Assessing students' awareness and education of web accessibility in web development and interface design programs

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Abstract

In an era of growing digitization, technology is essential for communication and daily life. However, inaccessible websites, including in Sweden, create barriers for individuals with disabilities, often due to insufficient education and awareness among web developers. Our quantitative study aimed to assess the status of web accessibility education within Swedish web development and interface design programs. We analyzed curricula and surveyed 63 final-year students across 23 programs. Findings show that while most programs (18 out of 23) include web accessibility, integration levels vary. Only 2% of courses offered standalone accessibility objectives, and 7% incorporated it within other courses, leaving 91% without any. Student knowledge varied; 69.8% were aware of accessibility guidelines and laws, but 30.2% were not. Additionally, only 26.2% of students reported acquiring knowledge about accessibility guidelines and laws from their current education. This underscores the need for better web accessibility education.

Keywords

Accessibility, web development, web accessibility, accessibility guidelines, WCAG, education, interface design.

1. Introduction

As our lives become more digital, technology shapes our daily routines. From scheduling appointments to handling banking matters, we rely on digital tools and a functional web to navigate our tasks smoothly. While this digital shift simplifies communication and access to information for some, it also creates barriers and excludes others from performing the same tasks. Studies highlight the global issue of inaccessible websites, depriving people with disabilities of equal web access [1, 2, 3, 4, 5, 6, 7].

The World Health Organization (2023) reports that approximately 16% of the global population has various disabilities, including auditory, cognitive, neurological, physical, speech, and visual impairments, with a growing elderly population facing age-related disabilities [8]. However, according to Buder & Perry (2021), the social model of disability states that it is the barriers in society that create problems, rather than the impairment of the individuals. Therefore the rapid advancement of technology needs to be developed with accessibility in mind to provide an accessible digital environment without barriers as stated by Katerattanakul et al. (2018), to

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ensure inclusiveness for the increasing number of individuals dealing with disabilities.

The issue of inaccessible websites poses significant challenges for people with disabilities [9]. Examples include intrusive advertisements, content overload, and the lack of audio descriptions, all of which can create barriers. Components like automatic video and music playback further hinder accessibility by interfering with screen readers [9], emphasizing the need for well-structured websites compatible with assistive technologies.

Access to information and communication technologies, including the web, is a fundamental right for individuals with disabilities, affirmed by the United Nations [10]. The Swedish Discriminatory Act works to combat discrimination against individuals, including those with disabilities. Additionally, the European Union has implemented accessibility laws, including the Web Accessibility Directive [11] and the European Accessibility Act [12]. These laws aim to reduce barriers by enforcing accessibility requirements on products and services, including websites [13]. The Web Accessibility Directive, enacted in 2018 across member states, focuses on the public sector [14]. In contrast, the European Accessibility Act (EAA) covers a broader range of accessibility requirements, encompassing the private sector, with compliance required by 2025 [13]. This impending legislation underscores the growing relevance of web accessibility.

To enhance web accessibility, adherence to guidelines such as the Web Content Accessibility Guidelines (WCAG) is crucial [15]. These guidelines serve as tools to structure and implement code and web content, promoting accessibility [16]. However, not all guidelines may be applicable to every website due to varying user needs [17]. Therefore, understanding the rationale behind accessibility implementations and their impact on end users is essential [18]. This underscores the significant responsibility on web developers and designers to create universally accessible websites, considering their pivotal role in developing interactive and design components [2].

1.1. Problem statement

Although web accessibility is crucial for equal web usage, it is often deprioritized within the web development industry [19, 20, 21, 18]. This is evident from the many inaccessible websites globally, where accessibility measures are lacking [2, 1, 4, 3, 5, 7]. Sweden is no exception. For instance, a study by Jonsson et al. (2023) found that Swedish healthcare providers' websites did not fully meet the EU web accessibility directive, failing to provide accessible health information and eHealth services to all citizens.

The main reasons for the prevailing lack of web accessibility today are not fully confirmed. However, studies have highlighted potential reasons, such as a perceived lack of knowledge on how to implement accessibility correctly [22, 23] and misconceptions stemming from a fundamental lack of awareness [5]. Despite many professionals expressing the necessity for education and training in web accessibility [23, 24], there remains a significant gap in research on current educational practices. While some studies have explored methods for integrating web accessibility into educational programs [25, 26, 27], there is a lack of clarity on the actual implementation of these learning objectives. Consequently, this study addresses this gap by shedding light on the current state and approaches to how web accessibility is incorporated into education.

1.2. Purpose and research questions

A potential reason for the prevalence of inaccessible websites globally and in Sweden is the lack of awareness and knowledge among professionals. One contributing factor could be inadequate education on web accessibility. Therefore, the purpose of this study is to examine the current state- and approaches of implementing education on web accessibility in Sweden. For this study the following research questions were created:

[RQ1] How are web accessibility learning objectives currently incorporated into the curricula of Swedish web development- and interface design programs?

[RQ2] How much do final-year students within web development- and interface design programs know about the current web accessibility guidelines and laws in Sweden?

[RQ3] How have current web development- and interface design educational programs contributed to the knowledge of students within those programs regarding web accessibility guidelines and laws?

2. Related works

2.1. Terminology

2.1.1. Web accessibility definition

Accessibility relates to concepts like inclusive design, digital inclusion, and universal usability, aiming to make technology accessible to the widest possible range of users. While some argue that accessibility should focus solely on people with disabilities [28], others contend that it applies universally. Research indicates that a majority of those involved in accessibility perceive it as relevant to everyone, not just individuals with disabilities [29]. The Web Accessibility Initiative (WAI) defines web accessibility as designing websites, tools, and technologies so that people with disabilities can use them, ensuring equal access to web content and functionality [30]. In this study, 'web accessibility' refers to creating a barrier-free web environment that ensures technology and content are accessible for individuals with disabilities.

2.1.2. Disability definition

Disability refers to any condition an individual's body or mind may encounter that limits the person's ability to do certain activities and interact with the community. For this study, we do however follow the social model, saying that it is the barriers in society that create problems, not the individuals. We refer to the term 'disabilities' as auditory, cognitive, neurological, physical, speech, and visual impairments, including both temporary and permanent disabilities.

2.1.3. Web development & interface design definition

In our study we refer to web development and interface design as the fields of Frontend development, User Experience (UX), User Interface (UI), or other related fields that are directly involved in creating the interactive components of websites, since that is where the majority of web accessibility implementations are done.

2.2. Overview of current laws and directives regarding accessibility

Several laws and directives are currently enacted worldwide to address web accessibility concerns, which vary by geographical location. This study focuses on specific laws and directives relevant in Sweden, collectively referred to as "Laws":

1. European Accessibility Act: Introduced in 2019, extending accessibility requirements to a broader array of products and services, including both the private and public sector, promoting equal opportunities and fair competition [31].
2. Swedish Discriminatory Act: Promotes equal rights and combats discrimination, including against individuals with disabilities, recognizing inaccessibility as a form of disadvantage [31].
3. United Nations Convention on the Rights of Persons with Disabilities (Article 9): Mandates measures to ensure individuals with disabilities have equal access to information and communication technologies [10].

2.3. How websites currently meet the accessibility requirements

Multiple studies underscore the global issue of inaccessible websites, creating barriers for individuals with disabilities. In India, a study of 44 higher educational websites revealed pervasive accessibility issues [2]. Similarly, in the United States, research found that only 23% of federal government homepages met accessibility standards under "Section 508", and 28% adhered to Web Accessibility Initiative (WAI) guidelines [4]. An Austrian study showed that merely 12% of Business-To-Consumer web pages passed accessibility evaluations [5]. Furthermore, a study in Brazil indicated that only 19.9% of web development professionals considered accessibility in their projects [32]. These findings highlight persistent global challenges despite universal efforts to ensure web accessibility. In Sweden, similar issues persist. A study by Jonsson et al. (2023) examined 37 Swedish healthcare providers' websites for compliance with EU web accessibility directives. None of the sites fully met legal requirements, failing to provide accessible health information and eHealth services as mandated since 2020. Additionally, many websites lacked required accessibility statements.

2.4. Accessibility awareness in the professional web development- and interface design field

In the professional web development and interface design field, awareness of web accessibility is increasing alongside the implementation of regulations, updated guidelines, and evaluation software [2, 1, 3, 4, 5, 6, 7]. Despite these efforts, practical implementations often fall short, as evidenced by the prevalence of inaccessible websites today. The integration of accessibility considerations into projects varies widely, influenced by factors such as management requirements, client demands, financial support, and social influences [23, 24]. Studies highlight that individuals responsible for web accessibility can significantly impact the measures taken; for instance, designers prioritize accessibility more than developers in certain projects [23]. A key challenge contributing to the deprioritization of web accessibility is the perceived lack of

knowledge in implementing accessibility correctly [22, 23]. Professionals often view accessibility as specialized expertise rather than common knowledge, which affects their confidence in integrating accessibility measures [1]. Additionally, misconceptions and insufficient education further hinder effective implementation [5, 32, 23].

2.5. Accessibility awareness in web development- and interface design education

Previous research has examined different levels of accessibility awareness among web development students [32, 21, 20]. Cao & Loiacono (2019) investigated the awareness of web accessibility guidelines among website and app developer students using surveys and interviews. They found that out of 76 students, only 43% were familiar with any of the guidelines. Additionally, Cao & Loiacono (2019) explored the inclusion of accessibility topics in design, web development, and app development courses. Their findings indicated that 73% of participants had taken one or more relevant courses, with 45% of these courses covering accessibility. In another study by Ferati & Vogel (2020), researchers examined 19 students enrolled in a web development course, revealing that only 42.11% were familiar with accessibility guidelines. Moreover, the study highlighted that 18 out of 19 students were unaware of disability policies in Sweden and the EU, with one student expressing uncertainty. Ferati & Vogel (2020) also investigated web development courses at a Swedish university, finding that only 14.3% of the 14 courses included accessibility topics in their syllabi. Additionally, Baker et al. (2020) conducted a literature analysis on accessibility in computing education, revealing that it is rarely a standalone course but often integrated as an add-on to existing topics. They noted that when accessibility is treated as an add-on, it tends to be deprioritized or omitted altogether. In a related study, Pima (2011) argued for integrating accessibility into university curricula for web programmers and developers to align with industry standards and regulations. From these studies, it is prevalent that the majority of students lack familiarity with accessibility guidelines. It is also shown that the topic of accessibility is rarely or only partially integrated into educational programs, and when included, it tends to be an add-on that is often neglected.

2.6. Methods to enhance web accessibility

Inaccessible websites pose significant challenges for individuals with disabilities, hindering their ability to navigate and access information online. Baumgartner et al. (2023) conducted qualitative interviews with individuals with disabilities, revealing common barriers such as complex layouts, intrusive advertisements, content overload, and lack of audio descriptions. Issues like automatic video and music playback further impede accessibility by interrupting screen readers. This underscores the need for well-structured websites that are compatible with assistive technologies, highlighting the responsibility of web developers and designers in ensuring universal accessibility [2]. Adhering to web accessibility guidelines is crucial to improving website accessibility from the outset [15]. However, guidelines must be applied contextually as each website serves diverse user needs [17]. Understanding the rationale behind accessibility implementations and their impact on end-users is essential [18]. Conducting user testing involving people with disabilities is also recommended to assess accessibility

comprehensively [17]. While guidelines offer a foundational framework for enhancing web accessibility, they should inform design decisions throughout the development process [18]. The World Wide Web Consortium (W3C) is an international public-interest, non-profit organization that works to develop and uphold web standards and guidelines that promote the evolution of the web to guarantee its sustained long-term progression [33]. An important part of the W3C is The Web Accessibility Initiative (WAI), they develop web accessibility guidelines, educational resources, and technical specifications to provide an inclusive web accessible for people with disabilities. The web standards and guidelines that WAI develops are called W3C recommendations [34] These standards include the Authoring Tool Accessibility Guidelines (ATAG), which offer guidance on the development of authoring tools [35]. The User Agent Accessibility Guidelines (UAAG) provide guidelines for user agents such as web browsers and browser extensions [36]. The Accessible Rich Internet Applications suite of web standards (WAI-ARIA) provides guidelines for dynamic content and advanced user interface controls [37]. Another W3C recommendation is the Web Content Accessibility Guidelines (WCAG). WCAG is a standard for how to make web content more accessible and might be one of the most commonly known standards [38]. WCAG 2.2 provides 13 guidelines under different categories that are designed to meet the diverse needs of individuals, organizations, and governments worldwide. All guidelines are centered on four key principles necessary for an accessible web [39]: perceivable, operable, understandable, and robust (POUR), ensuring that content is accessible and usable by everyone as technology evolves.

