2.500	1.357
	6 Mild Intellectual disability	13	2.000	2.000	1.354
	7 Older people	4	2.000	2.500	1.414
60. I cannot reach my workplace easily due to poor structure in external spaces.	1 Visual Impairments	20	2.050	2.000	1.146
	2 Physical/Mobility Impairments	57	2.491	3.000	1.325
	3 Hearing Impairments	10	1.400	1.000	1.075
	4 Specific Learning Disabilities	5	2.400	2.000	1.140
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.500	2.500	1.291

61. At my workplace, in internal spaces, there are accessibility issues concerning spatial accessibility (e.g., there are no ramps and elevators, facilities, toilets, or narrow spaces).	6 Mild Intellectual disability	9	1.444	1.000	1.333
	7 Older people	9	1.667	2.000	1.000
	1 Visual Impairments	16	1.625	1.500	1.258
	2 Physical/Mobility Impairments	54	2.278	3.000	1.433
	3 Hearing Impairments	8	1.500	1.500	0.926
	4 Specific Learning Disabilities	7	2.286	2.000	1.113
	5 Autism (High Functioning / Asperger's Syndrome)	3	1.333	1.000	0.577
	6 Mild Intellectual disability	9	1.556	1.000	1.014
	7 Older people	7	1.571	2.000	0.976
	1 Visual Impairments	21	2.095	2.000	1.179
	2 Physical/Mobility Impairments	55	2.618	3.000	1.240
	3 Hearing Impairments	18	2.611	3.000	0.850
	4 Specific Learning Disabilities	19	2.737	3.000	1.046
	5 Autism (High Functioning / Asperger's Syndrome)	10	3.300	3.000	0.675
62. Noise and an unstructured environment in the workplace cause me stress.	6 Mild Intellectual disability	12	2.750	3.000	1.055
	7 Older people	10	2.500	3.000	0.972
	1 Visual Impairments	23	2.130	3.000	1.290
	2 Physical/Mobility Impairments	47	1.936	2.000	1.258
	3 Hearing Impairments	19	2.158	2.000	0.898
	4 Specific Learning Disabilities	14	2.357	2.000	1.393
63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of	1 Visual Impairments	23	2.130	3.000	1.290
	2 Physical/Mobility Impairments	47	1.936	2.000	1.258
	3 Hearing Impairments	19	2.158	2.000	0.898
	4 Specific Learning Disabilities	14	2.357	2.000	1.393

documents and websites.	5 Autism (High Functioning / Asperger's Syndrome)	8	2.500	3.000	0.756
	6 Mild Intellectual disability	10	2.000	2.000	1.333
	7 Older people	7	1.429	1.000	0.976
64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).	1 Visual Impairments	20	1.800	1.500	1.281
	2 Physical/Mobility Impairments	47	2.064	2.000	1.358
	3 Hearing Impairments	17	1.941	2.000	1.088
	4 Specific Learning Disabilities	7	2.714	3.000	1.496
	5 Autism (High Functioning / Asperger's Syndrome)	6	2.833	3.000	1.169
	6 Mild Intellectual disability	10	2.200	2.000	1.317
	7 Older people	6	1.667	2.000	1.033
65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.	1 Visual Impairments	21	1.571	2.000	1.028
	2 Physical/Mobility Impairments	41	1.951	2.000	1.378
	3 Hearing Impairments	16	2.125	2.500	1.455
	4 Specific Learning Disabilities	12	2.667	3.000	0.985
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.200	2.000	0.837
	6 Mild Intellectual disability	9	2.222	2.000	1.394
	7 Older people	8	1.750	2.000	1.035
66. At my job, no assistive technology or special equipment is available to support	1 Visual Impairments	16	1.625	1.000	1.708
	2 Physical/Mobility Impairments	42	2.071	2.000	1.351
	3 Hearing Impairments	12	2.500	2.500	1.000

me.	4 Specific Learning Disabilities	7	3.000	3.000	0.816
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.000	2.000	0.816
	6 Mild Intellectual disability	7	1.857	2.000	1.345
	7 Older people	6	1.333	1.500	0.816
67. The machines I have to use in my job are not accessible.	1 Visual Impairments	17	2.000	2.000	1.323
	2 Physical/Mobility Impairments	44	1.841	2.000	1.293
	3 Hearing Impairments	13	2.000	2.000	1.225
	4 Specific Learning Disabilities	6	2.000	1.500	1.265
	5 Autism (High Functioning / Asperger's Syndrome)	6	1.667	1.500	1.366
	6 Mild Intellectual disability	7	1.857	2.000	1.215
	7 Older people	6	1.333	1.500	0.816
68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	1 Visual Impairments	19	3.000	3.000	1.000
	2 Physical/Mobility Impairments	61	2.508	3.000	1.192
	3 Hearing Impairments	11	2.364	3.000	1.206
	4 Specific Learning Disabilities	10	2.700	3.000	0.823
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.000	2.000	1.581
	6 Mild Intellectual disability	12	2.000	1.500	1.128
	7 Older people	21	2.095	2.000	0.944
69. At museums, exhibits, and works of art, internal spaces	1 Visual Impairments	20	2.850	3.000	1.089
	2 Physical/Mobility Impairments	63	2.508	3.000	1.243

lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	3 Hearing Impairments	10	2.000	2.000	1.054
	4 Specific Learning Disabilities	12	2.667	3.000	1.073
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.250	2.000	0.500
	6 Mild Intellectual disability	10	2.700	3.000	1.337
	7 Older people	19	2.368	3.000	0.955
	1 Visual Impairments	22	2.455	3.000	1.184
	2 Physical/Mobility Impairments	62	2.823	3.000	1.109
70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	3 Hearing Impairments	14	2.357	2.500	1.151
	4 Specific Learning Disabilities	12	2.167	2.000	1.267
	5 Autism (High Functioning / Asperger's Syndrome)	11	2.727	3.000	1.272
	6 Mild Intellectual disability	11	1.727	1.000	0.905
	7 Older people	23	2.609	3.000	1.076
	1 Visual Impairments	22	2.409	3.000	1.098
	2 Physical/Mobility Impairments	55	2.400	3.000	1.196
71. There are no trained staff members who can support me in archaeological and cultural sites and museums.	3 Hearing Impairments	14	2.357	2.500	1.277
	4 Specific Learning Disabilities	12	2.667	3.000	0.985
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.000	2.000	0.816
	6 Mild Intellectual disability	10	2.100	2.000	1.287
	7 Older people	18	2.056	2.000	1.110
	1 Visual Impairments	20	2.600	3.000	1.095
72. Many cultural	1 Visual Impairments	20	2.600	3.000	1.095

heritage sites lack permeable and functional websites (e.g., virtual tours).	2 Physical/Mobility Impairments	51	2.549	3.000	1.238
	3 Hearing Impairments	13	2.462	3.000	0.877
	4 Specific Learning Disabilities	15	2.800	3.000	1.207
	5 Autism (High Functioning / Asperger's Syndrome)	6	2.500	3.000	0.837
	6 Mild Intellectual disability	7	2.286	2.000	1.496
	7 Older people	10	2.500	3.000	1.179
73. Most places of cultural heritage don't have tour guides available for people with disabilities.	1 Visual Impairments	22	3.182	3.500	1.097
	2 Physical/Mobility Impairments	52	2.673	3.000	1.150
	3 Hearing Impairments	14	2.857	3.500	1.406
	4 Specific Learning Disabilities	10	2.700	3.000	1.337
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.500	2.500	0.577
	6 Mild Intellectual disability	10	2.600	3.000	1.265
74. A tour guide is not always enough for me to have access to cultural heritage environments.	7 Older people	7	2.571	3.000	1.397
	1 Visual Impairments	23	2.261	2.000	1.096
	2 Physical/Mobility Impairments	54	2.481	3.000	1.177
	3 Hearing Impairments	14	3.000	3.000	0.961
	4 Specific Learning Disabilities	14	2.357	3.000	1.393
	5 Autism (High Functioning / Asperger's Syndrome)	3	2.000	2.000	1.000
	6 Mild Intellectual disability	9	2.556	3.000	1.130
	7 Older people	16	1.875	1.500	1.408

75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.	1 Visual Impairments	16	1.188	1.000	0.981
	2 Physical/Mobility Impairments	46	1.848	2.000	1.247
	3 Hearing Impairments	16	2.000	1.500	1.414
	4 Specific Learning Disabilities	17	1.882	2.000	1.166
	5 Autism (High Functioning / Asperger's Syndrome)	10	1.900	1.500	1.287
	6 Mild Intellectual disability	12	2.417	2.500	1.505
	7 Older people	20	1.400	1.000	1.142
76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	1 Visual Impairments	24	2.833	3.000	1.049
	2 Physical/Mobility Impairments	39	1.949	2.000	1.234
	3 Hearing Impairments	11	2.636	3.000	1.027
	4 Specific Learning Disabilities	14	2.286	2.500	1.383
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.200	2.000	0.837
	6 Mild Intellectual disability	11	2.545	2.000	1.128
	7 Older people	14	1.929	2.000	1.207
77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	1 Visual Impairments	24	2.042	2.000	1.268
	2 Physical/Mobility Impairments	56	2.054	2.000	1.257
	3 Hearing Impairments	18	1.889	2.000	1.367
	4 Specific Learning Disabilities	19	2.158	2.000	1.385
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.000	2.000	1.000
	6 Mild Intellectual disability	10	2.600	2.500	1.265

	7 Older people	18	2.722	3.000	1.227
78. There is no tourist signage for the direction of tourist attractions and service facilities.	1 Visual Impairments	16	2.875	3.000	0.957
	2 Physical/Mobility Impairments	51	2.549	3.000	1.189
	3 Hearing Impairments	14	1.714	1.500	0.914
	4 Specific Learning Disabilities	18	2.222	2.000	0.878
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.000	2.000	0.707
	6 Mild Intellectual disability	7	2.429	2.000	1.272
	7 Older people	15	2.000	2.000	1.000
79. Booking a room in a hotel is difficult for me as I do not have access to the necessary information (e.g., pictures).	1 Visual Impairments	23	1.870	2.000	1.325
	2 Physical/Mobility Impairments	62	2.000	2.000	1.379
	3 Hearing Impairments	18	2.000	2.000	1.372
	4 Specific Learning Disabilities	16	2.250	2.000	1.183
	5 Autism (High Functioning / Asperger's Syndrome)	8	2.375	3.000	0.916
	6 Mild Intellectual disability	12	1.667	1.500	1.073
	7 Older people	19	2.000	2.000	1.054
80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.	1 Visual Impairments	24	2.042	2.000	1.334
	2 Physical/Mobility Impairments	49	1.612	1.000	1.222
	3 Hearing Impairments	17	2.176	2.000	1.286
	4 Specific Learning Disabilities	19	2.158	2.000	1.015
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.200	2.000	0.837

81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	6 Mild Intellectual disability	12	1.917	1.500	1.311
	7 Older people	20	2.400	3.000	1.046
	1 Visual Impairments	22	2.455	2.000	1.224
	2 Physical/Mobility Impairments	68	2.765	3.000	1.306
	3 Hearing Impairments	17	2.706	3.000	1.263
	4 Specific Learning Disabilities	11	2.727	3.000	1.272
	5 Autism (High Functioning / Asperger's Syndrome)	7	2.429	3.000	1.134
82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	6 Mild Intellectual disability	9	2.333	2.000	1.225
	7 Older people	17	2.824	3.000	0.883
	1 Visual Impairments	24	1.708	1.500	1.122
	2 Physical/Mobility Impairments	47	1.766	1.000	1.272
	3 Hearing Impairments	19	2.737	3.000	1.195
	4 Specific Learning Disabilities	12	1.833	1.500	1.115
	5 Autism (High Functioning / Asperger's Syndrome)	6	2.000	2.000	0.894
83. Staff in transportation means are not well trained to serve people with disabilities.	6 Mild Intellectual disability	12	1.833	1.500	1.193
	7 Older people	17	1.824	2.000	1.074
	1 Visual Impairments	24	2.542	2.500	1.062
	2 Physical/Mobility Impairments	64	2.719	3.000	1.175
	3 Hearing Impairments	14	3.071	3.000	0.917
	4 Specific Learning Disabilities	12	2.417	3.000	1.084