3. Method

3.1. Data collection

The data collection involved selecting institutions and programs that met our sample criteria. We then conducted two quantitative data collection methods, a survey and curricula analysis, to address our research questions; “RQ1”, “RQ2” and “RQ3”. We chose quantitative methods to draw generalizable conclusions and identify patterns, as recommended by Williams (2021). This approach provided insights into the student’s awareness of accessibility guidelines and laws, the extent of web accessibility learning objectives covered in their education, and how much of this knowledge was acquired through their current education. We adopted an 85% confidence level and a 10% margin of error. Although higher confidence levels are generally preferred, they require larger sample sizes, which were not feasible with our small sample frame (<50), as noted by Budiu (2021). To enhance generalizability, we aimed to gather a large number of survey responses and employed a triangulation approach to address our third research question (RQ3), combining survey and curricula analysis to strengthen the results, following Säfsten & Gustavsson (2019).

3.2. Selection of Institutions and Programs

When selecting institutions and programs for the curricula analysis and online survey, certain criteria had to be met: programs had to focus on UX, UI, Frontend development, or related fields directly involved in creating interactive components of websites to ensure relevance.

Additionally, the programs had to have a duration of at least one year of full-time studies, to exclude shorter, highly specialized ones, aiming to focus on broader programs that might cover multiple aspects of web accessibility. Only programs offered by Swedish universities and university colleges were considered, excluding those from other educational institutions. By using the websites that manage admissions to Swedish university programs, we identified 40 relevant programs (see appendix A) for our sample frame [40, 41]. We selected 23 programs for the curricula analysis and online survey, based on the determined confidence level and margin of error. Stratified random sampling based on geographical regions (Norrland, Svealand, and Götaland), was used, to ensure representation across Sweden [42]. Programs were proportionally selected from each stratum using random sampling, specifically the lottery method. This method ensured equal opportunity for all programs within each stratum, mitigating potential sampling bias and adhering to the principles of stratified random sampling [43]. The final sample included three programs from Norrland, seven from Svealand, and 13 from Götaland (see appendix B).

3.3. Sampling Process for Student Selection

Based on the program selection, the next step was distributing the online survey to all final-year students in each chosen program. We collaborated with program managers to facilitate the survey distribution. By focusing exclusively on final-year students, we ensured they had completed multiple courses, and had the opportunity to learn about web accessibility, which might not have been guaranteed for students in earlier years. Our objective for the survey findings was to achieve an 85% confidence level with a 10% margin of error, based on the parameters set during program selection (see Section 3.2). Initially, we identified 1221 students in our sample frame, adjusting for one program with unavailable statistics by using mean values from other programs. We calculated that a minimum of 50 responses was required. However, we aimed to gather more responses to enhance the generalizability of our results.

3.4. Curricula analysis

We analyzed the web development and interface design programs in our sample by examining their curricula and course syllabi to identify the presence of web accessibility learning objectives. Our analysis focused on identifying commonly used terms, phrases, and topics related to web accessibility, all of which are documented in appendix C. During our syllabi analysis, we specifically looked for web accessibility terms, focusing on topics that are directly related to web accessibility. Topics that potentially included web accessibility but lacked explicit confirmation were excluded, such as those related to User Experience (UX), Ethics, social sustainability, and usability, unless they explicitly addressed web accessibility. This approach aimed to maintain clarity and minimize ambiguity in our findings. Through this curriculum analysis, we gathered data regarding the implementation of web accessibility learning objectives across different educational programs, addressing our research question “RQ1.” Additionally, for our third research question “RQ3,” we documented whether each program’s curriculum explicitly included learning objectives related to accessibility guidelines and laws, categorizing programs as either "Yes" or "No" based on the presence or absence of such objectives.

3.5. Online survey

We conducted a quantitative online survey targeting final-year students in the sampled programs. The survey consisted of 15 questions (see appendix D) aimed at assessing students' knowledge of accessibility guidelines and laws and determining if they acquired this knowledge from their current education. The specific guidelines and laws examined were: The European Accessibility Act (EAA), The Discriminatory Act, Article 9 of the United Nations Convention on the Rights of Persons with Disabilities (CRPD), and the Web Content Accessibility Guidelines (WCAG). Additionally, the geographic diversity of the participants made an online format the most efficient method [44]. The survey included close-ended questions, such as multiple-choice and rating-scale items, to facilitate statistical analysis and achieve higher response rates, as noted by Rosala (2024). It was divided into five parts; demographics, educational details, assessment of students' knowledge of accessibility laws and guidelines and where they have acquired this knowledge, and evaluation of the extent to which their education provided knowledge about web accessibility. Names were not collected as they were unnecessary for this study, and their absence does not affect the study's replicability.

3.5.1. Survey questions

We incorporated demographic questions to gain deeper insights into our target population, enabling segmentation and comparison across various factors [45]. Additionally, educational questions allowed analysis by program rather than by individual participants, facilitating program-specific conclusions and the exclusion of participants who did not meet our criteria. The assessment questions regarding student's knowledge of accessibility laws and guidelines were collected using a Likert-type scale, for the benefit of providing more nuanced answers [46]. After each assessment question, participants were asked to specify where they acquired their knowledge via a multiple-choice question, helping determine if it came from current education or other sources. finally, participants were asked to evaluate, using a Likert-type scale ranging from one to five, the degree to which they have gained knowledge regarding web accessibility from their current education in general. This question provided additional insights into their educational experiences beyond specific WCAG guidelines and laws, contributing to our third research question, "RQ3." After drafting the survey design and questions, two pilot tests were conducted to identify any fundamental problems. The feedback led to revised questions followed by four additional tests to ensure any issues were resolved.

3.6. Data analysis

3.6.1. Data analysis: Curricula analysis

The data analysis of the curricula began by categorizing findings related to web accessibility. We classified courses based on how web accessibility topics were integrated: as an entire course, as part of a course, or not at all. Courses with a primary focus on web accessibility were labeled "course," while those with some web accessibility content were labeled "part of the course." Courses without web accessibility content were marked as "None," and new courses with unavailable syllabi were marked as "Not available." Irrelevant courses, such as thesis

projects, were marked as "Not relevant." All classifications are documented and can be seen in appendix C. To address our first research question, "RQ1," we excluded "Not relevant" and "Not available" courses from the analysis. We then calculated the percentage of programs that included web accessibility topics in some form and those that did not. Using frequency analysis, we assessed the classifications within each program. For each program, we calculated the percentage of courses classified as "course," "part of the course," and "none." We determined the overall integration of web accessibility into the curricula across the 23 programs, providing a comprehensive overview of its incorporation in Swedish web development and interface design programs. For our third research question, "RQ3," we specifically analyzed the inclusion of learning objectives related to accessibility guidelines and laws in each program, identifying how many programs included or excluded these objectives.

3.6.2. Data Analysis: Online Survey

Moving to the data analysis of the online survey for our second research question, "RQ2," we employed SPSS software to conduct both frequency analysis and cross-tabulations. Responses that were incomplete or did not meet sampling criteria were deemed invalid and excluded. We began with a frequency analysis to examine responses to the assessment questions. This calculated the percentage of each response option for each law and guideline, revealing students' self-assessed knowledge and highlighting familiarity with specific laws and guidelines. To provide an overall view, we conducted another frequency analysis across all assessment questions, determining the overall percentage of responses regarding familiarity with the different laws and guidelines.

3.6.3. Comparison between findings from online survey and curricula analysis

To address our third research question, we compared survey responses with findings from the curricula analysis through several steps. Firstly, we conducted cross-tabulation between survey responses to assessment questions and sources of knowledge acquisition stated by participants. This helped us understand the distribution of students indicating knowledge and its sources, particularly whether the knowledge came from current education or elsewhere. We also calculated overall knowledge acquisition perceptions across all laws and guidelines. Secondly, we reviewed curricula analysis data to determine how many programs included learning objectives related to accessibility guidelines and laws. Next, we focused on individual programs by analyzing survey responses from corresponding students. We conducted cross-tabulation between assessment questions and knowledge sources to understand knowledge acquisition within each program. We also examined whether programs included accessibility learning objectives. By integrating survey responses and curricula analysis, we assessed how and to what extent students learned about accessibility guidelines and laws from their current education. We compared programs that included accessibility objectives with those that did not, exploring differences in perceived knowledge acquisition among students. Additionally, we analyzed participants' responses to the overall knowledge acquisition question, providing further insights into their educational experiences on accessibility topics.

3.7. Validity and reliability

Our study's foundation was laid through reviewing previous studies that helped identify our research gap and frame our questions. Pilot tests on the survey and filtering questions were implemented to enhance data relevance and validity. Techniques used in the study drew from established methodologies [42, 43, 47, 20, 48, 49, 50]. Additionally, sampling methods were chosen to increase generalizability [42]. One concern regarding validity was the variation in the number of courses across sampled programs, potentially affecting the prominence of web accessibility topics. To mitigate this, we categorized courses based on explicit criteria and definitions, focusing strictly on web accessibility-related content. We utilized the latest syllabi to ensure accuracy and transparency in our curricula analysis. Reliability was also a focus, particularly in subjective assessments of curriculum content and integration of web accessibility topics. Clear criteria were established to minimize ambiguity, and efforts were made to collect survey responses from all sampled programs to enable comparisons for "RQ3." Transparency in response rates and reliability of results will be emphasized in our reporting.

3.8. Considerations

We have addressed ethical considerations in this study. Primarily, transparency has been prioritized to ensure clarity regarding the study's objectives, avoiding any deception about its purpose. Our intention has never been to shame individuals for their lack of knowledge or for the lack of inclusion of web accessibility topics in the programs. Our sole aim is to enhance the understanding of the implementation of web accessibility in education.

4. Results

4.1. Presentation of data

4.1.1. Curricula analysis

The curricula analysis examined all 23 sampled programs (see appendix E). Each program varied in course count. We found that 18 programs included web accessibility learning objectives in at least one course. Among these, nine programs specifically covered accessibility guidelines and laws. appendix F summarizes the data from our analysis, detailing the number of courses per program, those with web accessibility objectives, specific topics and phrases, and the inclusion of objectives on accessibility guidelines and laws. For detailed documentation on each program's courses, the presence of specific web accessibility topics, and the execution dates of the curricula, see appendix C.

4.1.2. Online Survey

After excluding 15 invalid responses from the online survey, we had 63 valid responses. The data was imported into SPSS. appendix G presents the categorical data and their corresponding numerical values.

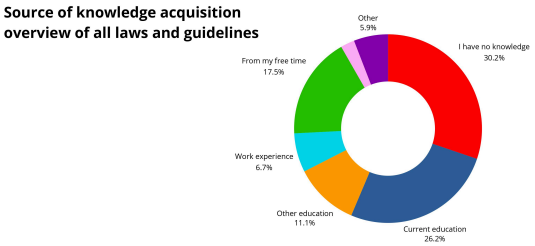

Figure 1: Result of online survey: Overview of the total answer distribution across all assessment questions.

4.2. Data analysis

4.2.1. Curricula analysis

From the curricula analysis, we found that 18 of the 23 programs (78%) integrated web accessibility learning objectives.

The 23 programs contained 332 relevant courses. Of these, seven courses (2%) had web accessibility as the main learning objective ("course"), 24 courses (7%) included web accessibility topics within the course ("part of the course"), and 301 courses (91%) had no evident web accessibility topics ("none"). Overall, 18 programs (78%) included web accessibility topics in some form. The distribution of each classification across all program courses and the implementation of web accessibility topics across all the programs can be seen in appendix H.

4.2.2. Online survey

A frequency analysis was conducted on the responses to each assessment question regarding guidelines and laws (see appendix I). The results showed that 11.1% of respondents had no knowledge of the discriminatory act, 44.4% had no knowledge of the CRPD, 25.4% had no knowledge of the WCAG, and 39.7% had no knowledge of the EAA. Detailed findings for every response option, including those mentioned, can be found in appendix J. Additionally, a frequency analysis was conducted on all assessment questions and their responses combined (see appendix K). The analysis revealed that a total of 30.2% of respondents lacked knowledge of the guidelines or law across all questions, while 13.9% knew entirely what it entailed. See Figure 1 for a comprehensive overview of all response options across the assessment questions.