84. I find it difficult to book a ticket online due to the inaccessible websites.	5 Autism (High Functioning / Asperger's Syndrome)	5	1.800	2.000	0.447
	6 Mild Intellectual disability	12	2.583	3.000	1.311
	7 Older people	16	2.563	3.000	0.892
	1 Visual Impairments	24	2.292	2.000	1.334
	2 Physical/Mobility Impairments	52	1.865	2.000	1.172
	3 Hearing Impairments	17	2.235	2.000	1.251
	4 Specific Learning Disabilities	18	2.278	2.500	1.227
85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	5 Autism (High Functioning / Asperger's Syndrome)	6	1.667	2.000	1.033
	6 Mild Intellectual disability	11	2.000	2.000	1.342
	7 Older people	20	2.700	3.000	1.129
	1 Visual Impairments	23	2.348	2.000	0.935
	2 Physical/Mobility Impairments	59	2.915	3.000	1.164
	3 Hearing Impairments	8	3.125	3.500	1.126
	4 Specific Learning Disabilities	15	2.867	3.000	0.990
86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor	5 Autism (High Functioning / Asperger's Syndrome)	1	2.000	2.000	NaN
	6 Mild Intellectual disability	8	2.625	2.500	1.061
	7 Older people	9	2.444	3.000	1.424
	1 Visual Impairments	18	2.444	2.500	1.042
	2 Physical/Mobility Impairments	61	2.721	3.000	1.142
	3 Hearing Impairments	4	2.500	3.000	1.732

spaces, etc.).	4 Specific Learning Disabilities	9	2.556	3.000	1.236
	5 Autism (High Functioning / Asperger's Syndrome)	1	2.000	2.000	NaN
	6 Mild Intellectual disability	10	2.500	3.000	0.972
	7 Older people	11	2.182	3.000	1.079
	1 Visual Impairments	17	2.706	3.000	1.047
	2 Physical/Mobility Impairments	61	2.820	3.000	1.133
	3 Hearing Impairments	8	3.125	3.000	0.991
87. There is no consideration for safety measures in sports facilities regarding people with disabilities.	4 Specific Learning Disabilities	10	2.600	3.000	1.174
	5 Autism (High Functioning / Asperger's Syndrome)	1	2.000	2.000	NaN
	6 Mild Intellectual disability	8	2.125	2.000	1.126
	7 Older people	9	2.333	3.000	1.225
	1 Visual Impairments	17	2.765	3.000	1.091
	2 Physical/Mobility Impairments	59	2.831	3.000	1.117
	3 Hearing Impairments	10	3.300	3.000	0.675
88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.	4 Specific Learning Disabilities	8	2.625	3.000	1.408
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.500	2.500	0.577
	6 Mild Intellectual disability	9	2.889	3.000	1.054
	7 Older people	8	2.625	3.000	1.302
	1 Visual Impairments	13	2.615	3.000	1.044
	2 Physical/Mobility Impairments	62	2.758	3.000	1.237
89. Beach ramps are not available on the beach, or they are not					

functional.	3 Hearing Impairments	6	3.333	3.000	0.516
	4 Specific Learning Disabilities	9	3.000	3.000	1.225
	5 Autism (High Functioning / Asperger's Syndrome)	3	2.333	2.000	0.577
	6 Mild Intellectual disability	10	2.500	3.000	0.972
	7 Older people	18	2.722	3.000	0.895
90. I find it difficult to locate my belongings when leaving the water.	1 Visual Impairments	24	3.125	3.000	0.992
	2 Physical/Mobility Impairments	48	1.896	2.000	1.189
	3 Hearing Impairments	9	1.222	1.000	0.972
	4 Specific Learning Disabilities	11	1.727	1.000	1.489
	5 Autism (High Functioning / Asperger's Syndrome)	7	2.000	2.000	0.816
	6 Mild Intellectual disability	11	1.455	1.000	1.128
	7 Older people	13	1.231	1.000	1.013
91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.	1 Visual Impairments	21	2.190	2.000	1.209
	2 Physical/Mobility Impairments	58	2.672	3.000	1.303
	3 Hearing Impairments	9	2.889	3.000	1.054
	4 Specific Learning Disabilities	6	3.000	3.000	0.632
	5 Autism (High Functioning / Asperger's Syndrome)	3	2.000	2.000	1.000
	6 Mild Intellectual disability	7	2.571	3.000	0.976
	7 Older people	8	2.500	3.000	1.195
92. There is no	1 Visual Impairments	21	2.714	3.000	1.102

provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	2 Physical/Mobility Impairments	60	2.750	3.000	1.144
	3 Hearing Impairments	12	3.083	3.000	0.996
	4 Specific Learning Disabilities	10	3.000	3.000	0.667
	5 Autism (High Functioning / Asperger's Syndrome)	2	1.500	1.500	0.707
	6 Mild Intellectual disability	9	2.889	3.000	1.054
	7 Older people	10	2.700	3.000	1.160
93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).	1 Visual Impairments	20	2.100	2.500	1.586
	2 Physical/Mobility Impairments	40	1.750	2.000	1.080
	3 Hearing Impairments	20	2.600	3.000	1.392
	4 Specific Learning Disabilities	7	2.571	3.000	1.813
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.000	2.000	1.225
	6 Mild Intellectual disability	11	1.636	2.000	1.120
94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	7 Older people	17	1.412	1.000	1.176
	1 Visual Impairments	19	2.526	3.000	1.073
	2 Physical/Mobility Impairments	67	2.567	3.000	1.234
	3 Hearing Impairments	9	3.222	3.000	0.972
	4 Specific Learning Disabilities	10	2.900	3.000	1.197
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.000	1.500	1.414
	6 Mild Intellectual disability	11	2.455	2.000	1.036
	7 Older people	11	2.636	3.000	1.286

95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader)	1 Visual Impairments	25	2.240	2.000	1.300
	2 Physical/Mobility Impairments	47	1.851	2.000	1.197
	3 Hearing Impairments	12	2.167	2.500	1.337
	4 Specific Learning Disabilities	14	1.571	1.000	1.342
	5 Autism (High Functioning / Asperger's Syndrome)	7	1.571	1.000	0.787
	6 Mild Intellectual disability	13	1.923	2.000	1.115
	7 Older people	16	2.188	2.500	1.109
96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	1 Visual Impairments	20	3.250	3.000	0.967
	2 Physical/Mobility Impairments	60	2.900	3.000	1.203
	3 Hearing Impairments	14	3.286	3.000	0.726
	4 Specific Learning Disabilities	10	2.900	3.000	0.876
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.250	2.000	1.258
	6 Mild Intellectual disability	12	2.750	3.000	1.138
	7 Older people	11	2.545	3.000	1.036
97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.	1 Visual Impairments	19	3.158	4.000	1.167
	2 Physical/Mobility Impairments	61	3.016	3.000	1.176
	3 Hearing Impairments	12	3.250	3.500	0.965
	4 Specific Learning Disabilities	9	3.444	3.000	0.527
	5 Autism (High Functioning / Asperger's Syndrome)	4	2.750	3.000	1.258
	6 Mild Intellectual disability	12	2.833	3.000	1.337

	7 Older people	10	2.700	3.000	1.160
98. There is no training for handling emergency situations involving people with disabilities.	1 Visual Impairments	17	3.059	3.000	1.144
	2 Physical/Mobility Impairments	60	3.083	3.000	1.062
	3 Hearing Impairments	13	3.538	4.000	0.660
	4 Specific Learning Disabilities	12	3.417	4.000	0.900
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.800	3.000	1.304
	6 Mild Intellectual disability	12	2.833	3.000	1.030
	7 Older people	10	2.700	3.000	1.252
99. Applications that have the services of the fire department, hospital, and police are not accessible enough.	1 Visual Impairments	19	2.263	2.000	1.240
	2 Physical/Mobility Impairments	49	2.592	3.000	1.153
	3 Hearing Impairments	12	3.000	3.000	1.206
	4 Specific Learning Disabilities	8	3.250	3.000	0.707
	5 Autism (High Functioning / Asperger's Syndrome)	5	2.200	2.000	1.095
	6 Mild Intellectual disability	9	2.556	3.000	1.130
	7 Older people	13	2.538	3.000	1.050
100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other	1 Visual Impairments	19	2.000	2.000	1.202
	2 Physical/Mobility Impairments	42	2.119	2.000	1.194
	3 Hearing Impairments	18	2.556	3.000	1.199
	4 Specific Learning Disabilities	17	2.059	2.000	1.298
	5 Autism (High Functioning / Asperger's Syndrome)	6	2.167	2.000	1.169

accessible formats).	6 Mild Intellectual disability	11	2.545	3.000	1.368
	7 Older people	19	1.895	2.000	1.100

Table 3-9

Tables 3-9 below present the results of the descriptive statistics regarding the responses of each category of participants: 1) Visual Impairments, 2) Physical/Mobility Impairments, 3) Deaf-Hard of hearing, 4) Specific Learning Disabilities, 5) Autism (High Functioning/ Asperger's Syndrome), 6) Mild Intellectual disability, and 7) Older people. The list of items is sorted by the mean (of the score) from highest to lowest value. This sorting highlights the accessibility problems that appear as most common, which appear in the first rows of the table.

Mean and standard deviation of responses of participants of a specified category of responses to each item of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the item. This number is different for each item and is less than the total number of participants for each group. The difference between the N-value and the total number of participants in the specified group is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options.

Table 3 Visual Impairments

Item	N	Mean	Median	SD
22. There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	24	3.33	4.00	1.007
96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	20	3.25	3.00	0.967

47. I find it difficult to access educational material when it is not given in an accessible text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).	22	3.23	3.50	1.066
73. Most places of cultural heritage don't have tour guides available for people with disabilities.	22	3.18	3.50	1.097
97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.	19	3.16	4.00	1.167
48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	22	3.14	3.50	1.125
90. I find it difficult to locate my belongings when leaving the water.	24	3.13	3.00	0.992
20. Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities.	23	3.09	4.00	1.276
98. There is no training for handling emergency situations involving people with disabilities.	17	3.06	3.00	1.144
68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	19	3.00	3.00	1.000
25. I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition).	24	2.96	3.00	1.122

50. There is a lack of information about useful tools for teachers and students.	20	2.95	3.00	0.999
78. There is no tourist signage for the direction of tourist attractions and service facilities.	16	2.88	3.00	0.957
69. At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	20	2.85	3.00	1.089
76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	24	2.83	3.00	1.049
15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.	25	2.80	3.00	1.000
5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.	24	2.79	3.00	1.250
39. ATMs are challenging for me due to the lack of specific accessibility features.	23	2.78	3.00	1.380
88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.	17	2.76	3.00	1.091
3. Insufficient lighting in external spaces is challenging for me.	22	2.73	3.00	1.316

87. There is no consideration for safety measures in sports facilities regarding people with disabilities.	17	2.71	3.00	1.047
92. There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	21	2.71	3.00	1.102
46. I find it difficult when lecture locations change.	22	2.64	3.00	1.329
35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	24	2.63	3.00	1.209
89. Beach ramps are not available on the beach, or they are not functional.	13	2.62	3.00	1.044
1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.	25	2.60	3.00	1.225
72. Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	20	2.60	3.00	1.095
11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.	25	2.56	3.00	1.387
83. Staff in transportation means are not well trained to serve people with disabilities.	24	2.54	2.50	1.062

94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	19	2.53	3.00	1.073
40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.	22	2.50	3.00	1.263
55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	20	2.50	2.50	1.051
45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom.	19	2.47	3.00	1.219
31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).	24	2.46	2.50	1.062
70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	22	2.45	3.00	1.184
81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	22	2.45	2.00	1.224
24. I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.	25	2.44	3.00	1.356

86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).	18	2.44	2.50	1.042
49. There is not accessible educational material with the use of VR/AR technology.	12	2.42	2.00	1.311
56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions).	19	2.42	2.00	0.902
8. Indoor places are challenging for me when there are not standardized lighting levels.	22	2.41	3.00	1.469
12. When public transportation is overcrowded and noisy, it is difficult for me to cope with.	22	2.41	2.50	1.260
71. There are no trained staff members who can support me in archaeological and cultural sites and museums.	22	2.41	3.00	1.098
36. I find communicating with technical assistance services challenging and hesitate to ask for help.	19	2.37	2.00	1.212
9. Overcrowded and noisy internal spaces are frustrating for me.	22	2.36	3.00	1.364
54. The library in the educational institution I attend is not equipped appropriately (e.g., assistive technology, devices, etc.) to support students with disabilities.	20	2.35	2.50	1.182
85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	23	2.35	2.00	0.935

52. Communication with the administrative services is inadequate, and I don't have the chance to express my needs.	20	2.30	2.00	1.031
17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	24	2.29	2.00	1.233
84. I find it difficult to book a ticket online due to the inaccessible websites.	24	2.29	2.00	1.334
51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	18	2.28	2.00	1.320
21. Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	22	2.27	3.00	1.420
23. I encounter difficulties in health care services due to organizational and transport barriers.	22	2.27	2.50	1.316
74. A tour guide is not always enough for me to have access to cultural heritage environments.	23	2.26	2.00	1.096
99. Applications that have the services of the fire department, hospital, and police are not accessible enough.	19	2.26	2.00	1.240
19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.	24	2.25	2.00	1.189

95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader)	25	2.24	2.00	1.300
2. It is difficult to navigate external spaces without someone to accompany me due to a lack of signage.	24	2.21	2.00	1.382
91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.	21	2.19	2.00	1.209
63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of documents and websites.	23	2.13	3.00	1.290
53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	18	2.11	2.00	1.183
62. Noise and an unstructured environment in the workplace cause me stress.	21	2.10	2.00	1.179
93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).	20	2.10	2.50	1.586
34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	19	2.05	2.00	1.224
57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.	20	2.05	2.00	1.191

59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	21	2.05	2.00	1.203
60. I cannot reach my workplace easily due to poor structure in external spaces.	20	2.05	2.00	1.146
77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	24	2.04	2.00	1.268
80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.	24	2.04	2.00	1.334
67. The machines I have to use in my job are not accessible.	17	2.00	2.00	1.323
100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other accessible formats).	19	2.00	2.00	1.202
13. I find it challenging to access bus stops due to the inaccessible routes leading to them.	24	1.96	2.00	1.268
38. It is challenging for me to make digital payments and manage my finances.	24	1.96	2.00	1.429
58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	21	1.95	2.00	1.359
16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	18	1.94	2.00	1.305
29. Using passwords on digital platforms or apps is challenging for me.	24	1.88	2.00	1.116

26. I find it difficult to understand information in digital interfaces due to too much complex content involved.	23	1.87	2.00	1.254
79. Booking a room in a hotel is difficult for me as I do not have access to the necessary information (e.g., pictures).	23	1.87	2.00	1.325
32. E-commerce is challenging because I worry about online shopping security.	22	1.86	2.00	1.125
14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.	23	1.83	2.00	1.267
41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	23	1.83	2.00	1.114
27. I have difficulty using chat windows or digital bots on websites.	22	1.82	2.00	1.181
43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).	17	1.82	2.00	1.334
37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.	25	1.80	1.00	1.258
64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).	20	1.80	1.50	1.281

33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	24	1.79	2.00	1.215
4. I have difficulty finding accessible parking spaces.	9	1.78	2.00	1.394
7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	17	1.76	2.00	1.640
44. It is difficult for me to attend a course in a crowded educational environment.	17	1.71	2.00	1.359
82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	24	1.71	1.50	1.122
61. At my workplace, in internal spaces, there are accessibility issues concerning spatial accessibility (e.g., there are no ramps and elevators, facilities, toilets, or narrow spaces).	16	1.63	1.50	1.258
66. At my job, no assistive technology or special equipment is available to support me.	16	1.63	1.00	1.708
18. I cannot communicate and understand the information explained to me in public services without assistance.	21	1.62	2.00	1.244
10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	15	1.60	2.00	1.352

42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).	15	1.60	2.00	1.183
6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	19	1.58	1.00	1.539
65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.	21	1.57	2.00	1.028
28. Navigation paths and searching on websites are too complicated for me.	25	1.56	2.00	1.083
75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.	16	1.19	1.00	0.981
30. I struggle with access to social media (e.g., blogging and Facebook).	22	1.09	1.00	1.192

Table 4

Mean and standard deviation of responses of participants of a specified category of responses to each item of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the item. This number is different for each item and can less than the total number of participants for each group. The difference between the N-value and the total number of participants in the specified group is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options.

Table 4 Physical/mobility impairments

Item	N	Mean	Median	SD
6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	64	3.25	4.00	1.13
7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	65	3.17	4.00	1.19
10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	71	3.14	4.00	1.10
1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.	66	3.12	4.00	1.18
98. There is no training for handling emergency situations involving people with disabilities.	60	3.08	3.00	1.06
97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.	61	3.02	3.00	1.18
4. I have difficulty finding accessible parking spaces.	56	2.98	3.00	1.27
85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	59	2.92	3.00	1.16
96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	60	2.90	3.00	1.20

22. There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	53	2.87	3.00	1.23
9. Overcrowded and noisy internal spaces are frustrating for me.	64	2.86	3.00	1.25
12. When public transportation is overcrowded and noisy, it is difficult for me to cope with.	64	2.84	3.00	1.13
16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	66	2.83	3.00	1.20
88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.	59	2.83	3.00	1.12
70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	62	2.82	3.00	1.11
87. There is no consideration for safety measures in sports facilities regarding people with disabilities.	61	2.82	3.00	1.13
50. There is a lack of information about useful tools for teachers and students.	47	2.81	3.00	1.23
81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	68	2.76	3.00	1.31
89. Beach ramps are not available on the beach, or they are not functional.	62	2.76	3.00	1.24
92. There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	60	2.75	3.00	1.14

83. Staff in transportation means are not well trained to serve people with disabilities.	64	2.72	3.00	1.17
86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).	61	2.72	3.00	1.14
13. I find it challenging to access bus stops due to the inaccessible routes leading to them.	63	2.68	3.00	1.06
8. Indoor places are challenging for me when there are not standardized lighting levels.	48	2.67	3.00	1.31
73. Most places of cultural heritage don't have tour guides available for people with disabilities.	52	2.67	3.00	1.15
91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.	58	2.67	3.00	1.30
15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.	67	2.64	3.00	1.23
49. There is not accessible educational material with the use of VR/AR technology.	39	2.62	3.00	1.31
62. Noise and an unstructured environment in the workplace cause me stress.	55	2.62	3.00	1.24
23. I encounter difficulties in health care services due to organizational and transport barriers.	63	2.59	3.00	1.20
34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	56	2.59	3.00	1.23

99. Applications that have the services of the fire department, hospital, and police are not accessible enough.	49	2.59	3.00	1.15
43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).	53	2.58	3.00	1.31
94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	67	2.57	3.00	1.23
72. Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	51	2.55	3.00	1.24
78. There is no tourist signage for the direction of tourist attractions and service facilities.	51	2.55	3.00	1.19
44. It is difficult for me to attend a course in a crowded educational environment.	52	2.54	3.00	1.35
68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	61	2.51	3.00	1.19
69. At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	63	2.51	3.00	1.24
46. I find it difficult when lecture locations change.	52	2.50	3.00	1.24
60. I cannot reach my workplace easily due to poor structure in external spaces.	57	2.49	3.00	1.32

74. A tour guide is not always enough for me to have access to cultural heritage environments.	54	2.48	3.00	1.18
3. Insufficient lighting in external spaces is challenging for me.	51	2.45	3.00	1.32
41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	54	2.43	3.00	1.35
71. There are no trained staff members who can support me in archaeological and cultural sites and museums.	55	2.40	3.00	1.20
33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	52	2.38	3.00	1.30
47. I find it difficult to access educational material when it is not given in an accessible text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).	45	2.36	2.00	1.26
11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.	55	2.35	2.00	1.29
17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	70	2.34	2.00	1.09
51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	38	2.34	2.00	1.38

32. E-commerce is challenging because I worry about online shopping security.	60	2.33	3.00	1.32
35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	52	2.33	2.00	1.26
42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).	48	2.33	3.00	1.37
45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom.	45	2.33	3.00	1.33
52. Communication with the administrative services is inadequate, and I don't have the chance to express my needs.	52	2.31	2.00	1.34
39. ATMs are challenging for me due to the lack of specific accessibility features.	60	2.30	3.00	1.45
61. At my workplace, in internal spaces, there are accessibility issues concerning spatial accessibility (e.g., there are no ramps and elevators, facilities, toilets, or narrow spaces).	54	2.28	3.00	1.43
55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	45	2.27	3.00	1.40

56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions).	53	2.26	3.00	1.46
21. Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	53	2.25	2.00	1.31
36. I find communicating with technical assistance services challenging and hesitate to ask for help.	52	2.25	2.50	1.41
5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.	55	2.24	2.00	1.40
2. It is difficult to navigate external spaces without someone to accompany me due to a lack of signage.	51	2.22	2.00	1.19
59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	46	2.22	2.00	1.23
26. I find it difficult to understand information in digital interfaces due to too much complex content involved.	54	2.19	2.00	1.40
20. Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities.	65	2.18	2.00	1.39
29. Using passwords on digital platforms or apps is challenging for me.	55	2.15	2.00	1.37
53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	47	2.15	2.00	1.27

100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other accessible formats).	42	2.12	2.00	1.19
14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.	63	2.10	2.00	1.27
25. I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition).	48	2.10	2.00	1.34
48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	42	2.07	2.00	1.39
66. At my job, no assistive technology or special equipment is available to support me.	42	2.07	2.00	1.35
64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).	47	2.06	2.00	1.36
54. The library in the educational institution I attend is not equipped appropriately (e.g., assistive technology, devices, etc.) to support students with disabilities.	40	2.05	2.00	1.24
77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	56	2.05	2.00	1.26
40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.	45	2.04	2.00	1.36

27. I have difficulty using chat windows or digital bots on websites.	53	2.02	2.00	1.38
31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).	48	2.02	2.00	1.28
38. It is challenging for me to make digital payments and manage my finances.	55	2.00	2.00	1.41
79. Booking a room in a hotel is difficult for me as I do not have access to the necessary information (e.g., pictures).	62	2.00	2.00	1.38
57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.	54	1.98	2.00	1.46
65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.	41	1.95	2.00	1.38
76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	39	1.95	2.00	1.23
63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of documents and websites.	47	1.94	2.00	1.26

24. I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.	54	1.93	2.00	1.33
28. Navigation paths and searching on websites are too complicated for me.	54	1.91	2.00	1.31
90. I find it difficult to locate my belongings when leaving the water.	48	1.90	2.00	1.19
84. I find it difficult to book a ticket online due to the inaccessible websites.	52	1.87	2.00	1.17
75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.	46	1.85	2.00	1.25
95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader)	47	1.85	2.00	1.20
67. The machines I have to use in my job are not accessible.	44	1.84	2.00	1.29
37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.	52	1.83	1.50	1.38
82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	47	1.77	1.00	1.27
93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).	40	1.75	2.00	1.08

58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	42	1.74	2.00	1.34
80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.	49	1.61	1.00	1.22
18. I cannot communicate and understand the information explained to me in public services without assistance.	53	1.60	1.00	1.29
19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.	58	1.52	1.00	1.23
30. I struggle with access to social media (e.g., blogging and Facebook).	14	1.21	1.00	1.19

Table 5

Mean and standard deviation of responses of participants of a specified category of responses to each item of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the item. This number is different for each item and can less than the total number of participants for each group. The difference between the N-value and the total number of participants in the specified group is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options.

Table 5 Hearing impairments (Deaf - hard of hearing)

Item	N	Mean	Median	SD
98. There is no training for handling emergency situations involving people with disabilities.	13	3.54	4.000	0.660
89. Beach ramps are not available on the beach, or they are not functional.	6	3.33	3.000	0.516

88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.	10	3.30	3.000	0.675
96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	14	3.29	3.000	0.726
97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.	12	3.25	3.500	0.965
94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	9	3.22	3.000	0.972
45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom.	19	3.16	3.000	1.015
85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	8	3.13	3.500	1.126
87. There is no consideration for safety measures in sports facilities regarding people with disabilities.	8	3.13	3.000	0.991
44. It is difficult for me to attend a course in a crowded educational environment.	17	3.12	3.000	1.111
21. Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	22	3.09	3.000	1.151
92. There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	12	3.08	3.000	0.996
15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.	15	3.07	3.000	0.704
83. Staff in transportation means are not well trained to serve people with disabilities.	14	3.07	3.000	0.917
50. There is a lack of information about useful tools for teachers and students.	12	3.00	3.000	1.128

59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	15	3.00	3.000	1.134
74. A tour guide is not always enough for me to have access to cultural heritage environments.	14	3.00	3.000	0.961
99. Applications that have the services of the fire department, hospital, and police are not accessible enough.	12	3.00	3.000	1.206
91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.	9	2.89	3.000	1.054
22. There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	16	2.88	3.000	1.310
51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	14	2.86	3.000	1.351
73. Most places of cultural heritage don't have tour guides available for people with disabilities.	14	2.86	3.500	1.406
9. Overcrowded and noisy internal spaces are frustrating for me.	20	2.85	3.000	1.226
8. Indoor places are challenging for me when there are not standardized lighting levels.	12	2.83	3.000	1.403
11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.	15	2.80	3.000	0.941
82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	19	2.74	3.000	1.195
81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	17	2.71	3.000	1.263
12. When public transportation is overcrowded and noisy, it is difficult for me to cope with.	16	2.69	3.000	1.078

32. E-commerce is challenging because I worry about online shopping security.	17	2.65	3.000	1.272
76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	11	2.64	3.000	1.027
36. I find communicating with technical assistance services challenging and hesitate to ask for help.	19	2.63	3.000	1.342
47. I find it difficult to access educational material when it is not given in an accessible text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).	16	2.63	3.000	1.360
62. Noise and an unstructured environment in the workplace cause me stress.	18	2.61	3.000	0.850
93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).	20	2.60	3.000	1.392
57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.	17	2.59	3.000	1.228
3. Insufficient lighting in external spaces is challenging for me.	16	2.56	3.000	1.413
55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	16	2.56	3.000	1.504
100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other accessible formats).	18	2.56	3.000	1.199

56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions).	17	2.53	3.000	1.546
53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	18	2.50	2.500	1.249
66. At my job, no assistive technology or special equipment is available to support me.	12	2.50	2.500	1.000
86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).	4	2.50	3.000	1.732
48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	17	2.47	3.000	1.419
72. Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	13	2.46	3.000	0.877
49. There is not accessible educational material with the use of VR/AR technology.	7	2.43	3.000	1.272
5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.	12	2.42	3.000	1.240
17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	20	2.40	3.000	1.501
54. The library in the educational institution I attend is not equipped appropriately (e.g., assistive technology, devices, etc.) to support students with disabilities.	15	2.40	3.000	1.121
14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.	16	2.38	2.000	1.147

26. I find it difficult to understand information in digital interfaces due to too much complex content involved.	14	2.36	3.000	1.447
68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	11	2.36	3.000	1.206
70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	14	2.36	2.500	1.151
71. There are no trained staff members who can support me in archaeological and cultural sites and museums.	14	2.36	2.500	1.277
52. Communication with the administrative services is inadequate, and I don't have the chance to express my needs.	17	2.35	2.000	1.320
58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	17	2.35	3.000	1.320
34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	19	2.32	3.000	1.336
1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.	10	2.30	2.000	1.494
46. I find it difficult when lecture locations change.	17	2.29	2.000	1.312
18. I cannot communicate and understand the information explained to me in public services without assistance.	18	2.28	3.000	1.565
23. I encounter difficulties in health care services due to organizational and transport barriers.	12	2.25	2.500	1.357

84. I find it difficult to book a ticket online due to the inaccessible websites.	17	2.24	2.000	1.251
25. I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition).	13	2.23	2.000	1.092
80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.	17	2.18	2.000	1.286
95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader)	12	2.17	2.500	1.337
63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of documents and websites.	19	2.16	2.000	0.898
20. Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities.	14	2.14	2.000	1.406
65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.	16	2.13	2.500	1.455
19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.	17	2.12	2.000	1.317
40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.	13	2.08	2.000	1.256
33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	15	2.07	2.000	1.223
24. I have difficulty navigating unfamiliar websites and locating important information	16	2.06	2.000	1.181

(e.g., contact details) due to their overly complex and inaccessible design.