4.2.3. Comparison between findings from online survey and curricula analysis

From the curricula analysis and online survey data, we analyzed and compared results to identify which programs included learning objectives on accessibility guidelines and laws, and examined students' knowledge of these guidelines and their sources. Using SPSS, we performed a cross-tabulation between each assessment question and the sources of knowledge among all students (see appendices L to O). The findings revealed that WCAG was the most commonly cited guideline that students learned about through their current education, while the CRPD was the least commonly mentioned in this context. All the sources from which students

Program	Number of students	Inclusion of accessibility guidelines or laws in curricula	Number of responses on all assessment questions combined					Number of responses on all source of knowledge acquisition combined						
			1	2	3	4	5	1	2	3	4	5	6	7
1	2	No	4 (50%)	2 (25%)	1 (12.5%)	1 (12.5%)	0	4 (50%)	1 (12.5%)	1 (12.5%)	0	2 (25%)	0	0
2	9	Yes	13 (36.1%)	4 (11.1%)	9 (25%)	6 (16.7%)	4 (11.1%)	13 (36.1%)	8 (22.2%)	2 (5.6%)	2 (5.6%)	5 (13.9%)	1 (2.8%)	5 (13.9%)
3	9	No	19 (52.8%)	9 (25%)	6 (16.7%)	4 (5.5%)	0	19 (52.8%)	1 (2.8%)	5 (13.9%)	0	9 (25%)	2 (5.6%)	0
4	10	Yes	12 (30%)	8 (20%)	8 (20%)	9 (22.5%)	3 (7.2%)	12 (30%)	5 (12.5%)	9 (22.5%)	1 (2.5%)	5 (12.5%)	2 (5%)	6 (15%)
7	3	Yes	3 (25%)	3 (25%)	2 (16.7%)	3 (25%)	1 (8.3%)	3 (25%)	8 (66.7%)	0	0	0	0	1 (8.3%)
10	8	Yes	1 (3.1%)	2 (6.25%)	6 (18.75%)	11 (34.4%)	12 (37.2%)	1 (3.1%)	23 (71.9%)	0	1 (3.1%)	4 (12.5%)	1 (3.1%)	2 (6.25%)
11	2	No	0	1 (12.5%)	4 (50%)	3 (37.5%)	0	0	0	4 (50%)	0	4 (50%)	0	0
12	7	No	8 (28.6%)	5 (17.85%)	2 (7.1%)	8 (28.6%)	5 (17.85%)	8 (28.6%)	8 (28.6%)	0	7 (25%)	5 (17.9%)	0	0
13	1	No	2 (50%)	1 (25%)	1 (25%)	0	0	2 (50%)	0	2 (50%)	0	0	0	0
14	5	No	6 (30%)	3 (15%)	1 (5%)	4 (20%)	6 (30%)	6 (30%)	4 (20%)	4 (20%)	1 (5%)	5 (25%)	0	0
15	6	No	7 (29.2%)	6 (25%)	5 (20.8%)	5 (20.8%)	1 (4.2%)	7 (29%)	6 (25%)	1 (4.2%)	5 (20.8%)	4 (16.7%)	0	1 (4.2%)
20	1	Yes	1 (25%)	0	0	0	3 (75%)	1 (25%)	2 (50%)	0	0	1 (25%)	0	0

Table 1
Findings of all assessment questions combined and source of knowledge for each individual program.

reported acquiring their knowledge for all assessment questions can be found in appendix P. Furthermore, we calculated the overall perception of knowledge acquisition across all four laws and guidelines. The findings revealed that 26.2% identified "current education" as their primary source of knowledge acquisition, while 73.8% cited other sources. Figure 1 shows an overview of the percentage distribution of the various sources across all four assessment questions.

From the curricula analysis, we examined whether accessibility topics related to guidelines and laws were included in various programs. Our findings showed that 39.1% of the programs included learning objectives on accessibility guidelines and laws, while the majority, 60.9%, did not. Out of the 23 programs, only 12 had responses from their respective students. Consequently, we were limited to only comparing the results from the survey to the respective programs that we obtained answers from. We found that out of the 12 programs available for analysis, seven of them did not incorporate any learning objectives concerning accessibility guidelines and laws in their curricula. Table 1 summarizes these findings, covering all assessment questions, sources of knowledge, and the inclusion of learning objectives related to accessibility guidelines and laws within each program.

Furthermore, we conducted a frequency analysis on the final question in the survey which can be seen in appendix Q, where participants were asked to rate their overall perception of how much their current education has contributed to their knowledge of web accessibility. The analysis revealed that out of the 63 respondents, three (4.8%) answered "not at all," 15 (23.8%) answered "very little," 21 (33.3%) answered "some," 15 (23.8%) answered "much," and nine (14.3%) answered "significantly."

5. Discussions

5.1. Result discussion

This study aimed to examine the current state of web accessibility education in web development and interface design programs at Swedish institutions. This helps determine if insufficient

emphasis on web accessibility education contributes to the global issue of inaccessible websites, as highlighted in prior research [1, 2, 3, 4, 5, 4, 6, 7]. The research questions addressed were: "RQ1," "RQ2," and "RQ3."

5.1.1. Integration of accessibility learning objectives in web development- and interface design programs

To address our first research question, we analyzed the curricula of 23 educational programs to see how web accessibility topics were integrated. We found two main approaches: full courses with web accessibility as the primary focus or as components within broader courses. Our analysis revealed that 18 of the 23 programs (78%) included web accessibility learning objectives. However, only 9% of the 332 courses across these programs addressed web accessibility, with just 2% having it as the main focus and 7% covering it as part of the course. Our findings align with Ferati & Vogel (2020), who found that 14.3% of web development courses at one Swedish university included accessibility topics, highlighting that the topic is not often implemented to a greater extent. In contrast, Cao & Loiacono (2019) reported that 45% of web and app development courses discussed accessibility, a significantly higher proportion than our study. However, our analysis focused on explicit mentions of web accessibility in course syllabi, which might have led to overlooking implicit integration. Research by Bi et al. (2021) and Almeida & Gama (2021) emphasizes that a lack of knowledge contributes to poor accessibility implementation. Our findings suggest a lack of web accessibility education, which might be impacting professional practices because of a lack of knowledge regarding implementation. Most programs incorporated web accessibility as part of courses rather than full courses, consistent with Baker et al. (2020), who noted the rarity of full courses on accessibility. None of the 23 programs had web accessibility as the primary focus of their entire curriculum. Despite the recognized need for such education [23, 24, 7], only 2% of courses implemented it as the main learning objective, contrary to recommendations for it to be a full course. Other studies cite reasons for the lack of accessibility implementation. Brown & Hollier (2015) argue that it is seen as specialized expertise, while Leitner et al. (2016) point to misconceptions and a lack of argumentation, which align with our findings of insufficient education on the topic. In summary, our first research question is answered as follows: Web accessibility is variably integrated into Swedish web development and interface design curricula, primarily as part of courses. Although 78% of programs included web accessibility to some extent, some programs lacked it entirely. Only 9% of all courses incorporated web accessibility learning objectives.

5.1.2. Students knowledge of accessibility guidelines and laws

Addressing our second research question "RQ2", the results showed that 30.2% of respondents indicated no knowledge of accessibility laws or guidelines, while only 13.9% indicated a comprehensive understanding. This suggests that many individuals are uncertain about the specifics of these laws and guidelines. However, when considering all responses for options 2-5 (indicating some level of familiarity), 69.8% of participants fell into these categories. These findings indicate that while a significant portion of respondents have some awareness of the laws and guidelines, many still claim little to no familiarity with them. Compared to previous studies

by Cao & Loiacono (2019) and Ferati & Vogel (2020), our findings suggest a higher perceived knowledge among participants, although variations in survey design and participant sampling may influence these results. The Discriminatory Act was the most commonly known law in our study (only 11.1% unaware), while the CRPD was the least known (44.4% unaware). Regarding the WCAG, 74.7% had at least heard of WCAG, indicating a potential increase in awareness among students in web development and interface design programs compared to previous studies [21, 20]. As stated by Gilbert (2019), following web accessibility guidelines ensures that websites are developed correctly, promoting an accessible web. Consequently, it is advantageous that 74.7% of the participants stated being at least somewhat knowledgeable about WCAG. In conclusion, our findings reveal that while 69.8% of final-year web development and interface design students have some awareness of accessibility guidelines and laws, 30.2% state having no knowledge. This highlights a perceived lack of understanding of accessibility guidelines and laws in Sweden among these students.

5.1.3. Students knowledge acquisition from current education and implementation of learning objectives in curricula

Answering our third research question, “RQ3”, our analysis revealed that 26.2% of the respondents stated "current education" as the primary source of knowledge acquisition, making it the most frequently cited individual response option, excluding the option indicating no knowledge. However, 43.6% of participants acquired their knowledge from sources other than their current education, making these sources collectively more common. Regarding the WCAG question, 49.2% of respondents cited "current education" as their primary source of knowledge, the highest among all guidelines or laws surveyed. This suggests that WCAG was the most frequently taught guideline or law among those we asked about. In contrast, only 12.7% learned about the CRPD from their current education. Our study found that only 39.1% of the programs included learning objectives on accessibility guidelines or laws in their curricula, leaving 60.9% without such learning objectives. Furthermore, we compared each program’s curriculum with the students’ reported knowledge sources, noting that results might vary based on the number and diversity of participants in each program. In programs that covered accessibility guidelines and laws, most students from three out of five programs identified their current education as their main knowledge source. Students from the remaining programs cited different sources. Interestingly, even in programs without explicit accessibility topics, some students still cited their current education as a primary source, though less consistently. However, none of these programs had a majority of students indicating current education as their primary knowledge source; instead, most students pointed to other sources. This highlights that students are more likely to credit their education for learning about accessibility when integrated into the program curriculum. The final survey question revealed that 33.3% of students felt their education contributed "very little" to their knowledge, while 14.3% felt it contributed "significantly." This indicates that students gained some knowledge—not exclusively and not necessarily limited to guidelines and laws—about accessibility from their education, even if not explicitly stated in the curricula. In summary, 26.2% of students learned about accessibility from their current education, and the integration of accessibility topics into program curricula influences student’s perceptions to some extent.

5.2. Method discussion

We opted for a quantitative study design to obtain generalizable results and conclusions about the state of web accessibility education. Our aim was to provide insights into how web accessibility is taught and its potential impact on the prevalence of inaccessible websites globally. Choosing a quantitative approach allowed us to gather comprehensive data from a large number of respondents and programs across Sweden. We examined the stated learning outcomes in each syllabus to avoid potential social desirability bias from course cordinators and maintain objectivity. We established specific criteria for the curricula analysis to ensure consistency and used pilot testing in our survey design to reduce potential misunderstandings. Additionally, we filtered out invalid survey responses to ensure accurate measurement. A limitation was the incomplete response rate from all sampled programs, affecting the reliability of findings, particularly for our third research question. In some programs, only one or two students responded, reducing generalizability. However, we analyzed survey responses and program curricula independently to mitigate this issue and maintain transparency regarding response numbers. A strength of our study is our dual approach, examining both the integration of web accessibility learning objectives in curricula and students' knowledge of accessibility guidelines and laws. This provided a comprehensive overview and allowed us to answer all three research questions without assuming a direct correlation between curricula and student knowledge. In conclusion, despite certain weaknesses, we obtained results that offer valuable insights into the current state of web accessibility education in web development and interface design programs in Sweden.

6. Conclusions

6.1. Conclusions

This study aimed to assess education on web accessibility in Swedish web development and interface design programs and its potential impact on global website accessibility issues. Our study found varying levels of integration of web accessibility learning objectives in Swedish web development and interface design program curricula. While most programs include these objectives to some extent, there are gaps where some programs do not include them at all. Our analysis shows that rarely do more than 16% of courses in any program cover web accessibility, and only 9% of all courses across all programs integrate these learning objectives. Regarding students' awareness, 69.8% are somewhat familiar with accessibility guidelines and laws, while 30.2% indicated no knowledge, highlighting a significant knowledge gap. The Discriminatory Act was the most recognized, whereas the United Nations Convention on the Rights of Persons with Disabilities (CRPD) was the least known among the students. While the integration of accessibility in program curricula appears to positively influence students' knowledge acquisition, not all students view their current education as the primary source of this knowledge. Only about a fourth (26.2%) of students stated they gained knowledge on accessibility guidelines and laws from their current education. These findings underscore the insufficient education on web accessibility, potentially contributing to the widespread inaccessibility of websites globally.

6.1.1. Practical implications

Our findings show that integrating web accessibility learning objectives into curricula seems to enhance students' knowledge. However, many programs still offer limited coverage, leaving many students unaware of key accessibility guidelines and laws. We recommend a more comprehensive integration, ideally as a full course. Programs with robust web accessibility training could better equip students to create inclusive digital experiences. Although many students know about WCAG, practical application is often lacking, indicating a need for hands-on learning. Prioritizing accessibility in education will raise awareness and understanding among future professionals, making it a fundamental part of web development and design. Integrating web accessibility into curricula also benefits society by making the digital landscape more inclusive and promoting equality. Our study highlights the need to expand web accessibility education to build a more inclusive digital future.