41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	17	2.06	2.000	1.345
13. I find it challenging to access bus stops due to the inaccessible routes leading to them.	9	2.00	2.000	1.581
67. The machines I have to use in my job are not accessible.	13	2.00	2.000	1.225
69. At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	10	2.00	2.000	1.054
75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.	16	2.00	1.500	1.414
79. Booking a room in a hotel is difficult for me as I do not have access to the necessary information (e.g., pictures).	18	2.00	2.000	1.372
64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).	17	1.94	2.000	1.088
4. I have difficulty finding accessible parking spaces.	12	1.92	2.500	1.311
10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	9	1.89	2.000	1.537
77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	18	1.89	2.000	1.367
31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).	14	1.86	1.500	1.231

16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	12	1.83	2.000	1.267
7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	9	1.78	3.000	1.716
37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.	20	1.75	1.000	1.164
35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	14	1.71	2.000	0.994
78. There is no tourist signage for the direction of tourist attractions and service facilities.	14	1.71	1.500	0.914
42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).	10	1.70	2.000	1.160
38. It is challenging for me to make digital payments and manage my finances.	18	1.67	1.000	1.372
28. Navigation paths and searching on websites are too complicated for me.	17	1.65	1.000	1.272
2. It is difficult to navigate external spaces without someone to accompany me due to a lack of signage.	8	1.63	2.000	1.506
27. I have difficulty using chat windows or digital bots on websites.	15	1.53	1.000	1.187
43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).	10	1.50	1.500	1.080
61. At my workplace, in internal spaces, there are accessibility issues concerning spatial	8	1.50	1.500	0.926

accessibility (e.g., there are no ramps and elevators, facilities, toilets, or narrow spaces).				
29. Using passwords on digital platforms or apps is challenging for me.	17	1.47	1.000	1.231
39. ATMs are challenging for me due to the lack of specific accessibility features.	15	1.47	1.000	1.246
60. I cannot reach my workplace easily due to poor structure in external spaces.	10	1.40	1.000	1.075
6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	8	1.38	0.500	1.685
90. I find it difficult to locate my belongings when leaving the water.	9	1.22	1.000	0.972
30. I struggle with access to social media (e.g., blogging and Facebook).	12	1.00	1.000	0.739

Table 6

Mean, median and standard deviation of responses of participants of a specified category of responses to each item of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the item. This number is different for each item and can be less than the total number of participants for each group. The difference between the N-value and the total number of participants in the specified group is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options.

Table 6 Specific learning disabilities

Item	N	Mean	Median	SD
97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.	9	3.444	3.00	0.527
98. There is no training for handling emergency situations involving people with disabilities.	12	3.417	4.00	0.900

9. Overcrowded and noisy internal spaces are frustrating for me.	12	3.333	3.50	0.888
99. Applications that have the services of the fire department, hospital, and police are not accessible enough.	8	3.250	3.00	0.707
8. Indoor places are challenging for me when there are not standardized lighting levels.	6	3.167	3.50	1.169
50. There is a lack of information about useful tools for teachers and students.	20	3.000	3.00	0.725
66. At my job, no assistive technology or special equipment is available to support me.	7	3.000	3.00	0.816
89. Beach ramps are not available on the beach, or they are not functional.	9	3.000	3.00	1.225
91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.	6	3.000	3.00	0.632
92. There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	10	3.000	3.00	0.667
55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	17	2.941	3.00	1.144
12. When public transportation is overcrowded and noisy, it is difficult for me to cope with.	10	2.900	3.00	1.370
94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	10	2.900	3.00	1.197
96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	10	2.900	3.00	0.876
5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.	8	2.875	3.00	0.835

85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	15	2.867	3.00	0.990
1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.	5	2.800	3.00	1.304
3. Insufficient lighting in external spaces is challenging for me.	5	2.800	3.00	1.304
72. Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	15	2.800	3.00	1.207
11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.	9	2.778	3.00	1.093
24. I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.	18	2.778	3.00	1.309
26. I find it difficult to understand information in digital interfaces due to too much complex content involved.	17	2.765	3.00	1.200
59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	17	2.765	3.00	1.437
21. Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	8	2.750	3.00	0.886
48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	19	2.737	3.00	1.240
62. Noise and an unstructured environment in the workplace cause me stress.	19	2.737	3.00	1.046

81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	11	2.727	3.00	1.272
64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).	7	2.714	3.00	1.496
68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	10	2.700	3.00	0.823
73. Most places of cultural heritage don't have tour guides available for people with disabilities.	10	2.700	3.00	1.337
6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	6	2.667	3.00	1.033
15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.	9	2.667	3.00	0.866
20. Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities.	9	2.667	3.00	0.866
43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).	6	2.667	2.50	1.211
65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.	12	2.667	3.00	0.985
69. At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	12	2.667	3.00	1.073
71. There are no trained staff members who can support me in archaeological and cultural sites and museums.	12	2.667	3.00	0.985

34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	20	2.650	3.00	1.040
88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.	8	2.625	3.00	1.408
44. It is difficult for me to attend a course in a crowded educational environment.	20	2.600	3.00	1.046
87. There is no consideration for safety measures in sports facilities regarding people with disabilities.	10	2.600	3.00	1.174
47. I find it difficult to access educational material when it is not given in an accessible text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).	19	2.579	3.00	1.346
56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions).	19	2.579	3.00	1.305
58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	19	2.579	3.00	1.017
93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).	7	2.571	3.00	1.813
86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).	9	2.556	3.00	1.236
22. There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	11	2.545	3.00	1.128
51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	11	2.545	3.00	0.820

36. I find communicating with technical assistance services challenging and hesitate to ask for help.	18	2.500	3.00	1.150
54. The library in the educational institution I attend is not equipped appropriately (e.g., assistive technology, devices, etc.) to support students with disabilities.	10	2.500	3.00	1.080
83. Staff in transportation means are not well trained to serve people with disabilities.	12	2.417	3.00	1.084
10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	5	2.400	2.00	1.140
13. I find it challenging to access bus stops due to the inaccessible routes leading to them.	5	2.400	2.00	1.140
17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	10	2.400	3.00	1.075
60. I cannot reach my workplace easily due to poor structure in external spaces.	5	2.400	2.00	1.140
63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of documents and websites.	14	2.357	2.00	1.393
74. A tour guide is not always enough for me to have access to cultural heritage environments.	14	2.357	3.00	1.393
16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	3	2.333	2.00	1.528
61. At my workplace, in internal spaces, there are accessibility issues concerning spatial accessibility (e.g., there are no ramps and elevators, facilities, toilets, or narrow spaces).	7	2.286	2.00	1.113
76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	14	2.286	2.50	1.383

84. I find it difficult to book a ticket online due to the inaccessible websites.	18	2.278	2.50	1.227
35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	15	2.267	3.00	1.280
31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).	16	2.250	2.50	1.342
40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.	16	2.250	3.00	1.342
49. There is not accessible educational material with the use of VR/AR technology.	8	2.250	2.50	1.282
79. Booking a room in a hotel is difficult for me as I do not have access to the necessary information (e.g., pictures).	16	2.250	2.00	1.183
78. There is no tourist signage for the direction of tourist attractions and service facilities.	18	2.222	2.00	0.878
7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	5	2.200	2.00	1.304
53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	17	2.176	2.00	1.380
23. I encounter difficulties in health care services due to organizational and transport barriers.	6	2.167	2.00	1.169
25. I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition).	12	2.167	2.50	1.193
52. Communication with the administrative services is inadequate, and I don't have the chance to express my needs.	18	2.167	2.00	1.295

70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	12	2.167	2.00	1.267
32. E-commerce is challenging because I worry about online shopping security.	19	2.158	2.00	1.167
77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	19	2.158	2.00	1.385
80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.	19	2.158	2.00	1.015
33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	16	2.125	2.00	1.147
41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	18	2.111	2.00	1.367
19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.	12	2.083	2.50	1.443
100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other accessible formats).	17	2.059	2.00	1.298
45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom.	19	2.053	3.00	1.353
4. I have difficulty finding accessible parking spaces.	5	2.000	2.00	1.414
27. I have difficulty using chat windows or digital bots on websites.	16	2.000	2.00	1.265
57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.	19	2.000	2.00	1.491
67. The machines I have to use in my job are not accessible.	6	2.000	1.50	1.265

75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.	17	1.882	2.00	1.166
2. It is difficult to navigate external spaces without someone to accompany me due to a lack of signage.	6	1.833	2.00	1.169
14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.	6	1.833	2.00	1.169
46. I find it difficult when lecture locations change.	18	1.833	2.00	1.150
82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	12	1.833	1.50	1.115
29. Using passwords on digital platforms or apps is challenging for me.	19	1.789	2.00	1.475
90. I find it difficult to locate my belongings when leaving the water.	11	1.727	1.00	1.489
18. I cannot communicate and understand the information explained to me in public services without assistance.	14	1.714	1.00	1.267
37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.	15	1.667	2.00	1.345
42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).	6	1.667	1.00	1.033
28. Navigation paths and searching on websites are too complicated for me.	20	1.650	1.00	1.309
38. It is challenging for me to make digital payments and manage my finances.	19	1.579	1.00	1.502
95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader)	14	1.571	1.00	1.342
39. ATMs are challenging for me due to the lack of specific accessibility features.	10	1.500	1.50	1.080

30. I struggle with access to social media (e.g., blogging and Facebook).	15	0.867	1.00	0.834

Table 7

Mean, median and standard deviation of responses of participants of a specified category of responses to each item of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the item. This number is different for each item and can be less than the total number of participants for each group. The difference between the N-value and the total number of participants in the specified group is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options.

Table 7 Autism (high functioning/ Asperger's syndrome)

Item	N	Mean	Median	SD
9. Overcrowded and noisy internal spaces are frustrating for me.	12	3.42	3.50	0.669
62. Noise and an unstructured environment in the workplace cause me stress.	10	3.30	3.00	0.675
8. Indoor places are challenging for me when there are not standardized lighting levels.	7	3.14	3.00	0.690
17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	8	3.13	3.00	0.835
12. When public transportation is overcrowded and noisy, it is difficult for me to cope with.	12	3.08	3.50	1.240
5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.	8	3.00	3.00	0.756
47. I find it difficult to access educational material when it is not given in an accessible	8	3.00	3.00	0.535

text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).

51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	4	3.00	3.00	0.816
64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).	6	2.83	3.00	1.169
98. There is no training for handling emergency situations involving people with disabilities.	5	2.80	3.00	1.304
48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	9	2.78	3.00	0.833
53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	9	2.78	3.00	1.202
46. I find it difficult when lecture locations change.	12	2.75	3.00	1.288
97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.	4	2.75	3.00	1.258
70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	11	2.73	3.00	1.272
32. E-commerce is challenging because I worry about online shopping security.	12	2.67	3.00	0.985
34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	12	2.67	3.00	1.155

56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions).	9	2.67	3.00	1.225
1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.	5	2.60	3.00	1.140
4. I have difficulty finding accessible parking spaces.	5	2.60	3.00	1.140
22. There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	5	2.60	3.00	0.548
50. There is a lack of information about useful tools for teachers and students.	9	2.56	3.00	1.130
36. I find communicating with technical assistance services challenging and hesitate to ask for help.	11	2.55	3.00	1.214
44. It is difficult for me to attend a course in a crowded educational environment.	11	2.55	3.00	1.368
49. There is not accessible educational material with the use of VR/AR technology.	4	2.50	3.00	1.915
60. I cannot reach my workplace easily due to poor structure in external spaces.	4	2.50	2.50	1.291
63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of documents and websites.	8	2.50	3.00	0.756
72. Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	6	2.50	3.00	0.837
73. Most places of cultural heritage don't have tour guides available for people with disabilities.	4	2.50	2.50	0.577

88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.	4	2.50	2.50	0.577
55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	11	2.45	3.00	1.214
52. Communication with the administrative services is inadequate, and I don't have the chance to express my needs.	9	2.44	3.00	1.236
81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	7	2.43	3.00	1.134
23. I encounter difficulties in health care services due to organizational and transport barriers.	5	2.40	2.00	0.548
35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	5	2.40	2.00	1.140
79. Booking a room in a hotel is difficult for me as I do not have access to the necessary information (e.g., pictures).	8	2.38	3.00	0.916
21. Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	9	2.33	2.00	1.000
89. Beach ramps are not available on the beach, or they are not functional.	3	2.33	2.00	0.577
11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.	10	2.30	3.00	0.949