6.1.2. Scientific implication

Our study contributes valuable insights into the state of web accessibility education within web development and interface design programs in Sweden, an underexplored area. This research fills a significant knowledge gap. Our findings show that web accessibility learning objectives are rarely included in curricula, despite their importance for meeting legal and ethical standards. Previous studies have noted the lack of knowledge and training but did not provide a comprehensive view. Our study highlights ongoing deficiencies in web accessibility education. By examining current educational programs' strengths and weaknesses regarding web accessibility, our study lays a foundation for future research. Educational institutions can use our findings to improve curricula and enhance knowledge regarding web accessibility among students. Our study could inspire similar research in other regions, expanding global understanding of web accessibility education. The implications of our study extend beyond Sweden, calling for a global reassessment of educational practices related to web accessibility to create a more inclusive digital environment.

6.2. Limitations

The main limitation of our study was time constraints, which required us to limit our scope regarding the sample, methods, and extent of the study. We aimed to investigate current educational practices of web accessibility in Swedish institutions by conducting a quantitative analysis of program curricula and an online survey targeting students from those programs. This provided insights into whether education contributes to the lack of web accessibility awareness. We focused on specific accessibility guidelines and laws and how these were included within web development and interface design programs in Sweden.

6.3. Further research

Based on our findings, which reveal a lack of knowledge about accessibility guidelines and the absence of web accessibility learning objectives in some curricula, further investigation into the

reasons behind this is needed. This could explain why web accessibility is not prioritized in web development and interface design programs.

Our study focused on programs lasting at least one year at Swedish universities and colleges. Future research could explore this topic more broadly, examining variations based on program duration, type of institution, or a global scale.

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A. Appendix A: Sample Frame of Programs

Program	University	City	County	Credits	Lands of Sweden
Grafisk design och webbutveckling	Jönköping university	Jönköping	Jönköpingslän	180	Götaland
Webprogrammering	Blekinge Tekniska högskola	Karlskrona	Blekinge Län	180	Götaland
digital design och innovation	Högskolan i Halmstad	Halmstad	Halland	180	Götaland
Mjukvaruutveckling och mobila plattformar	Jönköping university	Jönköping	jönköping	180	Götaland
Webbmaster	Högskolan väst	Vimmerby	Kalmar län	120	Götaland
webprogrammering distans	Blekinge Tekniska högskola	Karlskrona	Blekinge län	120	Götaland
Interaktiva medier och webbteknologier	Linneuniversitet	Växjö	Kronobergs län	180	Götaland
Webbprogrammerare	Linneuniversitet	Kalmar	Kalmar Län	180	Götaland
Medieteknik: Webbaserad design och utveckling	Malmö universitet	Malmö	Skåne Län	180	Götaland
User Experience Design	Höskolan skövde	Skövde	Västra Götalands län	180	Götaland
Interaktionsdesigner	Linneuniversitet	Kalmar	Kalmar Län	180	Götaland
Kandidatprogram i Digital informationsdesign och utveckling	Högkolan i Borås	Borås	Västra Götalands län	180	Götaland
Digitala medier	Högskolan i Väst	Trollhättan	Västra Götalands län	180	Götaland
Kandidatprogram i grafisk design och kommunikation	Linköpings universitet	Norrköping	Östergötlands län	180	Götaland
Kandidatprogram i innovativ programmering	Linköpings universitet	Linköping	Östergötlands län	180	Götaland
Digital design	Högskolan kristianstad	Kristiandstad, Distans	skåne Län	180	Götaland
Bachelor Programme in Software Development	Högskolan i kristianstad	kristianstad	Skåne län	180	Götaland
Strategisk kommunikation och digitala medier	Lunds universitet	Lund	Skåne län	180	Götaland
Interaction Design	Malmö universitet	Malmö	Skåne län	180	Götaland
Webbutvecklare - programmering	Högskolan i skövde	skövde	Västra Götalands län	180	Götaland
Interaction Design, two-year master's programme	Malmö universitet	Malmö	Skåne län	120	Götaland
Interaction design and technologies, MSc	Chalmers	Göteborg	Västra Götalands län	120	Götaland
Webbutveckling	Mittuniversitet	Distans	Sundsvall	120	Norrland
Digital tjänsteutveckling, kandidat	Luleå tekniska universitet	Luleå	Norrbotten	180	Norrland
Civilingenjörsprogrammet i interaktion och design	Umeå universitet	Umeå	Västerbottens Län	300	Norrland
Digital medieproduktion	Umeå universitet	Umeå	Västerbottens Län	180	Norrland
Digital tjänsteutveckling, kandidat	Luleå tekniska universitet	Luleå	Norrbotten	180	Norrland
Datavetenskapliga programmet	Högskolan i gävle	Gävle	Gävleborgs län	180	Norrland
Systemvetenskapliga programmet	Högskolan Dalarna	Borlänge	Dalarnas län	180	Svealand
webutvecklare	Karlstad universitet	Karlstad	Värmland	180	Svealand
Systemvetenskapliga programmet	Örebro universitet	Örebro	Örebro län	180	Svealand
IT, medier och design	Södertörns högskola	Huddinge	Stockholm	180	Svealand
kandidatprogram i datavetenskap	Karlstads universitet	Karlstad	värmland	180	Svealand
Datavetenskapliga programmet	Mälardalens universitet	västerås	Västmanlands län	180	Svealand
Grafisk design och webbutveckling	Högskolan Dalarna	Borlänge	Dalarnas län	180	Svealand
IT-design: systemdesign	Karlstads universitet	Karlstad	Värmland	180	Svealand
Kandidatprogram i interaktionsdesign	Stockholms universitet	Stockholm	stockholms län	180	Svealand
Interaktionsdesign - informationsdesign	Mälardalens Universitet	Eskilstuna	Södermanlands län	180	Svealand
User Experience and interactive media design, Master's programme	Södertörns högskola	Huddinge	Stockholm	120	Svealand
Masterprogram i människa–datorinteraktion	Uppsala universitet	Uppsala	Uppsala län	120	Svealand

B. Appendix B: Final Sample of Programs

Program	University	City	County	Credits	Lands of Sweden
digital design och innovation	Högskolan i Halmstad	Halmstad	Halland	180	Götaland
Mjukvaruutveckling och mobila plattformar	Jönköping university	Jönköping	jönköping	180	Götaland
Webbmaster	Högskolan väst	Vimmerby	Kalmar län	120	Götaland
Interaktiva medier och webbteknologier	Linneuniversitet	Växjö	Kronobergs län	180	Götaland
Webbprogrammerare	Linneuniversitet	Kalmar	Kalmar Län	180	Götaland
Medieteknik: Webbaserad design och utveckling	Malmö universitet	Malmö	Skåne Län	180	Götaland
Interaktionsdesigner	Linneuniversitet	Kalmar	Kalmar Län	180	Götaland
Digitala medier	Högskolan i Väst	Trollhättan	Västra Götalands län	180	Götaland
Digital design	Högskolan kristianstad	Kristiandstad, Distans	skåne Län	180	Götaland
Bachelor Programme in Software Development	Högskolan i kristianstad	kristianstad	Skåne län	180	Götaland
Interaction Design	Malmö universitet	Malmö	Skåne län	180	Götaland
Webbutvecklare - programmering	Högskolan i skövde	skövde	Västra Götalands län	180	Götaland
Interaction design and technologies, MSc	Chalmers	Göteborg	Västra Götalands län	120	Götaland
Webbutveckling	Mittuniversitet	Distans	Sundsvall	120	Norrland
Digital tjänsteutveckling, kandidat	Luleå tekniska universitet	Luleå	Norrbotten	180	Norrland
Digital medieproduktion	Umeå universitet	Umeå	Västerbottens Län	180	Norrland
webutvecklare	Karlstad universitet	Karlstad	Värmland	180	Svealand
kandidatprogram i datavetenskap	Karlstads universitet	Karlstad	värmland	180	Svealand
Grafisk design och webbutveckling	Högskolan Dalarna	Borlänge	Dalarnas län	180	Svealand
IT-design: systemdesign	Karlstads universitet	Karlstad	Värmland	180	Svealand
Interaktionsdesign - informationsdesign	Mälardalens Universitet	Eskilstuna	Södermanlands län	180	Svealand
User Experience and interactive media design, Master's programme	Södertörns högskola	Huddinge	Stockholm	120	Svealand
Masterprogram i människa–datorinteraktion	Uppsala universitet	Uppsala	Uppsala län	120	Svealand

C. Appendix C: Curricula Analysis - Accessibility Topics and Phrases Found in Courses

CURRICULA ANANYLSIS

			Students in total
Explanations of classifications			1168st of 22program
None = Accessibility topics were not evident in a course			Mean value 53st
Part of the course = Only part of the course addressed accessibility			Sum 1221st of 23 program
Course = The major learning or focus was on accessibility			
Not relevant = The course was not relevant to examine accessibility			
Not Available = The course syllabi were not available			
Program 1	University	Amount of students in class	
Bachelor Programme in Software Development, 180hp	Högskolan i kristianstad	HT23 - 40	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Introduction to Computer Science* - 7.5 credits	-	None	2020-08-31
Fundamental programming* - 7.5 credits	-	None	2023-08-28
Object Oriented Programming* - 7.5 credits	-	None	2021-11-08
Mathematics for Computer Science– 7.5 credits	-	None	2021-11-08
Database Technique* - 7.5 credits	-	None	2023-03-27
Data Communication* - 7.5 credits	-	None	2021-08-30
Agile Development Methods* - 7.5 credits	-	None	2022-03-28
Discrete Mathematics – 7.5 credits	-	None	2022-03-28
Methods for Sustainable Programming * - 7.5 credits	-	None	2022-01-17
Operating Systems* - 7.5 credits	-	None	Retrieved 2024-04-03
Front-End Development Techniques - 7,5 credits	Plan, motivate and choose appropriate design principles to develop accessible web-based interfaces	Part of the course	2024-01-15
Computer Security* - 7.5 credits	-	None	Retrieved 2024-04-03
Back-End Development* - 7.5 credits	-	None	2024-02-19
Algorithms and Data Structures* - 7.5 credits	-	None	Retrieved 2024-04-03
Full Stack Development* - 7.5 credits	-	None	2024-03-25
Mathematical Statistics – 7.5 credits	-	None	Retrieved 2024-04-03
Machine Learning* - 7.5 credits	-	None	2022-08-29
Research Methodology for Computer Science – 7.5 credits	-	None	2022-08-29
Development of Mobile Applications* - 7.5 credits	-	None	2023-08-28
Big Data Analytics* - 7.5 credits	-	None	2022-11-07
Software Engineering* - 15 credits	-	None	2023-01-23
Bachelor Thesis in Computer Science* - 15 hp	-	Not relevant	
		Sum: 0/21 courses (0%), 1/21 part of courses (4.8%)	
Program 2	University	Amount of students in class	
Digital design, 180hp	Högskolan kristianstad	HT20 - 140	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Gestaltande Design: Att arbeta med designmaterial 9 hp	-	None	2023-08-28
Gestaltande Design: Visuell kommunikation 7 hp *	-	None	2023-12-11
Interaktionsdesign: Människa och teknik 7 hp *	-	None	2023-10-09
Webbteknik: Webbdesign 7 hp *	Planering och färdigställande av användbara och tillgängliga webbsidor, Riktlinjer för användbarhet och tillgä (Planning and completion of useful and accessible web pages, Guidelines for usability and accessibility)	Course	2023-08-28
Gestaltande Design: Grafisk design, introduktion 7,5 hp *	-	None	2024-01-15
Reflektiv metod och design 7,5 hp	-	None	2024-03-25
Interaktionsdesign: Kreativitet, design och IT 7,5 hp *	-	None	2024-03-25
Webbteknik: Webbdesign för social interaktion, 7,5 hp	-	None	2024-01-15
Interaktionsdesign: Interaktiva prototyper 15 hp *	-	Not available	
Självständigt arbete i Digital design, 7,5 hp *	-	Not relevant	
Projektarbete 7,5 hp *	-	None	Retrived: 2024-04-03
Interaktionsdesign: Design av digitala artefakter 15 hp *	-	Not available	
Gestaltande Design: Grafisk design för digitala medier 7,5 hp *	-	Not available	
Elective course, 7,5 hp	-	Not relevant	
Designteori 7,5 hp	-	None	2020-08-31
Interaktionsdesign och teknikens framkant, 7,5 hp *	-	None	2023-01-16
Verksamhetsförlagd utbildning i digital design 15 hp *	-	Not relevant	
Designprojekt 15 hp	-	None	2023-01-16
Examensarbete i Digital design 15 hp *	-	Not relevant	
		Sum: 1/12 courses (8,3%), 0/12 part of courses (0%)	
Program 3	University	Amount of students in class	
Digital design och innovation, 180hp	Högskolan i Halmstad	HT24 42st	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Introduktion till digital design och innovation, 15 hp*	-	None	2023-08-18
Designtänkande, 7,5 hp*	-	None	2022-05-09
Projektmetodik, 7,5 hp*	-	None	2022-04-24
Informationsarkitektur, 7,5 hp*	-	None	2022-10-31
Interaktionsdesign, 7,5 hp*	-	None	2022-11-22
Prototypande, 7,5 hp*	-	None	2023-11-15
Designstudio I, 7,5 hp*	-	None	2022-10-31
Vetenskaplig metod och forskningsetik, 7,5 hp*	-	None	2022-05-10
Service Design, 7,5 hp*	-	None	2022-05-10
Upplevelsedesign, 7,5 hp*	-	None	2023-06-20
Utvärdering och användningsstudier, 7,5 hp*	-	None	2023-05-08
Människocentrerad artificiell intelligens, 7,5 hp*	-	Not available	
Introduktion till front-end programmering, 7,5 hp*	-	None	2023-10-02
Designstudio II, 7,5 hp*	-	None	2023-10-02
Digital transformation, 7,5 hp*	-	None	2024-10-02
Designforskning, 7,5 hp*	-	None	2019-08-26
Perspektiv på informatik, 7,5 hp*	-	Not available	
Etik i design, 7,5 hp*	-	Not available	
Hållbar design, 7,5 hp*	-	None	2020-04-30
Kandidatuppsats i informatik, 15 hp*	-	Not relevant	
Designstudio III, 7,5 hp*	-	Not available	
Elective course 7,5 hp	-	Not relevant	
		Sum: 0/16 courses (0%), 0/16 part of course (0%)	
Program 4	University	Amount of students in class	
Digital medieproduktion, 180hp	Umeå universitet	HT20 - 37	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Samhällets digitalisering, 7,5 hp.	-	None	2021-09-09
Visuell kommunikation, 7,5 hp.	-	None	2021-09-09
Designteori, 7,5 hp.	-	None	2021-09-09
Webbutveckling, 7,5 hp.	grundläggande tillgänglighetsanpassning enligt gällande standarder. (Basic accessibility adaptation according to current standards)	Part of the course	2021-09-09
Användarstudier för digitala medier, 7,5 hp.	-	None	2021-09-09
Prototyping och gränssnitt, 7,5 hp.	-	None	2021-09-09
Digital storytelling, 7,5 hp.	-	None	2021-09-09
Digital mediedesign, 7,5 hp.	-	None	2021-09-09
Digital ljud- och videoredigering, 7,5 hp.	-	None	2023-09-07
3D-visualisering, 7,5 hp.	-	None	2023-09-07
Rorlig grafik, 7,5 hp.	-	None	2023-09-07

Informationsvisualisering, 7,5 hp.	-	None	2023-09-07
Artificiell intelligens i samhället, 7,5 hp.	-	None	2022-05-12
Digital tjänstedesign, 7,5 hp.	-	None	2022-05-12
Projektledning och projektmetodik, 7,5 hp.	-	None	2022-05-12
Tillämpat IT-projektarbete, 7,5 hp.	-	None	2022-05-12
Elective courses, 30 hp	-	Not relevant	
Att undersöka och utvärdera digitala miljöer, 7,5 hp.	-	None	2022-10-24
Examensarbete i informatik med inriktning mot digital medieproduk	-	Not relevant	
Framtidens digitala medieproduktion, 7,5 hp.	-	None	2022-10-24
		Sum: 0/18 courses (0%), 1/18 part of courses (5.6%)	
Program 5	University	Amount of students in class	
Digital tjänsteutveckling, kandidat, 180 hp	Luleå tekniska universitet	HT20 - 35	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Databaser I, 7,5 hp	-	None	2021-06-16
Programutveckling med Java 7,5 hp	-	None	2023-02-15
Design av IT, 7,5 hp	-	None	2007-02-28
Introduktion till informatik och digital tjänstedesign, 7,5 hp	-	None	2024-02-15
Verksamhetsutveckling med hjälp av IT, 7,5 hp	-	None	2007-01-31
IT-design från ett systemperspektiv, 7,5 hp	-	None	2024-02-15
Tjänstearkitektur, 7,5 hp	-	None	2014-02-14
Strategisk tjänstedesign, 7,5 hp	-	None	2024-02-15
Forskningsmetoder inom informationssystem, 7,5 hp	-	None	2016-02-15
Examensarbete i informatik, inriktning digital tjänsteutveckling, kanc	-	Not relevant	
Avancerad tjänstedesign, 15hp	-	None	2015-02-16
Webbutveckling I - Introduktion, 7,5 hp	-	None	2020-06-18
Webbutveckling II - Skriptspråk och databaser, 7,5 hp	-	None	2022-01-14
IT-projekt, 7,5 hp	-	None	2021-06-16
Grafiska användargränssnitt, 7,5 hp	Ta ställning till estetiska, perceptiva och kognitiva aspekter med utgångspunkt i människans behov, förutsättningar övervakgaanden för att tillgodose god användbarhet, tillgänglighet och användarupplevelse. (Consider aesthetic, perceptual, and cognitive aspects based on human needs, conditions, and considerations to ensure good usability, accessibility, and user experience)	Course	2014-02-14
Informationsmodellering, 7,5 hp	-	None	2021-02-25
Interaktion och Mobilitet, 7,5 hp	-	None	2010-02-19
Affärer och digitalt entreprenörskap, 7,5 hp	-	None	2023-02-15
Elective courses, 30 hp	-	Not relevant	
		Sum: 1/17 courses (5.9%), 0/17 part of courses (0%)	
Program 6	University	Amount of students in class	
Digitala medier, 180hp	Högskolan Väst	HT20- 42	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Design, process och metod, 10hp	-	Not available	
Lära tillsammans genom digitala medier, 5hp	-	None	2022-05-19
Digital grafisk formgivning, 5hp	-	None	2019-06-07
Webbdesign, 10hp	-	None	2020-06-12
Ljud- och rörlig bildproduktion, 7.5hp	-	None	2022-05-19
Visuell kommunikation, 7.5hp	-	None	2023-11-09
Content Management Systems, 7.5hp	-	None	2021-12-21
Projektmetodik, 7.5hp	-	None	2022-05-19
Designprocess, fördjupning, 5hp	-	None	2022-12-15
Visuellt berättande, 5hp	-	None	2022-05-19
Strategiskt berättande, 5hp	-	None	2024-03-06
Hållbar design av digital media, 7.5hp	-	None	2022-06-02
Akademiskt skrivande, 7.5hp	-	None	2023-12-13
Integritet och demokrati i digitala medier, 7.5hp	-	None	2012-09-19
Kommunikation och public relations i digitala medier, 7.5hp	-	None	2016-04-29
Rörlig grafik, 7.5hp	Rörlig grafik med hänsyn till tillgänglighet (Motion graphics with consideration for accessibility)	Part of the course	2022-05-19
Elective courses, 37.5hp	-	Not relevant	
Forskningsmetodik och vetenskapsteori, 10hp	-	None	2022-12-15
Examensarbete i medieinformatik, 15hp	-	Not relevant	
Portfolio, 5hp	-	None	2021-12-21
		Sum: 0/17 courses (0%), 1/17 part of courses (5.9%)	
Program 7	University	Amount of students in class	
Grafisk design och webbutveckling, 180 hp	Högskolan Dalarna	HT23 - 56	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Användarcentrerad design, 7,5 hp*	ISO standarder och vanligt förkommande begrepp inom användarcentrerade design (ISO standards and common terms in user-centered design.)	Part of the course	2020-06-23
Data- och informationshantering, 15 hp*	-	None	2022-03-01
Databassystem, 7,5 hp*	-	None	2021-01-28
Digital bild, 7,5 hp*	-	None	2021-04-11
Dynamiska webbapplikationer, 7,5 hp*	-	None	2020-03-05
Examensarbete för kandidatexamen i Informatik, 15 hp*	-	Not relevant	
Forskningsmetodik, 7,5 hp*	-	None	2017-01-05
Grafisk design, 7,5 hp*	Inkluderande och god design, målgruppsanpassning och människans behov (Inclusive and good design, audience adaptation, and human needs.)	Part of the course	2023-02-07
Grafisk produktion, 7,5 hp*	-	None	2021-04-13
Informationsdesign, 15 hp*	-	None	2024-02-09
Interaktionsdesign, 7,5 hp*	Värdera design utifrån perspektiven användbarhet, användarupplevelse och tillgänglighet (Evaluate design from the perspectives of usability, user experience, and accessibility.)	Part of the course	2021-04-11
Kollaborativt projekt, 15 hp*	-	None	2023-11-28
Layout och typografi, 7,5 hp*	-	None	2023-02-07
Objektorienterad programmering, 7,5 hp*	-	None	2019-06-14
Responsiv webbdesign, 7,5 hp*	-	None	2019-05-22
Statistisk analys, 7,5 hp	-	None	2020-01-30
Strategisk kommunikation, 7,5 hp*	-	None	2021-04-13
System- och verksamhetsutveckling, 7,5 hp*	-	None	2022-09-27
Visualisering, 7,5 hp*	-	None	2021-04-05
Visuell identitet, 7,5 hp*	-	None	2021-09-22
		Sum: 0/19 courses (0%), 3/19 part of courses (15,8%)	
Program 8	University	Amount of students in class	
Interaction Design, 180hp	Malmö universitet	HT23 - 62	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Interaction Design: Methods I, 7.5hp	-	None	2020-08-31
Programming, 7.5hp	-	None	2023-06-14
Interaction Design: Graphical User Interfaces, 7.5hp	Create W3C-validated and semantically-correct HTML markup and CSS	Part of the course	2023-08-28
Interaction design: Making and Prototyping, 15hp	-	None	2023-06-14
Interaction Design: Methods II, 7.5hp	-	None	2024-01-15
Interaction Design: Research, 7.5hp	-	None	2020-01-20
Interaction design: Studio, 7.5hp	-	None	2020-01-20
Interaction Design: Interactivity, 15hp	-	None	2018-09-03
Interaction Design: Tangible and Embodied Interaction, 15hp	-	None	2016-08-29
Interaction Design in Society, 15hp	-	None	2022-01-17