58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	7	2.29	2.00	1.113
54. The library in the educational institution I attend is not equipped appropriately (e.g., assistive technology, devices, etc.) to support students with disabilities.	4	2.25	2.00	1.258
59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	12	2.25	2.50	1.357
69. At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	4	2.25	2.00	0.500
96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	4	2.25	2.00	1.258
45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom.	9	2.22	3.00	1.716
15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.	5	2.20	2.00	0.837
16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	5	2.20	2.00	1.095
65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.	5	2.20	2.00	0.837
76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	5	2.20	2.00	0.837

80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.	5	2.20	2.00	0.837
99. Applications that have the services of the fire department, hospital, and police are not accessible enough.	5	2.20	2.00	1.095
100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other accessible formats).	6	2.17	2.00	1.169
20. Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities.	7	2.14	2.00	0.690
57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.	10	2.10	2.00	1.663
10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	4	2.00	2.00	0.816
24. I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.	10	2.00	2.00	1.054
38. It is challenging for me to make digital payments and manage my finances.	11	2.00	2.00	1.549
66. At my job, no assistive technology or special equipment is available to support me.	4	2.00	2.00	0.816
68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	5	2.00	2.00	1.581
71. There are no trained staff members who can support me in archaeological and cultural sites and museums.	4	2.00	2.00	0.816

74. A tour guide is not always enough for me to have access to cultural heritage environments.	3	2.00	2.00	1.000
77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	5	2.00	2.00	1.000
78. There is no tourist signage for the direction of tourist attractions and service facilities.	5	2.00	2.00	0.707
82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	6	2.00	2.00	0.894
85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	1	2.00	2.00	NaN
86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).	1	2.00	2.00	NaN
87. There is no consideration for safety measures in sports facilities regarding people with disabilities.	1	2.00	2.00	NaN
90. I find it difficult to locate my belongings when leaving the water.	7	2.00	2.00	0.816
91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.	3	2.00	2.00	1.000
93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).	5	2.00	2.00	1.225
94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	4	2.00	1.50	1.414
26. I find it difficult to understand information in digital interfaces due to too much complex content involved.	11	1.91	2.00	1.044
75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.	10	1.90	1.50	1.287

3. Insufficient lighting in external spaces is challenging for me.	8	1.88	2.00	1.126
2. It is difficult to navigate external spaces without someone to accompany me due to a lack of signage.	7	1.86	1.00	1.069
29. Using passwords on digital platforms or apps is challenging for me.	10	1.80	2.00	1.476
83. Staff in transportation means are not well trained to serve people with disabilities.	5	1.80	2.00	0.447
7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	4	1.75	1.50	0.957
40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.	7	1.71	2.00	1.380
31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).	6	1.67	2.00	1.033
42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).	3	1.67	1.00	1.155
67. The machines I have to use in my job are not accessible.	6	1.67	1.50	1.366
84. I find it difficult to book a ticket online due to the inaccessible websites.	6	1.67	2.00	1.033
27. I have difficulty using chat windows or digital bots on websites.	10	1.60	1.00	1.350
33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	10	1.60	1.50	1.174

14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.	7	1.57	2.00	0.976
95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader)	7	1.57	1.00	0.787
13. I find it challenging to access bus stops due to the inaccessible routes leading to them.	4	1.50	1.50	0.577
18. I cannot communicate and understand the information explained to me in public services without assistance.	12	1.50	1.00	0.905
19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.	8	1.50	2.00	1.069
25. I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition).	6	1.50	2.00	0.837
92. There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	2	1.50	1.50	0.707
37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.	9	1.33	1.00	1.118
61. At my workplace, in internal spaces, there are accessibility issues concerning spatial accessibility (e.g., there are no ramps and elevators, facilities, toilets, or narrow spaces).	3	1.33	1.00	0.577
41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	10	1.20	1.00	1.229
39. ATMs are challenging for me due to the lack of specific accessibility features.	6	1.17	1.00	1.169
30. I struggle with access to social media (e.g., blogging and Facebook).	8	1.13	1.00	1.126

28. Navigation paths and searching on websites are too complicated for me.	11	1.09	1.00	0.831
6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	5	1.00	1.00	0.707
43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).	2	1.00	1.00	0.000

Table 8

Mean, median and standard deviation of responses of participants of a specified category of responses to each item of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the item. This number is different for each item and can be less than the total number of participants for each group. The difference between the N-value and the total number of participants in the specified group is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options.

Table 8 Mild intellectual disability

Item	N	Mean	Median	SD
53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	10	3.10	3.00	0.738
88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.	9	2.89	3.00	1.054
92. There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	9	2.89	3.00	1.054
97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.	12	2.83	3.00	1.337

98. There is no training for handling emergency situations involving people with disabilities.	12	2.83	3.00	1.030
34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	13	2.77	3.00	0.927
3. Insufficient lighting in external spaces is challenging for me.	12	2.75	3.00	1.485
26. I find it difficult to understand information in digital interfaces due to too much complex content involved.	12	2.75	3.00	1.055
62. Noise and an unstructured environment in the workplace cause me stress.	12	2.75	3.00	1.055
96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	12	2.75	3.00	1.138
33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	11	2.73	3.00	1.104
69. At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	10	2.70	3.00	1.337
25. I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition).	13	2.69	3.00	1.182
8. Indoor places are challenging for me when there are not standardized lighting levels.	12	2.67	3.00	1.231
22. There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	9	2.67	3.00	1.581
85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	8	2.63	2.50	1.061

73. Most places of cultural heritage don't have tour guides available for people with disabilities.	10	2.60	3.00	1.265
77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	10	2.60	2.50	1.265
83. Staff in transportation means are not well trained to serve people with disabilities.	12	2.58	3.00	1.311
49. There is not accessible educational material with the use of VR/AR technology.	7	2.57	3.00	0.535
91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.	7	2.57	3.00	0.976
31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).	9	2.56	3.00	1.333
74. A tour guide is not always enough for me to have access to cultural heritage environments.	9	2.56	3.00	1.130
99. Applications that have the services of the fire department, hospital, and police are not accessible enough.	9	2.56	3.00	1.130
32. E-commerce is challenging because I worry about online shopping security.	11	2.55	3.00	1.508
76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	11	2.55	2.00	1.128
100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other accessible formats).	11	2.55	3.00	1.368
15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.	10	2.50	3.00	1.269
16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	8	2.50	2.50	1.512

23. I encounter difficulties in health care services due to organizational and transport barriers.	10	2.50	2.50	1.080
29. Using passwords on digital platforms or apps is challenging for me.	14	2.50	3.00	1.225
86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).	10	2.50	3.00	0.972
89. Beach ramps are not available on the beach, or they are not functional.	10	2.50	3.00	0.972
20. Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities.	11	2.45	3.00	1.368
94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	11	2.45	2.00	1.036
54. The library in the educational institution I attend is not equipped appropriately (e.g., assistive technology, devices, etc.) to support students with disabilities.	9	2.44	2.00	1.130
17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	14	2.43	3.00	1.555
78. There is no tourist signage for the direction of tourist attractions and service facilities.	7	2.43	2.00	1.272
19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.	12	2.42	3.00	1.564
50. There is a lack of information about useful tools for teachers and students.	12	2.42	2.00	1.165
75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.	12	2.42	2.50	1.505
81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	9	2.33	2.00	1.225

40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.	10	2.30	2.50	1.337
72. Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	7	2.29	2.00	1.496
5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.	11	2.27	2.00	1.555
38. It is challenging for me to make digital payments and manage my finances.	11	2.27	3.00	1.348
41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	11	2.27	2.00	1.272
46. I find it difficult when lecture locations change.	12	2.25	2.00	1.288
27. I have difficulty using chat windows or digital bots on websites.	13	2.23	3.00	1.363
55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	9	2.22	2.00	1.202
65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.	9	2.22	2.00	1.394
7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	10	2.20	2.50	1.135
64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).	10	2.20	2.00	1.317
47. I find it difficult to access educational material when it is not given in an accessible text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).	11	2.18	2.00	1.328
24. I have difficulty navigating unfamiliar websites and locating important information (e.g., contact	12	2.17	2.50	1.403

details) due to their overly complex and inaccessible design.

18. I cannot communicate and understand the information explained to me in public services without assistance.	13	2.15	2.00	1.281
28. Navigation paths and searching on websites are too complicated for me.	14	2.14	2.50	1.351
36. I find communicating with technical assistance services challenging and hesitate to ask for help.	14	2.14	2.00	1.610
9. Overcrowded and noisy internal spaces are frustrating for me.	15	2.13	3.00	1.246
51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	8	2.13	2.00	1.246
87. There is no consideration for safety measures in sports facilities regarding people with disabilities.	8	2.13	2.00	1.126
71. There are no trained staff members who can support me in archaeological and cultural sites and museums.	10	2.10	2.00	1.287
37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.	11	2.09	2.00	1.578
11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.	13	2.08	2.00	1.498
1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.	12	2.00	2.50	1.414
10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	11	2.00	2.00	1.673
12. When public transportation is overcrowded and noisy, it is difficult for me to cope with.	14	2.00	2.00	1.177

14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.	13	2.00	2.00	1.291
52. Communication with the administrative services is inadequate, and I don't have the chance to express my needs.	9	2.00	2.00	1.225
59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	13	2.00	2.00	1.354
63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of documents and websites.	10	2.00	2.00	1.333
68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	12	2.00	1.50	1.128
84. I find it difficult to book a ticket online due to the inaccessible websites.	11	2.00	2.00	1.342
21. Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	13	1.92	2.00	1.115
80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.	12	1.92	1.50	1.311
95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader)	13	1.92	2.00	1.115
35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	11	1.91	2.00	1.446
4. I have difficulty finding accessible parking spaces.	9	1.89	2.00	0.782
44. It is difficult for me to attend a course in a crowded educational environment.	14	1.86	2.00	1.231
66. At my job, no assistive technology or special equipment is available to support me.	7	1.86	2.00	1.345

67. The machines I have to use in my job are not accessible.	7	1.86	2.00	1.215
82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	12	1.83	1.50	1.193
57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.	14	1.79	1.00	1.424
58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	13	1.77	1.00	1.481
39. ATMs are challenging for me due to the lack of specific accessibility features.	11	1.73	1.00	1.348
70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	11	1.73	1.00	0.905
48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	12	1.67	2.00	1.371
79. Booking a room in a hotel is difficult for me as I do not have access to the necessary information (e.g., pictures).	12	1.67	1.50	1.073
93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).	11	1.64	2.00	1.120
45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom.	15	1.60	1.00	1.056
56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions).	10	1.60	1.50	1.647
6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	12	1.58	1.00	0.996

61. At my workplace, in internal spaces, there are accessibility issues concerning spatial accessibility (e.g., there are no ramps and elevators, facilities, toilets, or narrow spaces).	9	1.56	1.00	1.014
13. I find it challenging to access bus stops due to the inaccessible routes leading to them.	11	1.55	1.00	1.128
42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).	11	1.55	2.00	1.036
90. I find it difficult to locate my belongings when leaving the water.	11	1.45	1.00	1.128
60. I cannot reach my workplace easily due to poor structure in external spaces.	9	1.44	1.00	1.333
43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).	10	1.40	1.00	0.843
2. It is difficult to navigate external spaces without someone to accompany me due to a lack of signage.	13	1.38	1.00	1.325
30. I struggle with access to social media (e.g., blogging and Facebook).	6	1.00	1.00	0.632

Table 9

Mean, median and standard deviation of responses of participants of a specified category of responses to each item of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the item. This number is different for each item and can less than the total number of participants for each group. The difference between the N-value and the total number of participants in the specified group is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options.

Table 9 Older people

Item	N	Mean	Median	SD
1. I find it difficult to walk in outdoor spaces due to their poor structure (e.g., damaged or narrow sidewalks, obstacles, lack of ramps) and lack of pedestrian maintenance.	23	2.57	3.00	1.121
3. Insufficient lighting in external spaces is challenging for me.	24	2.63	3.00	1.056
4. I have difficulty finding accessible parking spaces.	11	2.73	3.00	1.348
6. I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	21	2.29	3.00	1.231
9. Overcrowded and noisy internal spaces are frustrating for me.	24	2.79	3.00	1.141
12. When public transportation is overcrowded and noisy, it is difficult for me to cope with.	24	2.67	3.00	1.239
15. There are no accessible facilities in public and private sector services, or the existing ones lack maintenance.	20	2.70	3.00	1.031
19. Information and services (e.g., booking an appointment) on health portals and websites are not accessible to me.	22	2.41	3.00	1.333
20. Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities.	13	2.31	3.00	1.316
22. There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	15	2.80	3.00	1.146
24. I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.	23	2.96	3.00	1.065
25. I find difficulty with internet services and websites, especially when they are not up to date	14	2.50	3.00	1.345

and incompatible with assistive technology (e.g., not accessible with screen recognition).