Interaction Design: Studio II, 15hp	-	None	2023-01-16
Interaction Design: Research Methods in Interaction Design, 7.5hp	-	None	2023-01-16
Interaction Design: Degree project, 22.5hp	-	Not relevant	2018-01-15
Elective courses, 30hp	-	Not relevant	
		Sum: 0/12 courses (0%), 1/12 part of courses (8.3%)	
Program 9	**University**	**Amount of students in class**	
Interaction design and technologies, MSc, 120hp	Chalmers	HT24 - 43	
All courses	**Accessibility Topics, phrases, synonyms**	**Classifications**	**Syllabi year**
Prototyping in interaction design, 7.5hp	-	None	2023-02-02
Interaction design methodology, 7.5hp	-	None	2023-02-02
Graphical interfaces, 7.5hp	-	None	2023-02-02
Elective courses, 30hp	-	Not relevant	
Interaction Design Project, 7.5hp	-	None	
Master's thesis in Computer science and engineering (diploma thes	-	Not relevant	
		Sum: 0/4 courses (0%), 0/4 part of courses (0%)	
Program 10	**University**	**Amount of students in class**	
Interaktionsdesign - informationsdesign, 180hp	Mälardalens Universitet	HT23 - 35	
All courses	**Accessibility Topics, phrases, synonyms**	**Classifications**	**Syllabi year**
Introduktion till informationsdesign, 7,5 hp	Etiska utmaningar inom informationsdesign, exempelvis hållbarhet, jämställdhet och tillgänglighet (Ethical challenges in information design, such as sustainability, gender equality, and accessibility.)	Part of the course	2023-01-19
Grafisk form, 7,5 hp	-	None	2016-01-27
Planerad kommunikation, 7,5 hp	-	None	2023-01-19
Kognition och interaktion i informationsdesign, 7,5 hp	-	None	2023-01-19
Introduktion till interaktionsdesign, 7,5 hp	Mänskliga faktorer, user experience, usability, universal design. (Human factors, user experience, usability, universal design.)	Part of the course	2024-01-18
Universell design för interaktion, 7,5 hp	Universell design	Course	2020-01-24
Digitala system, 7,5 hp	-	None	2024-01-18
Programmering för interaktiva gränssnitt, 7,5 hp	-	None	2020-01-24
Designforskning, 7,5 hp	-	None	2024-01-18
Berättande och retorik i informationsdesign, 7,5 hp	-	None	2024-01-18
Multimodalitet, material och kontext, 7,5 hp	-	None	2024-01-18
Specifiering för interaktionsdesign, 7,5 hp	-	None	2024-01-18
Interaktion och extended reality (XR), 15 hp	-	None	2024-01-18
Interaktionsdesign i globala kontexter, 7,5 hp	-	None	2024-01-18
Yrkesroller inom interaktionsdesign, 7,5 hp	-	None	2024-01-18
Informationsdesign i praktiken, 15 hp	Riktlinjer och principer inom informationsdesign (Guidelines and principles in information design.)	Part of the course	2013-02-14
Forskningsprocesser, 5 hp	-	None	2023-01-19
Examensarbete i informationsdesign, 17,5 hp	-	Not relevant	
Användbar design - projektkurs, 15 hp	Användbarhet och tillgänglighet (Usability and accessibility)	Course	2023-01-19
Fördjupning i interaktionsdesign, 7,5 hp	-	None	2023-01-19
		Sum: 2/19 courses (10,5%), 3/19 part of courses (15,8%)	
Program 11	**University**	**Amount of students in class**	
Interaktionsdesigner, 180hp	Linnéuniversitet	HT23 - 26	
All courses	**Accessibility Topics, phrases, synonyms**	**Classifications**	**Syllabi year**
Amnesintroduktion till interaktionsdesign 15 hp, G1N	-	None	2022-02-07
Grafiska verktyg 7,5 hp, G1N	-	None	2019-08-26
Webbteknik I 7,5 hp, G1N	Tillgänglighet (accessibility)	Part of the course	2022-09-26
Metoder för interaktionsdesign I 15 hp, G1F	-	None	2012-08-17
Design och konceptvisualisering 7,5 hp, G1F	Tillgänglighet (accessibility)	Part of the course	2019-09-11
Web management 7,5 hp, G1N	-	None	2021-06-10
Brukarorienterad design 15 hp, G1F	Hur aspekter av inkluderande design kan berika såväl process som produkt. (How aspects of inclusive design can enrich both process and product.)	Part of the course	2024-02-26
Bild och grafisk design för webben 7,5 hp, G1N	-	None	2023-06-14
Design av grafiska gränssnitt 7,5 hp, G1F	-	None	2020-06-12
Metoder för interaktionsdesign II 15 hp, G1F	-	None	2012-08-17
Projektarbete med vetenskapteori 15 hp G2F	-	None	2010-08-20
Elective courses, 30 hp	-	Not relevant	
Tillämpad interaktionsdesign 15 hp, G1F	-	None	2023-11-20
Examensarbete 15 hp, G2E	-	Not relevant	
		Sum: 0/12 courses (0%), 3/12 part of courses (25,0%)	
Program 12	**University**	**Amount of students in class**	
Interaktiva medier och webbteknologier, 180hp	Linnéuniversitet	HT23 - 41	
All courses	**Accessibility Topics, phrases, synonyms**	**Classifications**	**Syllabi year**
Studier i medieteknik (G1N), 7,5 hp	-	None	2022-05-02
Digitala medier (G1N), 7,5 hp	-	None	2017-03-03
Webbteknik 1 (G1N), 7,5 hp	Design av webbplatser - Tillgänglighet (Designing webbsites - Accessibility)	Part of the course	2022-09-26
Webbteknik 2 (G1F), 7,5 hp	-	None	2020-08-06
Webbteknik 3 (G1F), 7,5 hp	-	None	2023-05-15
Interaktionsdesign 1 (G1F), 7,5 hp	-	None	2020-08-06
Ekonomi och juridik för webbutvecklare (G1N), 7,5 hp	-	Not available	
Projektkurs 1 i medieteknik (G1F), 7,5 hp	-	None	2023-11-20
Interaktionsdesign 2 (G1F), 7,5 hp	Fokus på användarens mål, behov, begränsningar och interaktionsmöjligheter med webbplatser (Focus on the user's goals, needs, limitations and interaction possibilities with websites)	Course	2017-03-03
Interaktionsdesign 3 (G1F), 7,5 hp	-	None	2016-06-30
Projekthantering och entreprenörskap, 7,5 hp	-	None	2022-12-05
Projektkurs 2 i medieteknik (G1F), 7,5 hp	-	None	2016-06-30
Elective courses 30hp	-	Not relevant	
Vetenskaplig metod i medieteknik (G2F), 7,5 hp	-	None	2016-11-28
Verksamhetsförlagd praktik i medieteknik (G2F), 15 hp	-	Not relevant	
Forskningsutmaningar i medieteknik (G2F), 7,5 hp	-	None	2017-05-22
Examensarbete på kandidatnivå i medieteknik (G2E), 15 hp	-	Not relevant	
Elective courses 15hp	-	Not relevant	
		Sum: 1/13 courses (7.7%), 1/13 part of courses (7.7%)	
Program 13	**University**	**Amount of students in class**	
IT-design: systemdesign 180 hp	Karlstads universitet	HT20 - 32	
All courses	**Accessibility Topics, phrases, synonyms**	**Classifications**	**Syllabi year**
Introduktion till IT-design, 7,5 hp	-	None	2017-03-02
Verksamhet och IT, 7,5 hp	-	None	2022-02-11
Anskaffning av IT-system, 7,5 hp	-	None	2022-03-11
Introduktion till programmering, 7,5 hp	-	None	2021-02-16
Företagsekonomins grunder, 7,5 hp	-	None	2020-08-28
Grafiska användargränssnitt, 7,5 hp	-	None	2009-05-20
HTML och CSS för webbutveckling, 5 hp	-	None	2016-09-06
JavaScript för webbutveckling, 5 hp	-	None	2017-05-24
Serverprogrammering i JavaScript, 5 hp	-	None	2021-09-06
Databasdesign, 7,5 hp	-	None	2023-06-13

Objektorienterad modellering, 7,5 hp	-	None	2024-01-16
Nosql databaser, 7,5 hp	-	None	2022-01-14
Programutveckling, 7,5 hp	-	None	2017-03-01
Elective courses, 30 hp	-	Not relevant	
Utveckling av appar för mobila e-tjänster, 7,5 hp	-	None	2012-02-13
Designmönster, Java och UML, 7,5 hp	-	None	2021-04-13
Interaktionsdesign, 15 hp	-	None	2018-09-19
Informatik - Kandidatuppsats, 15 hp	-	Not relevant	
Systemanalys och design, 7,5 hp	-	None	2022-02-16
Systemintegration, 7,5 hp	-	None	2021-01-25
		Sum: 0/18 courses (0%), 0/18 part of courses (0%)	
Program 14	University	Amount of students in class	
kandidatprogram i datavetenskap	Karlstads universitet	HT20 - 50	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Datavetenskapens grunder, 7,5 hp	-	None	2019-02-18
Matematik för datavetare, 7,5 hp	-	None	2014-01-16
Programmeringsteknik, 7,5 hp	-	None	2017-02-09
Generell projektledningsmetodik, 7,5 hp	-	None	2019-09-05
Programutvecklingsmetodik, 7,5 hp	-	None	2020-10-13
HTML och CSS för webbutveckling, 5 hp	-	None	2016-09-06
JavaScript för webbutveckling, 5 hp	-	None	2017-05-24
Serverprogrammering i JavaScript, 5 hp	-	None	2021-09-06
Grafiska användargränssnitt, 7,5 hp	-	None	2009-05-20
Databasteknik, 5 hp	-	None	2024-01-31
Datorsystemteknik, 5 hp	-	None	2024-01-29
Operativsystem, 5 hp	-	None	2024-02-14
Datastrukturer och algoritmer, 7,5 hp	-	None	2024-01-30
Dataetik, 7,5 hp	Reflektera kring förhållandet mellan data, etik och samhälle utifrån frågor som rör diversitet, jämlikhet, social inkludering, hållbarhet och rättvisa. (Reflect on the relationship between data, ethics, and society based on issues related to diversity, equality, social inclusion, sustainability, and justice.)	Part of the course	2020-02-12
Matematisk statistik, 7,5 hp	-	None	2007-04-04
Datakommunikation I, 7,5 hp	-	None	2024-02-18
Under planering, 7.5hp	-	Not available	
Programspråk, 7.5hp	-	None	2024-01-30
Software Engineering, 7.5hp	-	None	2024-02-20
Datasäkerhet I, 7.5 hp	-	None	2024-02-20
Elective courses, 30hp	-	Not relevant	
Examensarbete i Kandidatarbete,15 hp	-	Not relevant	
		Sum: 0/19 courses (0%), 1/19 part of courses (5,3%)	
Program 15	University	Amount of students in class	
Masterprogram i människa–datorinteraktion 120 hp	Uppsala universitet	HT23 - 24	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Människa-datorinteraktion: Människa-datorinteraktion, 15 hp	Hur utformning av ett användargränssnitt kan komma att oavsiktligt utesluta användarkategorier med särskild (The design of a user interface may unintentionally exclude user categories with special needs by not considering their requirements during the design process.)	Part of the course	2018-10-25
Samhällsvetenskapliga metoder för studier av det digitala samhället	-	None	2023-04-13
Masteruppsats, 30 hp	-	Not relevant	
Elective courses, 60hp	-	Not relevant	
		Sum: 0/2 courses (0%), 1/2 part of courses (50%)	
Program 16	University	Amount of students in class	
Medieteknik: Webbaserad design och utveckling, 180hp	Malmö universitet	HT23 - 60	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Medieteknik I: Det medietekniska landskapet, 15hp	-	None	2023-08-28
Digital design och utveckling I, 7.5hp	-	None	2022-08-29
Digital design och utveckling II, 7.5hp	-	None	2022-08-29
Medieteknik II: Centrala begrepp och nyckeltexter, 15hp	-	None	2025-01-13
Digital design och utveckling III, 15hp	-	None	2024-01-15
Designmetoder för medieteknik, 7.5hp	-	None	2023-08-28
Designstudio för medieteknik, 15hp	-	None	2023-08-28
Crossmedia: Teori, 7.5hp	-	None	2024-01-15
Webbaserad datavisualisering, 7.5hp	Visualiseringar med hänsyn tagen till kommunikativ förmåga, tillgänglighet och etik (Visualizations with consideration for communicative ability, accessibility, and ethics.)	Part of the course	2024-01-15
Crossmedia: Projekt, 7.5hp	-	None	2024-01-15
Medieteknik: Vetenskaplig metod, 7.5hp	-	None	2022-01-14
Examensarbete i Medieteknik: kandidatarbete, 22.5hp	-	Not relevant	
Elective courses, 45hp	-	Not relevant	
		Sum: 0/11 courses (0%), 1/11 part of courses (9,1%)	
Program 17	University	Amount of students in class	
Mjukvaruutveckling och mobila plattformar, 180hp	Jönköping university	HT23 - 83	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Datateknisk introduktionskurs 7,5 hp	-	None	2023-05-31
Diskret matematik 7,5 hp	-	None	2020-10-27
Introduktion till programmering 9 hp	-	None	2023-02-24
Linjär algebra 6 hp	-	None	2019-10-03
Databaser 6 hp	-	None	2020-12-15
Datastrukturer och algoritmer 7,5 hp	-	None	2017-06-15
Envariabelanalys 9 hp	-	None	2021-11-05
Objektorienterad programmering 7,5 hp	-	None	2021-10-22
Grundläggande webbutveckling 7,5 hp	-	None	2023-10-03
Objektorienterad mjukvaruutveckling med designmönster 7,5 hp	-	None	2019-03-07
Android och gränssnittsdesign 7,5 h	-	None	2020-09-30
Nätverksprogrammering 7,5 hp	-	None	2019-03-07
iOS-utveckling 7,5 hp	-	None	2023-02-24
Fördjupad webbutveckling 7,5 hp	-	None	2021-11-05
Gruppdynamik 3 hp	-	None	2020-01-31
Näringslivsförlagd kurs i Datateknik 12 hp	-	Not relevant	
Mjukvaruprojektmetoder 7,5 hp	-	None	2023-02-24
Elective courses 15 hp	-	Not relevant	
Forskningsmetoder i datateknik och informatik 7,5 hp	-	None	2023-02-23
Affärsplanering och entreprenörskap 7,5 hp	-	None	2020-09-30
Intelligenta mobila system 7,5 hp	-	None	2021-04-12
Examensarbete i Datateknik 15 hp	-	Not relevant	
		Sum: 0/19 courses (0%), 0/19 part of course (0%)	
Program 18	University	Amount of students in class	
User Experience and interactive media design, Master's programmi	Södertörns högskola	Not found	

All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Design av Interaktiva Medier, 15 hp	-	None	2019-04-10
Designteori och designforskning, 7,5 hp	-	None	2019-04-02
Användarupplevelse och användarforskning I, 7,5 hp	-	None	2019-04-10
Användarupplevelse och användarforskning II, 7,5 hp	-	None	2019-09-11
Kritisk Design 7,5 hp	-	None	2022-02-09
Avancerad projektkurs, 15 hp	-	None	VT2023
Masteruppsats i medieteknik, 30 hp	-	Not relevant	
Elective courses, 30hp	-	Not relevant	
		Sum: 0/8 courses (0%), 0/6 part of courses (0%)	