26. I find it difficult to understand information in digital interfaces due to too much complex content involved.	20	2.65	3.00	1.137
27. I have difficulty using chat windows or digital bots on websites.	21	2.76	3.00	1.179
28. Navigation paths and searching on websites are too complicated for me.	23	2.57	3.00	1.308
29. Using passwords on digital platforms or apps is challenging for me.	23	2.74	3.00	1.251
30. I struggle with access to social media (e.g., blogging and Facebook).	15	2.73	3.00	1.163
31. Due to inaccessible e-commerce platforms, I find navigating product information and detailed descriptions challenging (e.g., not compatible with screen recognition programs).	13	2.69	3.00	1.182
32. E-commerce is challenging because I worry about online shopping security.	22	3.27	3.00	0.935
33. Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	21	2.67	3.00	1.390
34. I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	23	2.78	3.00	0.902
35. The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	17	2.53	3.00	1.068
36. I find communicating with technical assistance services challenging and hesitate to ask for help.	20	2.35	3.00	1.348
38. It is challenging for me to make digital payments and manage my finances.	22	2.45	3.00	1.299

41. I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	18	2.89	3.00	1.278
46. I find it difficult when lecture locations change.	9	2.00	3.00	1.225
47. I find it difficult to access educational material when it is not given in an accessible text form (e.g., easy-to-read texts, accessible texts in Word or Pdf form).	9	2.33	3.00	1.225
48. I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	9	2.22	3.00	1.093
50. There is a lack of information about useful tools for teachers and students.	7	2.29	3.00	1.113
53. Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	7	2.29	3.00	1.380
62. Noise and an unstructured environment in the workplace cause me stress.	10	2.50	3.00	0.972
69. At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	19	2.37	3.00	0.955
70. I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	23	2.61	3.00	1.076
72. Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	10	2.50	3.00	1.179
73. Most places of cultural heritage don't have tour guides available for people with disabilities.	7	2.57	3.00	1.397
77. I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	18	2.72	3.00	1.227
80. I cannot book tickets and accommodation without assistance due to hard-to-read websites.	20	2.40	3.00	1.046

81. Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	17	2.82	3.00	0.883
83. Staff in transportation means are not well trained to serve people with disabilities.	16	2.56	3.00	0.892
84. I find it difficult to book a ticket online due to the inaccessible websites.	20	2.70	3.00	1.129
85. Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	9	2.44	3.00	1.424
86. Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).	11	2.18	3.00	1.079
87. There is no consideration for safety measures in sports facilities regarding people with disabilities.	9	2.33	3.00	1.225
88. Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them.	8	2.63	3.00	1.302
89. Beach ramps are not available on the beach, or they are not functional.	18	2.72	3.00	0.895
91. On the beach, no assistance is provided by the beach bar owners for people with disabilities.	8	2.50	3.00	1.195
92. There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	10	2.70	3.00	1.160
94. In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	11	2.64	3.00	1.286
96. Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	11	2.55	3.00	1.036
97. There is no provision for inclusive planning for people with disabilities in security evacuation situations.	10	2.70	3.00	1.160

98. There is no training for handling emergency situations involving people with disabilities.	10	2.70	3.00	1.252
99. Applications that have the services of the fire department, hospital, and police are not accessible enough.	13	2.54	3.00	1.050
17. The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	14	2.29	2.50	1.069
21. Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	20	2.05	2.50	1.191
40. I find navigating and searching certain things in digital libraries difficult due to poor accessibility.	14	2.21	2.50	1.311
45. I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom.	8	2.00	2.50	1.195
58. I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	6	2.17	2.50	1.472
59. I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	4	2.00	2.50	1.414
95. It is challenging for me to book a ticket for a movie, a theater, or a concert due to inaccessible websites (e.g., through a screen reader)	16	2.19	2.50	1.109
5. It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage.	21	1.95	2.00	1.203
8. Indoor places are challenging for me when there are not standardized lighting levels.	22	2.14	2.00	1.167
10. I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	22	1.95	2.00	1.214
11. It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus	21	1.76	2.00	1.221

station due to a lack of signage and announcements.

14. I frequently have difficulty communicating with bus drivers, or they are unwilling to help.	21	1.81	2.00	0.928
18. I cannot communicate and understand the information explained to me in public services without assistance.	22	1.77	2.00	1.232
23. I encounter difficulties in health care services due to organizational and transport barriers.	17	2.18	2.00	1.074
37. Navigating through bank websites and i-banking to check my bank account and transfer money is difficult due to accessibility issues.	17	2.12	2.00	1.269
49. There is not accessible educational material with the use of VR/AR technology.	3	1.33	2.00	1.155
51. There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	4	1.50	2.00	1.000
56. Teachers do not take into account the special needs of students with disabilities during the physical or online examination process (e.g., time, exam difficulty, examination form and directions).	3	2.00	2.00	2.000
57. I find it difficult to work in a group because of the lack of disability awareness among my fellow students.	4	2.25	2.00	1.500
60. I cannot reach my workplace easily due to poor structure in external spaces.	9	1.67	2.00	1.000
61. At my workplace, in internal spaces, there are accessibility issues concerning spatial accessibility (e.g., there are no ramps and elevators, facilities, toilets, or narrow spaces).	7	1.57	2.00	0.976
64. I need assistance from others in my workplace because of inaccessibility, which is not always given (e.g., instructions and modifications from employers).	6	1.67	2.00	1.033

65. I find it difficult to master new digital tools effectively at my workplace due to accessibility barriers, such as complex interfaces and a lack of assistive technology support.	8	1.75	2.00	1.035
68. At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	21	2.10	2.00	0.944
71. There are no trained staff members who can support me in archaeological and cultural sites and museums.	18	2.06	2.00	1.110
76. It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	14	1.93	2.00	1.207
78. There is no tourist signage for the direction of tourist attractions and service facilities.	15	2.00	2.00	1.000
79. Booking a room in a hotel is difficult for me as I do not have access to the necessary information (e.g., pictures).	19	2.00	2.00	1.054
82. I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	17	1.82	2.00	1.074
100. I find it hard to understand critical information due to the lack of accessible formats of information (e.g., understandable vocabulary, easy-to-read texts, accessible texts or other accessible formats).	19	1.89	2.00	1.100
7. I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	14	1.50	1.50	1.286

16. My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	6	2.00	1.50	1.673
52. Communication with the administrative services is inadequate, and I don't have the chance to express my needs.	8	1.75	1.50	1.165
55. The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	4	1.25	1.50	0.957
66. At my job, no assistive technology or special equipment is available to support me.	6	1.33	1.50	0.816
67. The machines I have to use in my job are not accessible.	6	1.33	1.50	0.816
74. A tour guide is not always enough for me to have access to cultural heritage environments.	16	1.88	1.50	1.408
2. It is difficult to navigate external spaces without someone to accompany me due to a lack of signage.	20	1.45	1.00	1.099
13. I find it challenging to access bus stops due to the inaccessible routes leading to them.	21	1.81	1.00	1.209
39. ATMs are challenging for me due to the lack of specific accessibility features.	14	1.29	1.00	1.204
42. I have difficulty reaching my educational unit or navigating into it due to the inappropriate building structure (e.g. narrow spaces and obstacles).	6	1.33	1.00	1.033
43. I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).	7	1.57	1.00	1.397
44. It is difficult for me to attend a course in a crowded educational environment.	8	1.50	1.00	1.069
54. The library in the educational institution I attend is not equipped appropriately (e.g.,	5	1.00	1.00	0.707

assistive technology, devices, etc.) to support students with disabilities.

63. I find it difficult to apply for a job, follow a hiring process, or make requests in my workplace due to the inaccessibility of documents and websites.

7 1.43 1.00 0.976

75. I struggle to comprehend the information in the museum because of the vocabulary, syntax and ambiguity of the words and symbols.

20 1.40 1.00 1.142

90. I find it difficult to locate my belongings when leaving the water.

13 1.23 1.00 1.013

93. I have difficulty accessing TV programs (e.g. news broadcasts) or videos due to lack of accessibility (e.g. lack of interpretation or subtitles, difficult-unknown terminology).

17 1.41 1.00 1.176

Table 10

Table 10 presents the results of the descriptive statistics regarding the responses of the total sample of study participants, sorted by the mean from highest to lowest mean score, in the 7 accessibility areas investigated. This sorting highlights the accessibility areas that show the highest average on greatest difficulties. For example, the area "Accessibility in Security and Evacuation Situations" shows the highest value (mean = 2.71) meaning that more participants agree with the statements (items 96-100) relating to this area, compared to the statements included in the accessibility areas that follow in the order. The items included in each accessibility area are described in section 3. Instrument.

Mean, median, and standard deviation of participants' responses to each accessibility area of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the items included in each accessibility area. This number is less than 206, which corresponds to the total number of participants in the survey. The difference between the N-value and 206 is due to the "I don't know" or "Not relevant to my disability" responses given by some participants.

These responses were included in the possible response options in addition to the 5-point Likert scale options.

Table 10

Each accessibility area	N	Mean	Median	SD
Accessibility in Security and Evacuation Situations	175	2.67	3.00	0.991
Cultural Heritage Accessibility	182	2.37	2.50	0.960
Educational Accessibility	173	2.33	2.33	0.912
Tourism (including recreation and sports) Accessibility	190	2.32	2.40	0.879
General Accessibility	196	2.31	2.38	0.833
Digital Accessible Transformation	185	2.29	2.36	0.956
Employment Accessibility	174	2.24	2.18	0.950

Table 11

Table 11 presents the results of the descriptive statistics regarding the responses in the 7 accessibility areas investigated, comparing each of the seven categories of participants: 1) Visual Impairments, 2) Physical/Mobility Impairments, 3) Deaf-Hard of hearing, 4) Specific Learning Disabilities, 5) Autism (High Functioning/ Asperger's Syndrome), 6) Mild Intellectual disability, and 7) Older people.

Mean, median and standard deviation of participants' responses to each accessibility area of the questionnaire. The value of N corresponds to the number of participants who responded to what extent they agreed with the items included in each accessibility area. This number is less than number of participants belonging to each of the seven categories. The difference between the N-value and the number of participants belonging to each category is due to the "I don't know" or "Not relevant to my disability" responses given by some participants. These responses were included in the possible response options, in addition to the 5-point Likert scale options.

Table 11

Area	Category	N	Mean	Median	SD
General Accessibility	1 Visual Impairments	25	2.24	2.18	0.812

Digital Accessible Transformation	2 Physical/Mobility Impairments	77	2.45	2.38	0.842
	3 Hearing Impairments	23	2.33	2.31	0.799
	4 Specific Learning Disabilities	20	2.08	2.33	0.998
	5 Autism (High Functioning / Asperger's Syndrome)	12	2.14	2.44	0.736
	6 Mild Intellectual disability	15	2.09	2.18	0.715
	7 Older people	24	2.35	2.56	0.821
	1 Visual Impairments	25	2.19	2.20	0.835
	2 Physical/Mobility Impairments	68	2.36	2.35	1.036
	3 Hearing Impairments	21	2.07	1.86	0.941
	4 Specific Learning Disabilities	21	2.12	2.38	0.977
	5 Autism (High Functioning / Asperger's Syndrome)	12	2.06	2.28	1.016
	6 Mild Intellectual disability	14	2.27	2.29	0.697
	7 Older people	24	2.62	2.83	0.922
	1 Visual Impairments	23	2.42	2.39	0.885
Educational Accessibility	2 Physical/Mobility Impairments	68	2.30	2.25	0.993
	3 Hearing Impairments	20	2.59	2.89	0.983
	4 Specific Learning Disabilities	23	2.41	2.50	0.739
	5 Autism (High Functioning / Asperger's Syndrome)	12	2.43	2.47	0.796
	6 Mild Intellectual disability	15	1.94	1.83	0.767
	7 Older people	12	2.09	2.30	0.915
	1 Visual Impairments	25	1.99	1.86	0.920
Employment Accessibility	2 Physical/Mobility Impairments	68	2.25	2.42	1.081

Cultural Heritage Accessibility	3 Hearing Impairments	22	2.22	2.20	0.815
	4 Specific Learning Disabilities	22	2.52	2.58	0.899
	5 Autism (High Functioning / Asperger's Syndrome)	11	2.57	2.50	0.716
	6 Mild Intellectual disability	13	2.05	2.00	0.742
	7 Older people	13	2.07	2.13	0.893
	1 Visual Impairments	25	2.56	2.63	0.812
	2 Physical/Mobility Impairments	70	2.39	2.60	1.064
	3 Hearing Impairments	19	2.55	2.67	1.025
	4 Specific Learning Disabilities	19	2.37	2.57	0.988
	5 Autism (High Functioning / Asperger's Syndrome)	12	2.23	2.37	0.870
	6 Mild Intellectual disability	13	2.23	2.33	0.816
	7 Older people	24	2.10	2.00	0.843
	1 Visual Impairments	25	2.38	2.54	0.808
	2 Physical/Mobility Impairments	74	2.41	2.57	0.944
Tourism (including recreation and sports) Accessibility	3 Hearing Impairments	22	2.33	2.29	1.046
	4 Specific Learning Disabilities	21	2.22	2.18	0.838
	5 Autism (High Functioning / Asperger's Syndrome)	11	2.09	2.00	0.579
	6 Mild Intellectual disability	13	2.14	1.92	0.801
	7 Older people	24	2.31	2.42	0.816
	1 Visual Impairments	24	2.67	2.90	0.999
	2 Physical/Mobility Impairments	70	2.76	3.00	1.017
	3 Hearing Impairments	21	2.83	3.00	1.035
	3 Hearing Impairments	22	2.22	2.20	0.815
	4 Specific Learning Disabilities	22	2.52	2.58	0.899
	5 Autism (High Functioning / Asperger's Syndrome)	11	2.57	2.50	0.716
	6 Mild Intellectual disability	13	2.05	2.00	0.742
	7 Older people	13	2.07	2.13	0.893
	1 Visual Impairments	25	2.56	2.63	0.812
	2 Physical/Mobility Impairments	70	2.39	2.60	1.064
Accessibility in Security and Evacuation Situations	3 Hearing Impairments	19	2.55	2.67	1.025
	4 Specific Learning Disabilities	19	2.37	2.57	0.988
	5 Autism (High Functioning / Asperger's Syndrome)	12	2.23	2.37	0.870
	6 Mild Intellectual disability	13	2.23	2.33	0.816
	7 Older people	24	2.10	2.00	0.843
	1 Visual Impairments	25	2.38	2.54	0.808
	2 Physical/Mobility Impairments	74	2.41	2.57	0.944

4 Specific Learning Disabilities	19	2.67	2.80	0.998
5 Autism (High Functioning / Asperger's Syndrome)	7	2.50	2.33	0.946
6 Mild Intellectual disability	13	2.70	3.00	0.869
7 Older people	21	2.27	2.40	0.952

7.2. Inferential statistics

The results of the Wilcoxon one sample signed rank test for the different groups are shown in Tables 12 to 18, which include only those aspects which participants rated as significantly important.