Program 19	University	Amount of students in class	
Webbmaster, 120hp	Högskolan väst	HT24 - 10	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Grafisk design för webb, 7.5hp		None	2023-03-09
Webbutveckling med HTML och CSS, 7.5hp	W3C standarder och riktlinjer (W3C standrads and guidlines)	Part of the course	2019-07-04
Grundläggande javascriptprogrammering, 7.5hp	-	None	2024-02-28
Intranet/Internet - tjänster, nät, 7.5hp	-	None	2016-05-16
Avancerad webbutveckling med HTML och CSS, 7.5hp	-	None	2019-06-28
Media för webben, 7.5hp	-	None	2019-09-19
Designprocesser för digitala projekt, 7.5hp	-	None	2024-01-29
Säkerhet och integritet på nätet, 7.5hp	-	None	2018-05-31
Tillämpad databashantering, 7.5hp	-	None	2019-03-15
Webbprogrammering, 7.5hp	-	None	2019-06-28
Content Management Systems, 7.5hp	-	None	2021-12-21
Javascriptramverk, 7.5hp	-	None	2022-05-19
Utveckling av mobila webbapplikationer, 7.5hp	-	None	2020-11-16
Webbplatsadministration och marknadsföring, 7.5hp	Hålla en webbplats tillgänglig, säker och uppdaterad (keeping websites accessible, secure and updated)	Part of the course	2022-05-19
Forskningsmetodik för webmaster, 7.5hp	-	None	2023-12-13
Examensarbete, Webmaster, 7.5hp	-	Not relevant	
		Sum: 0/15 courses (0%), 2/15 part of courses (13,3%)	

Program 20	University	Amount of students in class	
Webbprogrammerare, 180hp	Linnéuniversitet	HT23 - 40	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Webbprogrammering på klientsidan 15 hp, Datavetenskap, G1N	Utveckla optimerade och tillgänglighetsanpassade webbapplikationer. (Develop optimized and accessibility-adapted web applications.)	Part of the course	2021-03-25
Webbteknik 1 7,5 hp, Medieteknik, G1N	Tillgänglighet (accessibility)	Part of the course	2022-09-26
Webbprogrammering på serversidan 15 hp, Datavetenskap, G1F	-	None	2021-03-25
Objektorienterad programmering 7,5 hp, Datavetenskap, G1F	-	None	2021-06-17
Mjukvaruutvecklingsprojekt 15 hp, Datavetenskap, G1F	-	None	2020-05-18
Elective courses15hp	-	Not relevant	
Objektorienterad analys och design med UML 7,5 hp, Datavetenski	-	None	2020-09-05
Mjukvarutestning 7,5 hp, Datavetenskap, G1F	-	None	2015-12-22
Introduktion till mjukvarukvalitet 7,5 hp, Datavetenskap, G1F		None	2023-11-29
Webben som applikationsplattform 15 hp, Datavetenskap, G1F	Web of things, webbstandarder som grund för applicationsutveckling mot internet of things. (Web of Things, web standards as the basis for application development towards the Internet of Things.)	Part of the course	2021-08-30
Entreprenörskap och grundläggande affärsutveckling 7,5 hp, Förel	-	None	2021-06-16
Algoritmer och datastrukturer 7,5 hp, Datavetenskap, G1F	-	None	2021-12-13
Web Intelligence 7,5 hp, Datavetenskap, G2F	-	None	2017-03-06
Cloud-native applications 15 hp, Datavetenskap, G2F	-	None	2022-02-07
Verksamhetsförlagt projekt 15 hp, Datavetenskap, G2F	-	None	2022-05-30
Examensarbete 15 hp, Datavetenskap, G2F	-	Not relevant	
		Sum: 0/14 courses (0%), 3/14 part of courses (21,4%)	

Program 21	University	Amount of students in class	
Webbutvecklare, 180hp	Karlstad universitet	HT20 - 65	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Prototyping: Att pröva och kommunicera designkoncept (Obligatoris	-	None	2017-03-01
Verksamhet och IT (Obligatorisk), 7.5hp	-	None	2022-02-11
Anskaffning av IT-system (Obligatorisk) 7,5 hp	-	None	2022-03-11
Introduktion till programmering (Obligatorisk), 7.5hp	-	None	2021-02-16
Introduktion till objektorienterad programmering (Obligatorisk) 5 hp	-	None	2023-06-13
HTML och CSS för webbutveckling (Obligatorisk), 5hp	-	None	2016-09-06
Systemimplementeringsteknik (Obligatorisk) 5 hp	-	None	2017-06-07
JavaScript för webbutveckling (Obligatorisk), 5hp	-	None	2017-05-24
Portabla format (Obligatorisk) 5 hp	Granska webbsidor utifrån webbstandarder inklusive standarder för tillgänglighet på webben (Review web pages based on web standards including standards for web accessibility)	Part of the course	2017-02-23
Serverprogrammering i JavaScript (Obligatorisk), 5hp	-	None	2021-09-06
Databasdesign (Obligatorisk) 7,5 hp	-	None	2023-06-13
Programutveckling (Obligatorisk), 7.5hp	-	None	2017-03-01
Utveckling av webbapplikationer (Obligatorisk) 7,5 hp	-	None	2019-02-22
Nosql databaser (Obligatorisk), 7.5hp	-	None	2022-01-14
Elective courses, 30hp	-	Not relevant	
Användartester, prototyping och utvärdering (Obligatorisk), 7.5hp	-	None	2022-09-07
Interaktionsdesign (Obligatorisk) 7,5 hp	-	None	2018-09-19
Elective courses,15hp	-	Not relevant	
Informatik - Kandidatuppsats (Obligatorisk) 15 hp	-	Not relevant	
Elective courses,15hp	-	Not relevant	
		Sum: 0/16 courses (0%), 1/16 part of courses (6,3%)	

Program 22	University	Amount of students in class	
Webbutvecklare - programmering, 180hp	Högskolan i skövde	HT20 - 45	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Databaskonstruktion G1F, 7,5 hp	-	None	2023-07-01
Databassystem G1N, 7,5 hp	-	None	2019-01-01
Datakommunikation - introduktion G1N, 7,5 hp	-	None	2020-07-01
Grundläggande programmering med C++ G1N, 7,5 hp	-	None	2014-07-01
Informationssäkerhet - introduktion G1N, 7,5 hp	-	None	2018-07-01
Introduktion till User Experience Design G1N, 7,5 hp	-	None	2022-07-01
IT i organisationer - introduktion G1N, 7,5 hp	-	None	2022-07-01
Operativsystem G1F, 7,5 hp	-	None	2020-07-01
Projekt i Software Engineering G1F, 15 hp	-	None	2022-03-17
Software Engineering G1F, 7,5 hp	Tillgänglighet (Accessibility)	Part of Course	2024-01-01
Webbprogrammering G1F, 7,5 hp	-	None	2024-01-01
Webbteknologi - forskning och utveckling G2F, 7,5 hp	-	None	2023-07-01
Webbutveckling - mobilapplikationsdesign G1F, 7,5 hp	-	None	2018-01-01
Webbutveckling - XML API G1F, 7,5 hp	-	None	2019-01-01
Webbutveckling - datorgrafik G1N, 7,5 hp	-	None	2022-07-01
Webbutveckling - programmering av mobila applikationer G1F, 7,5 h	-	None	2021-01-01
Webbutveckling - webbplatsdesign G1N, 7,5 hp	-	None	2024-01-01
Webbutveckling - content management & drift G2F, 7,5 hp	-	None	2015-07-01
Examensarbete i informationsteknologi med inriktning mot webbutv	-	Not relevant	
Elective course, 7.5hp	-	Not relevant	

		Sum: 0/18 courses (0%), 1/18 part of courses (5.6%)	
Program 23	University	Amount of students in class	
Webbutveckling, 120hp	Mittuniversitet	HT20 - 160	
All courses	Accessibility Topics, phrases, synonyms	Classifications	Syllabi year
Introduktion till programmering i JavaScript, 7,5 hp	-	None	2023-07-01
Webbutveckling I, 7,5 hp	Användbar webbplats som klarar W3C:s valideringskrav och följer dess grundprinciper (A useful website that meets W3C's validation requirements and follows its foundational principles)	Course	2023-07-01
Grafisk teknik för webb, 7,5 hp	-	None	2023-07-01
Programmering i C# NET, 7,5 hp	-	None	2023-07-01
Databaser, 7,5 hp	-	None	2023-01-01
Frontend-baserad webbutveckling, 7,5 hp	-	None	2023-01-01
Fördjupad frontend-utveckling, 7,5 hp	-	None	2024-03-15
Fullstack utveckling med ramverk, 7,5 hp	-	None	2023-11-15
Backend-baserad webbutveckling, 7,5 hp	-	None	2023-01-01
Programmering i TypeScript, 7,5 hp	-	None	2024-03-14
Webbanvändbarhet, 7,5 hp	Implementera/realisera en användbar och tillgänglig webbplats. Medvetenhet om grundläggande typografi oc (Implementing/realizing a useful and accessible website. Awareness of basic typography and legibility for scr	Course	2023-07-01
Webbutveckling för Wordpress, 7,5 hp	-	None	2023-01-01
Webbutveckling med .NET, 7,5 hp	-	None	2023-01-01
Självständigt arbete, 15 hp	-	Not relevant	
Projektledning, 7,5 hp	-	None	2010-01-18
		Sum: 2/14 courses (14,3%), 0/14 part of courses (0%)	

D. Appendix D: Online Survey Questions

Survey questions

Introduction

Welcome to our survey!

In this survey, we aim to examine students' awareness and understanding of current web accessibility guidelines and policies. Additionally, we will investigate whether the knowledge about web accessibility has been acquired through current education or not.

Your participation in this survey is anonymous, and you will not be asked to disclose your name. The information gathered will be used exclusively for research purposes.

Your input is valuable to us, and we appreciate your time and honesty in responding to the survey. If you have any questions or concerns, feel free to reach out to us at heel21fg@student.ju.se or udan21hi@student.ju.se.

Thank you for taking the time to participate!

Demographic

1. How old are you?
    - 18 - 24
    - 25 - 34
    - 35 - 44
    - 45+

2. What gender do you identify as?
    - Female
    - Male
    - Non-binary
    - Prefer not to say
    - …. Other

Educational

3. Which institution do you currently attend
    - Halmstad University / Högskolan i Halmstad
    - Linné University / Linnéuniversitetet
    - Malmö University / Malmö Universitet
    - Kristianstad University / Högskolan Kristianstad
    - Skövde University / Högskolan i Skövde
    - Mid Sweden University / Mittuniversitet

- Luleå University of Technology / Luleå Tekniska Universitet
- Karlstad University / Karlstad Universitet
- Södertörns University / Södertörns Högskola
- Uppsala University / Uppsala Universitet
- Jönköping University / Jönköpings Högskola
- University West / Högskolan i Väst
- Chalmers Institute of Technology / Chalmers Tekniska Högskola
- Umeå University / Umeå Universitet
- Dalarna University / Högskolan Dalarna
- Mälardalens University / Mälardalens Universitet
- …. Other

4. What program do you study?

- Digital design och innovation (Högskolan i Halmstad)
- Webbprogrammerare (Linnéuniversitetet)
- Medieteknik: Webbaserad design och utveckling (Malmö Universitet)
- Interaktionsdesigner (Linné Universitet)
- Bachelor Programme in Software Development (Kristianstad University)
- Interaction Design (Malmö University)
- Webbutvecklare - programmering (Högskolan i Skövde)
- Webbutveckling (Mittuniversitet)
- Digital tjänsteutveckling, kandidat (Luleå Tekniska Universitet)
- Web developer / Webbutvecklare (Karlstad University)
- IT-design: systemdesign (Karlstad University)
- User Experience and interactive media design, Master's programme (Södertörns University)
- Masterprogram i människa–datorinteraktion (Uppsala University)
- Mjukvaruutveckling och mobila plattformar (Jönköping university)
- Webmaster (Högskolan Väst)
- Interaktiva medier och webbteknologier (Linné Universitet)
- Digitala medier (Högskolan i Väst)
- Digital design (Högskolan kristianstad)
- Interaction design and technologies, MSc (Chalmers)
- Digital medieproduktion (Umeå universitet)
- Kandidatprogram i datavetenskap (Karlstads universitet)
- Grafisk design och webbutveckling (Högskolan Dalarna)
- Interaktionsdesign - informationsdesign (Mälardalens Universitet)
- …. Other

5. How long is your current education?
    - 1 year
    - 2 year
    - 3 year
    - 4 year
    - 5 year

6. Which year of study are you currently enrolled in?
    - First year
    - Somewhere in between
    - Final year

Assessment of the student's knowledge

7. Do you know and understand the law “The European Accessibility Act” / "Europeiska Tillgänglighetslagen"?

    Explanation: This policy includes rules for making websites and mobile apps of public entities accessible to everyone, regardless of disability. The law will soon apply to private websites (with a few exceptions, like small businesses), requiring them to be accessible by 2025.