Table 12: Statements which visually impaired participants rated as significant problems for them

Area/Statement	N ¹	Median (SIQR ²)	Wilcoxon test
General accessibility			
Difficult to walk in outdoor spaces due to their poor structure and lack of pedestrian maintenance	25	3.0 (1.0)	Z = 2.14 p = 0.032
Insufficient lighting in external spaces is challenging for me	22	3.0 (1.0)	Z = 2.22 p = 0.026
It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage	24	3.0 (1.0)	Z = 2.52 p = 0.012
There are no accessible facilities in public and private sector services, or the existing ones lack maintenance	25	3.0 (0.5)	Z = 3.07 p = 0.002
Monitors for clients (e.g., in banks or hospitals) are inaccessible to people with disabilities	23	4.0 (1.0)	Z = 3.22 p = 0.001

There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	24	4.0 (0.5)	Z = 3.70 p < 0.001
I find difficulty with internet services and websites, especially when they are not up to date and incompatible with assistive technology (e.g., not accessible with screen recognition).	24	3.0 (1.0)	Z = 3.08 p = 0.002
Digital Accessibility Transformation			
The formats in digital documents and online services are inaccessible (e.g., small/large fonts or artistic ones, lack of speech-to-text technology and multiple interaction methods, such as voice commands)	24	3.0 (1.0)	Z = 2.16 p = 0.031
ATMs are challenging for me due to the lack of specific accessibility features	23	3.0 (1.0)	Z = 2.41 p = 0.016
Educational Accessibility			
I find it difficult to access educational material when it is not given in an accessible text form (e.g. easy-to-read texts, accessible texts in Word or PDF form).	22	3.5 (0.5)	Z = 3.41 p < 0.001
I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	22	3.5 (0.5)	Z = 3.23 p = 0.001
There is a lack of information about useful tools for teachers and students.	20	3.0 (1.0)	Z = 2.93 p = 0.003
The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	20	2.5 (0.5)	Z = 2.00 p = 0.045
Employment Accessibility			
No questions rated significantly above the neutral point			
Cultural Heritage Accessibility			

At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	19	3.0 (0.5)	Z = 2.93 p = 0.003
At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	20	3.0 (0.5)	Z = 2.71 p = 0.007
Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	20	3.0 (0.5)	Z = 2.13 p = 0.034
Most places of cultural heritage don't have tour guides available for people with disabilities.	22	3.5 (0.5)	Z = 3.32 p < 0.001
It is difficult for me to have access to information, as there is a lack of tactile material, audio descriptions (e.g. QR codes for audio information) for museum exhibits or text information is unreadable.	24	3.0 (1.0)	Z = 2.99 p = 0.003
Tourism/Sports Accessibility			
There is no tourist signage for the direction of tourist attractions and service facilities	16	3.0 (0.0)	Z = 2.67 p = 0.009
Staff in transportation means are not well trained to serve people with disabilities.	24	2.5 (0.5)	Z = 2.20 p = 0.028
There is no consideration for safety measures in sports facilities regarding people with disabilities	17	3.0 (1.0)	Z = 2.36 p = 0.018
Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them	17	3.0 (1.0)	Z = 2.46 p = 0.014
I find it difficult to locate my belongings when leaving the water.	24	3.0 (0.5)	Z = 3.53 p < 0.001
There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	21	3.0 (1.0)	Z = 2.46 p = 0.014
Evacuation/Security Accessibility			

Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	20	3.0 (0.5)	Z = 3.34 p < 0.001
There is no provision for inclusive planning for people with disabilities in security evacuation situations.	19	4.0 (0.5)	Z = 3.00 p = 0.003
There is no training for handling emergency situations involving people with disabilities.	17	3.0 (1.0)	Z = 2.67 p = 0.008

1. N = number of participants in this group who provided a valid Likert-scale response. Responses of "I don't know" or "Not relevant to my disability" were excluded from the analysis.
2. Semi-interquartile range.

Table 13: Statements which physical/mobility participants rated as significant problems for them

Area/Statement	N ¹	Median (SIQR ²)	Wilcoxon test
General accessibility			
1 I find it difficult to walk in outdoor spaces due to their poor structure and lack of pedestrian maintenance	66	4.0 (0.5)	Z = 5.38 p < 0.001
3 Insufficient lighting in external spaces is challenging for me	51	3.0 (1.0)	Z = 2.19 p = 0.028
4 I have difficulty finding accessible parking spaces.	56	3.0 (1.0)	Z = 2.14 p < 0.001
6 I have difficulty navigating indoor spaces with stairs and no ramps or elevators.	64	4.0 (0.5)	Z = 5.62 p < 0.001
7 I find difficulty in indoor places (such as schools, gyms, bars, and restaurants) due to the lack or misuse of toilets for people with disabilities.	65	4.0 (0.5)	Z = 5.47 p < 0.001
8 Indoor places are challenging for me when there are not standardized lighting levels.	48	3.0 (1.0)	Z = 2.98 p = 0.003
9 Overcrowded and noisy internal spaces are frustrating for me.	64	3.0 (1.0)	Z = 4.47 p < 0.001
10 I find it difficult to get on the bus (e.g., due to narrow spaces or lack of ramps or due to the height of the doorstep).	71	4.0 (0.5)	Z = 5.97 p < 0.001

12 When public transportation is overcrowded and noisy, it is difficult for me to cope with.	64	3.0 (1.0)	Z = 4.64 p < 0.001
13 I find it challenging to access bus stops due to the inaccessible routes leading to them.	63	3.0 (0.5)	Z = 3.23 p < 0.001
15 here are no accessible facilities in public and private sector services, or the existing ones lack maintenance	67	3.0 (1.0)	Z = 3.68 p < 0.001
16 My disability card is not always taken into account to be granted priority and I find it difficult to wait in lines for a long time.	66	3.0 (1.0)	Z = 4.50 p < 0.001
17 The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	70	2.0 (1.0)	Z = 2.59 p = 0.010
22 There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	53	3.0 (1.0)	Z = 4.28 p < 0.001
23 I encounter difficulties in health care services due to organizational and transport barriers.	63	3.0 (1.0)	Z = 3.52 p < 0.001
Digital Accessibility Transformation			
33 Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	52	3.0 (1.5)	Z = 2.14 p = 0.032
34 I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	56	3.0 (1.0)	Z = 3.17 p = 0.002
41 I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	54	3.0 (1.5)	Z = 2.20 p = 0.028
Educational Accessibility			
43 I have difficulty reaching my educational unit or navigating into it due to lack of facilities (e.g., ramps, elevators, signage).	53	3.0 (1.0)	Z = 2.78 p = 0.005

44 It is difficult for me to attend a course in a crowded educational environment.	52	3.0 (1.5)	Z = 2.71 p = 0.007
46 I find it difficult when lecture locations change.	52	3.0 (0.5)	Z = 2.55 p = 0.011
49 There is not accessible educational material with the use of VR/AR technology.	39	3.0 (1.0)	Z = 2.553 p = 0.011
50 There is a lack of information about useful tools for teachers and students.	47	3.0 (1.0)	Z = 3.69 p < 0.001
Employment Accessibility			
60 I cannot reach my workplace easily due to poor structure in external spaces.	57	3.0 (1.5)	Z = 2.65 p = 0.008
62 Noise and an unstructured environment in the workplace cause me stress.	55	3.0 (1.0)	Z = 3.24 p = 0.001
Cultural Heritage Accessibility			
68 At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	61	3.0 (1.0)	Z = 3.09 p = 0.002
69 At museums, exhibits, and works of art, internal spaces lack accessible infrastructure (unstable glass floor, obstacles, lack of stairs with handrails) and indicators to help visitors reach the points of interest.	63	3.0 (1.0)	Z = 2.93 p = 0.003
70 I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	62	3.0 (1.0)	Z = 4.45 p < 0.001
71 There are no trained staff members who can support me in archaeological and cultural sites and museums.	55	3.0 (0.05)	Z = 2.24 p = 0.025
72 Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	51	3.0 (0.5)	Z = 2.83 p = 0.005
73 Most places of cultural heritage don't have tour guides available for people with disabilities.	53	3.0 (1.0)	Z = 3.54 p < 0.001
74 A tour guide is not always enough for me to have access to cultural heritage environments.	54	3.0 (0.5)	Z = 2.62 p = 0.009
Tourism/Sports Accessibility			

78 There is no tourist signage for the direction of tourist attractions and service facilities	51	3.0 (0.5)	Z = 2.97 p = 0.003
81 Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	68	3.0 (1.0)	Z = 4.29 p < 0.001
83 Staff in transportation means are not well trained to serve people with disabilities.	64	3.0 (1.0)	Z = 4.02 p < 0.001
85 Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	59	3.0 (1.0)	Z = 4.61 p < 0.001
86 Sports facilities are inaccessible in terms of physical accessibility (entrances, indoor spaces, etc.).	61	3.0 (1.0)	Z = 4.08 p < 0.001
87 There is no consideration for safety measures in sports facilities regarding people with disabilities	61	3.0 (1.0)	Z = 4.31 p < 0.001
88 Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them	59	3.0 (1.0)	Z = 4.40 p < 0.001
89 Beach ramps are not available on the beach, or they are not functional.	62	3.0 (1.0)	Z = 4.04 p < 0.001
91 On the beach, no assistance is provided by the beach bar owners for people with disabilities.	58	3.0 (1.0)	Z = 3.33 p < 0.001
92 There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	60	3.0 (1.0)	Z = 4.05 p < 0.001
94 In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	67	3.0 (1.0)	Z = 3.43 p < 0.001
Evacuation/Security Accessibility			
Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	60	3.0 (1.0)	Z = 4.46 p < 0.001
There is no provision for inclusive planning for people with disabilities in security evacuation situations.	61	3.0 (0.5)	Z = 4.87 p < 0.001

There is no training for handling emergency situations involving people with disabilities.	60	3.0 (0.5)	Z = 5.14 p < 0.001
Applications that have the services of the fire department, hospital, and police are not accessible enough.	49	3.0 (0.5)	Z = 3.11 p = 0.002

3. N = number of participants in this group who provided a valid Likert-scale response. Responses of "I don't know" or "Not relevant to my disability" were excluded from the analysis.

4. Semi-interquartile range.

Table 14: Statements which participants with hearing impairments rated as significant problems for them

Area/Statement	N ¹	Median (SIQR ²)	Wilcoxon test
General accessibility			
9 Overcrowded and noisy internal spaces are frustrating for me.	20	3.0 (0.5)	Z = 2.4 p <= 0.016
11 It is difficult for me to find the correct bus stop to get on/off the bus or the correct bus at the bus station due to a lack of signage and announcements.	15	3.0 (0.5)	Z = 2.54 p = 0.011
12 When public transportation is overcrowded and noisy, it is difficult for me to cope with.	16	3.0 (0.5)	Z = 2.11 p = 0.035
15 there are no accessible facilities in public and private sector services, or the existing ones lack maintenance	15	3.0 (0.5)	Z = 3.18 p = 0.001
21 Communication is challenging for me in public or private services where glass barriers are used or people wear face masks.	22	3.0 (0.5)	Z = 2.99 p = 0.003
22 There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	16	3.0 (1.0)	Z = 2.04 p = 0.042
Digital Accessibility Transformation			
No questions rated significantly above the neutral point			
Educational Accessibility			
44 It is difficult for me to attend a course in a crowded educational environment.	17	3.0 (1.0)	Z = 2.77 p = 0.006

45 I find it difficult to attend the lesson when I am not close to the teacher and the board in the classroom	19	3.0 (0.5)	Z = 3.10 p = 0.006
50 There is a lack of information about useful tools for teachers and students.	12	3.0 (1.0)	Z = 2.38 p = 0.017
51 There are no available devices or educational tools compatible with assistive technology to support me in the courses that I attend (e.g., screen readers).	14	3.0 (1.0)	Z = 2.05 p = 0.040
59 I cannot keep up with online courses as they are too fast, and I do not have time to take notes and digest information.	15	3.0 (1.0)	Z = 2.67 p = 0.008
Employment Accessibility			
62 Noise and an unstructured environment in the workplace cause me stress.	18	3.0 (0.5)	Z = 2.52 p = 0.012
Cultural Heritage Accessibility			
73 Most places of cultural heritage don't have tour guides available for people with disabilities.	14	3.5 (1.0)	Z = 2.08 p = 0.038
74 A tour guide is not always enough for me to have access to cultural heritage environments.	14	3.0 (1.0)	Z = 2.70 p = 0.007
Tourism/Sports Accessibility			
81 Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	17	3.0 (1.0)	Z = 2.05 p = 0.040
82 I do not have access to the announcements provided by transportation means (e.g., airplanes, buses, ships).	19	3.0 (1.0)	Z = 2.46 p = 0.014
83 Staff in transportation means are not well trained to serve people with disabilities.	14	3.0 (0.5)	Z = 2.83 p = 0.005
85 Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	8	3.5 (1.0)	Z = 2.08 p = 0.037
87 There is no consideration for safety measures in sports facilities regarding people with disabilities	8	3.0 (0.5)	Z = 2.17 p = 0.030

88 Sports clubs have no available and qualified staff to support people with disabilities and create programs adapted to them	10	3.0 (0.5)	Z = 2.44 p = 0.006
89 Beach ramps are not available on the beach, or they are not functional.	6	3.0 (0.5)	Z = 2.27 p = 0.023
91 On the beach, no assistance is provided by the beach bar owners for people with disabilities.	9	3.0 (1.0)	Z = 1.99 p = 0.046
92 There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	12	3.0 (1.0)	Z = 2.66 p = 0.023
94 In a theater or a cinema, there is no provision for people with disabilities regarding facilities and seating arrangements.	9	3.0 (1.0)	Z = 2.37 p = 0.018
Evacuation/Security Accessibility			
96 Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	14	3.0 (0.5)	Z = 3.15 p = 0.002
97 There is no provision for inclusive planning for people with disabilities in security evacuation situations.	12	3.5 (0.5)	Z = 2.74 p = 0.006
98 There is no training for handling emergency situations involving people with disabilities.	13	4.0 (0.5)	Z = 3.18 p = 0.001
99 Applications that have the services of the fire department, hospital, and police are not accessible enough.	12	3.0 (1.0)	Z = 2.10 p = 0.036

5. N = number of participants in this group who provided a valid Likert-scale response. Responses of "I don't know" or "Not relevant to my disability" were excluded from the analysis.

6. Semi-interquartile range.

Table 15: Questions which participants with specific learning difficulties rated as significant problems for them

Area/Statement	N ¹	Median (SIQR ²)	Wilcoxon test
General accessibility			

5 It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage	8	3.0 (0.0)	Z = 2.11 p = 0.035
9 Overcrowded and noisy internal spaces are frustrating for me.	12	3.5 (1.0)	Z = 2.86 p = 0.004
24 I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.	18	3.0 (1.0)	Z = 2.24 p = 0.025
26 I find it difficult to understand information in digital interfaces due to too much complex content involved.	17	3.0 (1.0)	Z = 2.20 p = 0.028
Digital Accessibility Transformation			
34 I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	20	3.0 (0.5)	Z = 2.35 p = 0.019
Educational Accessibility			
44 It is difficult for me to attend a course in a crowded educational environment.	20	3.0 (0.5)	Z = 2.17 p = 0.030
48 I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	19	3.5 (1.0)	Z = 2.25 p = 0.025
50 There is a lack of information about useful tools for teachers and students.	20	3.0 (0.0)	Z = 3.60 p < 0.001
55 The teacher's lack of qualification to use accessibility methods (e.g., technological and e-learning tools) and lack of proper training in supporting students with disabilities led to significant gaps in my learning, making it difficult to catch up.	17	3.0 (1.0)	Z = 2.54 p = 0.011
58 I face difficulties accessing online courses and material due to inaccessibility in digital educational material and resources.	19	3.0 (0.5)	Z = 2.21 p = 0.027
Employment Accessibility			

62 Noise and an unstructured environment in the workplace cause me stress.	19	3.0 (1.0)	Z = 2.57 p = 0.010
66 At my job, no assistive technology or special equipment is available to support me.	7	3.0 (1.0)	Z = 2.07 p = 0.038
Cultural Heritage Accessibility			
68 At museums, art galleries, and archaeological sites, external spaces lack proper infrastructure and indicators to help visitors understand where the parking spots and entrances are or how to get there.	10	3.0 (0.5)	Z = 2.11 p = 0.035
71 There are no trained staff members who can support me in archaeological and cultural sites and museums.	12	3.0 (0.5)	Z = 1.99 p = 0.046
72 Many cultural heritage sites lack permeable and functional websites (e.g., virtual tours).	15	3.0 (0.5)	Z = 2.13 p = 0.034
Tourism/Sports Accessibility			
85 Sports equipment (e.g. exercise machines) in sports centers is inaccessible to people with disabilities.	15	3.0 (0.0)	Z = 2.48 p = 0.013
91 On the beach, no assistance is provided by the beach bar owners for people with disabilities.	6	3.0 (0.5)	Z = 2.12 p = 0.034
92 There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	10	3.0 (0.5)	Z = 2.64 p = 0.008
Evacuation/Security Accessibility			
96 Evacuation and security systems lack specific provisions for people with disabilities (e.g., alerts that are not accessible to everyone).	10	3.0 (0.5)	Z = 2.31 p = 0.021
97 There is no provision for inclusive planning for people with disabilities in security evacuation situations.	9	3.0 (0.5)	Z = 2.74 p = 0.006
98 There is no training for handling emergency situations involving people with disabilities.	12	4.0 (0.5)	Z = 2.91 p = 0.004
99 Applications that have the services of the fire department, hospital, and police are not accessible enough.	8	3.0 (0.5)	Z = 2.43 p = 0.015

7. N = number of participants in this group who provided a valid Likert-scale response. Responses of “I don’t know” or “Not relevant to my disability” were excluded from the analysis.
8. Semi-interquartile range.

Table 16: Questions which participants with Autism (High Functioning / Asperger’s Syndrome) rated as significant problems for them

Area/Statement	N ¹	Median (SIQR ²)	Wilcoxon test
General accessibility			
5 It isn't easy for me to navigate internal spaces, such as hospitals, due to a lack of indicators and signage	8	3.0 (0.0)	Z = 2.27 p = 0.023
8 Indoor places are challenging for me when there are not standardized lighting levels.	7	3.0 (0.5)	Z = 2.27 p = 0.023
9 Overcrowded and noisy internal spaces are frustrating for me.	12	3.5 (0.5)	Z = 3.02 p = 0.003
12 When public transportation is overcrowded and noisy, it is difficult for me to cope with.	12	3.5 (1.0)	Z = 2.18 p = 0.030
17 The staff in services (such as hospital personnel) are not properly educated on how to treat and communicate with people with disabilities, or they are not willing to help.	8	3.0 (1.0)	Z = 2.25 p = 0.024
Digital Accessibility Transformation			
No questions rated significantly above the midpoint			
Educational Accessibility			
47 I find it difficult to access educational material when it is not given in an accessible text form (e.g. easy-to-read texts, accessible texts in Word or PDF form).	8	3.0 (0.0)	Z = 2.53 p = 0.011
48 I have difficulties in accessing educational material due to the lack of accessible forms and multimedia (e.g., accessible presentations and accessible videos).	9	3.0 (0.5)	Z = 2.11 p = 0.035
Employment Accessibility			
62 Noise and an unstructured environment in the workplace cause me stress.	10	3.0 (0.05)	Z = 2.74 p = 0.006

Cultural Heritage Accessibility			
Insufficient responses for analysis			
Tourism/Sports Accessibility			
Insufficient responses for analysis			
Evacuation/Security Accessibility			
Insufficient responses for analysis			

9. N = number of participants in this group who provided a valid Likert-scale response. Responses of “I don’t know” or “Not relevant to my disability” were excluded from the analysis.

10. Semi-interquartile range.

Table 17: Questions which participants with mild Intellectual disability rated as significant problems for them

Area/Statement	N ¹	Median (SIQR ²)	Wilcoxon test
General accessibility			
26 I find it difficult to understand information in digital interfaces due to too much complex content involved.	12	3.0 (1.0)	Z = 2.07 p = 0.038
Digital Accessibility Transformation			
34 I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	13	3.0 (0.5)	Z = 2.35 p = 0.019
Educational Accessibility			
49 There is not accessible educational material with the use of VR/AR technology.	7	3.0 (0.5)	Z = 2.00 p = 0.046
53 Announcements by the teaching and administrative staff are not always accessible to me or presented understandably.	10	3.0 (0.5)	Z = 2.60 p = 0.009
Employment Accessibility			
No questions rated significantly above the neutral point			
Cultural Heritage Accessibility			
No questions rated significantly above the neutral point			
Tourism/Sports Accessibility			

92 There is no provision for appropriate staff training for people with disabilities in theaters, cinemas, and concerts.	9	3.0 (1.0)	Z = 1.99 p = 0.046
Evacuation/Security Accessibility			
98 There is no training for handling emergency situations involving people with disabilities.	12	3.0 (1.0)	Z = 2.23 p = 0.026

1. N = number of participants in this group who provided a valid Likert-scale response. Responses of "I don't know" or "Not relevant to my disability" were excluded from the analysis.
2. Semi-interquartile range.

Table 18: Questions which older participants rated as significant problems for them

Area/Statement	N ¹	Median (SIQR ²)	Wilcoxon test
General accessibility			
1 I find it difficult to walk in outdoor spaces due to their poor structure and lack of pedestrian maintenance	23	3.0 (0.5)	Z = 2.04 p = 0.041
3 Insufficient lighting in external spaces is challenging for me	24	3.0 (0.5)	Z = 2.40 p = 0.016
9 Overcrowded and noisy internal spaces are frustrating for me.	24	3.0 (1.0)	Z = 2.65 p = 0.008
12 When public transportation is overcrowded and noisy, it is difficult for me to cope with.	24	3.0 (1.0)	Z = 2.26 p = 0.024
15 There are no accessible facilities in public and private sector services, or the existing ones lack maintenance	20	3.0 (0.5)	Z = 2.49 p = 0.013
22 There is a lack of accessible information in public services (e.g., tactile maps, Braille labels, audible information, easy-to-read texts, etc.)	15	3.0 (1.0)	Z = 2.17 p = 0.030
24 I have difficulty navigating unfamiliar websites and locating important information (e.g., contact details) due to their overly complex and inaccessible design.	23	3.0 (0.5)	Z = 3.13 p = 0.002

26 I find it difficult to understand information in digital interfaces due to too much complex content involved.	20	3.0 (0.5)	Z = 2.22 p = 0.027
27 I have difficulty using chat windows or digital bots on websites.	21	3.0 (1.0)	Z = 2.48 p = 0.013
29 Using passwords on digital platforms or apps is challenging for me.	23	3.0 (1.0)	Z = 2.35 p = 0.019
30 I struggle with access to social media (e.g., blogging and Facebook).	15	3.0 (1.0)	Z = 2.18 p = 0.029
Digital Accessibility Transformation			
32 E-commerce is challenging because I worry about online shopping security.	22	3.0 (0.5)	Z = 3.56 p < 0.001
33 Due to poor accessibility, I find it difficult to access, fill in, and save digital documents (such as declarations from CSIS) on my own, especially when they require personal information.	21	3.0 (1.5)	Z = 2.02 p = 0.043
34 I encounter difficulty with digital service documents that require me to fill in or understand instructions with unfamiliar terminology, such as legal, banking, or administrative vocabulary.	23	3.0 (0.5)	Z = 3.05 p = 0.002
41 I have difficulty keeping up with updates in operating systems, digital formats of information, and device and software updates.	18	3.0 (1.0)	Z = 2.45 p = 0.014
Educational Accessibility			
No questions rated significantly above the neutral point			
Employment Accessibility			
No questions rated significantly above the neutral point			
Cultural Heritage Accessibility			
70 I find it difficult to navigate in museums or cultural heritage sites when they are crowded.	23	3.0 (0.5)	Z = 2.35 p = 0.019
Tourism/Sports Accessibility			
77 I find it difficult to plan a trip (e.g., activities) due to inaccessible websites of travel agencies.	18	3.0 (1.0)	Z = 2.16 p = 0.031

81 Transportation means (e.g., airplanes, ships, buses, trains) are not properly designed to serve people with disabilities.	17	3.0 (0.0)	Z = 2.78 p = 0.005
83 Staff in transportation means are not well trained to serve people with disabilities.	16	3.0 (0.5)	Z = 2.13 p = 0.033
84 I find it difficult to book a ticket online due to the inaccessible websites.	20	3.0 (0.5)	Z = 2.35 p = 0.019
89 Beach ramps are not available on the beach, or they are not functional.	18	3.0 (0.0)	Z = 2.68 p = 0.007
Evacuation/Security Accessibility			
none			

1. N = number of participants in this group who provided a valid Likert-scale response. Responses of "I don't know" or "Not relevant to my disability" were excluded from the analysis.
2. Semi-interquartile range.