    1 = No, I don't know what it is.

    2 = I have heard of it.

    3 = I have a basic understanding of it.

    4 = I have a good understanding of it.

    5 = Yes, I know entirely what it is and what it entails.

No, I don't know what it is. Yes, I know entirely what it is and what it entails

1_____2_____3_____4_____5

8. Kindly specify where you acquired this knowledge:
    - I answered 'No' in the previous question
    - Current Education
    - Other Education
    - Work experience

- From my free time
- Colleagues/friends
- Other

9. Do you know and understand the Swedish law “The Discriminatory Act” / "Diskrimineringslagen"?

Explanation: This policy fights discrimination and promotes equal rights. It targets discrimination against people with disabilities among others. One important part deals with accessibility, ensuring that people with disabilities aren't unfairly disadvantaged due to inaccessible environments or services, such as websites.

1 = No, I don't know what it is.

2 = I have heard of it.

3 = I have a basic understanding of it.

4 = I have a good understanding of it.

5 = Yes, I know entirely what it is and what it entails.

No, I don't know what it is. Yes, I know entirely what it is and what it entails

1_____2_____3_____4_____5

10. Kindly specify where you acquired this knowledge:

- I answered 'No' in the previous question
- Current Education
- Other Education
- Work experience
- From my free time
- Colleagues/friends
- Other

11. Do you know and understand the United Nations law “Convention on the Rights of Persons with Disability (CRPD)” / "Konventionen om rättigheter för personer med funktionsnedsättning"?

Explanation: The policy aims to facilitate the ability of individuals with disabilities to live independently and engage in all aspects of life. Individuals with disabilities should, on an equal basis

as everyone else, have access to information and communication technologies and systems, including the web, without any barriers.

1 = No, I don't know what it is.

2 = I have heard of it.

3 = I have a basic understanding of it.

4 = I have a good understanding of it.

5 = Yes, I know entirely what it is and what it entails.

No, I don't know what it is. Yes, I know entirely what it is and what it entails

1_____2_____3_____4_____5

12. Kindly specify where you acquired this knowledge:

- I answered 'No' in the previous question
- Current Education
- Other Education
- Work experience
- From my free time
- Colleagues/friends
- Other

13. Do you know and understand the guidelines “Web Content Accessibility Guidelines (WCAG)” / "Riktlinjer för tillgängligt webbinnehåll"?
Explanation: WCAG is a standard for how to make web content more accessible. WCAG 2.2 provides 13 guidelines that clarify how to make web content such as text, images, sound, code, and structure more accessible.

1 = No, I don't know what it is.

2 = I have heard of it.

3 = I have a basic understanding of it.

4 = I have a good understanding of it.

5 = Yes, I know entirely what it is and what it entails.

No, I don't know what it is. Yes, I know entirely what it is and what it entails

1_____2_____3_____4_____5

14. Kindly specify where you acquired this knowledge:

- I answered 'No' in the previous question
- Current Education
- Other Education
- Work experience
- From my free time
- Colleagues/friends
- Other

Gained knowledge from education

15. Overall, to what extent have you gained knowledge regarding web accessibility in your education?

1 = Not at all
2 = Very little
3 = Some
4 = Much
5 = Significantly

Not at all Significantly

1_____2_____3_____4_____5

E. Appendix E: Final Sample Frame and Assigned Numerical Value

Numerical value	Program name
1	Bachelor Programme in Software Development, 180hp
2	Digital design, 180hp
3	Digital design och innovation, 180hp
4	Digital medieproduktion, 180hp
5	Digital tjänsteutveckling, kandidat, 180hp
6	Digitala medier, 180hp
7	Grafisk design och webbutveckling, 180hp
8	Interaction Design, 180hp
9	Interaction Design and technologies, MSc, 120hp
10	Interaktionsdesigner - informationsdesign, 180hp
11	Interaktionsdesigner, 180hp
12	Interaktiva medier och webbteknologier, 180hp
13	IT-design: systemdesign, 180hp
14	Kandidatprogram i datavetenskap, 180hp
15	Masterprogram i människa-datorinteraktion, 120hp
16	Medieteknik: webbaserad design och utveckling, 180hp
17	Mjukvaruutveckling och mobila plattformar, 180hp
18	User experience and interactive media design, Master's programme, 120hp
19	Webbmaster, 120hp
20	Webbprogrammerare, 180hp
21	Webbutvecklare, 180hp
22	Webbutvecklare - programmering, 180hp
23	Webbutveckling, 120hp

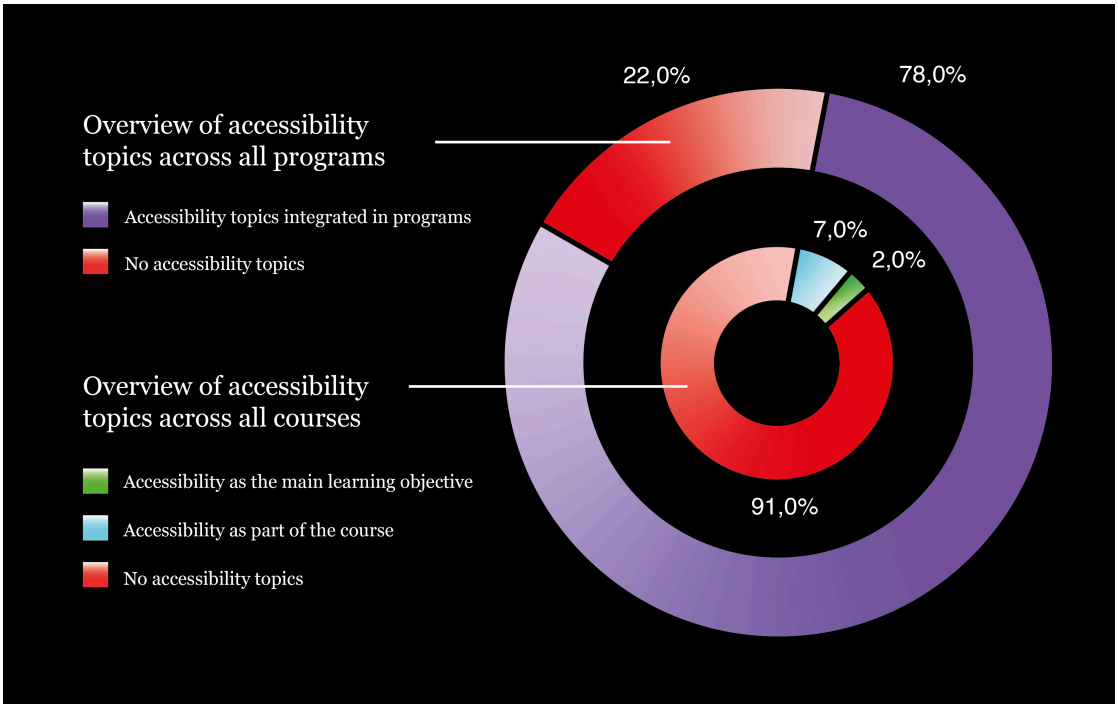
F. Appendix F: Results of Curricula Analysis - Amount of Topics and Phrases Found in Each Program

Program	Total amount of courses	Amount of courses with accessibility topic, phrases, synonyms	Accessibility topics, phrases, synonyms found	Included topic on accessibility guidlines/laws
Program 1	21	1	Plan, motivate and choose appropriate design principles to develop accessible web-based interfaces	No
Program 2	12	1	Planning and completion of useful and accessible web pages, Guidelines for usability and accessibility.	Yes
Program 3	16	0	-	-
Program 4	18	1	Basic accessibility adaptation according to current standards	Yes
Program 5	17	1	Consider aesthetic, perceptual, and cognitive aspects based on human needs, conditions, and considerations to ensure good usability, accessibility, and user experience	No
Program 6	17	1	Motion graphics with consideration for accessibility	No
Program 7	19	3	ISO standards and common terms in user-centered design. Inclusive and good design, audience adaptation, and human needs. Evaluate design from the perspectives of usability, user experience, and accessibility.	Yes
Program 8	12	1	Create W3C-validated and semantically-correct HTML markup and CSS	Yes
Program 9	4	0	-	-
Program 10	19	5	Ethical challenges in information design, such as sustainability, gender equality, and accessibility. Human factors, user experience, usability, universal design. Universell design. Guidelines and principles in information design. Usability and accessibility.	Yes
Program 11	12	3	How aspects of inclusive design can enrich both process and product. Accessibility.	No
Program 12	13	2	Designing webbsites - Accessibility. Focus on the user's goals, needs, limitations and interaction possibilities with websites.	No
Program 13	18	0	-	-
Program 14	19	1	Reflect on the relationship between data, ethics, and society based on issues related to diversity, equality, social inclusion, sustainability, and justice.	No
Program15	2	1	The design of a user interface may unintentionally exclude user categories with special needs by not considering their requirements during the design process.	No
Program 16	11	1	Visualizations with consideration for communicative ability, accessibility, and ethics.	No
Program 17	19	0	-	-
Program 18	6	0	-	-
Program 19	15	2	W3C standrads and guidlines. Keeping websites accessible, secure and updated	Yes
Program 20	14	3	Develop optimized and accessibility-adapted web applications. Accessibility. Web of Things, web standards as the basis for application development towards the Internet of Things.	Yes
Program 21	16	1	Review web pages based on web standards including standards for web accessibility.	Yes
Program 22	18	1	Accessibility.	Yes
Program 23	14	2	A useful website that meets W3C's validation requirements and follows its foundational principles. Implementing/realizing a useful and accessible website. Awareness of basic typography and legibility for screen.	No
Total sum	332	31		Yes=9

G. Appendix G: Categorical Data of Survey Responses and Assigned Numerical Values

Enrollment year, numerical value	Enrollment year, categorical data
1	First year
2	Somewhere in between
3	Final year
Assessment questions, numerical value	**Assessment questions, categorical data**
1	No, I don't know what it is
2	I have heard of it
3	I have a basic understanding of it
4	I have a good understanding of it
5	Yes, I know entirely what it is and what it entails
Source of aquired knowledge, numerical value	**Source of aquired knowledge, categorical data**
1	I answered 'No' in the previous question
2	Current Education
3	Other Education
4	Work experience
5	From my free time
6	Colleagues/friends
7	Other
WCAG evaluation questions, numerical value	**WCAG evaluation questions, categorical data**
1	Correct answer
2	Wrong answer
Overall knowledge from education, numerical value	**Overall knowledge from education, categorical data**
1	Not at all
2	Very little
3	Some
4	Much
5	Significantly

H. Appendix H: Integration of Accessibility Topics Across All Programs and All Courses



I. Appendix I: Frequency Analysis of Answers on Each Assessment Question, SPSS

Statistics

		EAA	The Discriminatory Act	CRPD	WCAG
N	Valid	63	63	63	63
	Missing	0	0	0	0

Frequency Table

EAA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	25	39,7	39,7	39,7
	2,00	12	19,0	19,0	58,7
	3,00	9	14,3	14,3	73,0
	4,00	13	20,6	20,6	93,7
	5,00	4	6,3	6,3	100,0
	Total	63	100,0	100,0	

The Discriminatory Act

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	7	11,1	11,1	11,1
	2,00	8	12,7	12,7	23,8
	3,00	18	28,6	28,6	52,4
	4,00	21	33,3	33,3	85,7
	5,00	9	14,3	14,3	100,0
	Total	63	100,0	100,0	

CRPD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	28	44,4	44,4	44,4
	2,00	14	22,2	22,2	66,7
	3,00	9	14,3	14,3	81,0
	4,00	7	11,1	11,1	92,1
	5,00	5	7,9	7,9	100,0
	Total	63	100,0	100,0	

WCAG

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	16	25,4	25,4	25,4
	2,00	10	15,9	15,9	41,3
	3,00	9	14,3	14,3	55,6
	4,00	11	17,5	17,5	73,0
	5,00	17	27,0	27,0	100,0
	Total	63	100,0	100,0	

Frequency Table

EAA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	25	39,7	39,7	39,7
	2,00	12	19,0	19,0	58,7
	3,00	9	14,3	14,3	73,0
	4,00	13	20,6	20,6	93,7
	5,00	4	6,3	6,3	100,0
	Total	63	100,0	100,0	

The Discriminatory Act

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	7	11,1	11,1	11,1
	2,00	8	12,7	12,7	23,8
	3,00	18	28,6	28,6	52,4
	4,00	21	33,3	33,3	85,7
	5,00	9	14,3	14,3	100,0
	Total	63	100,0	100,0	

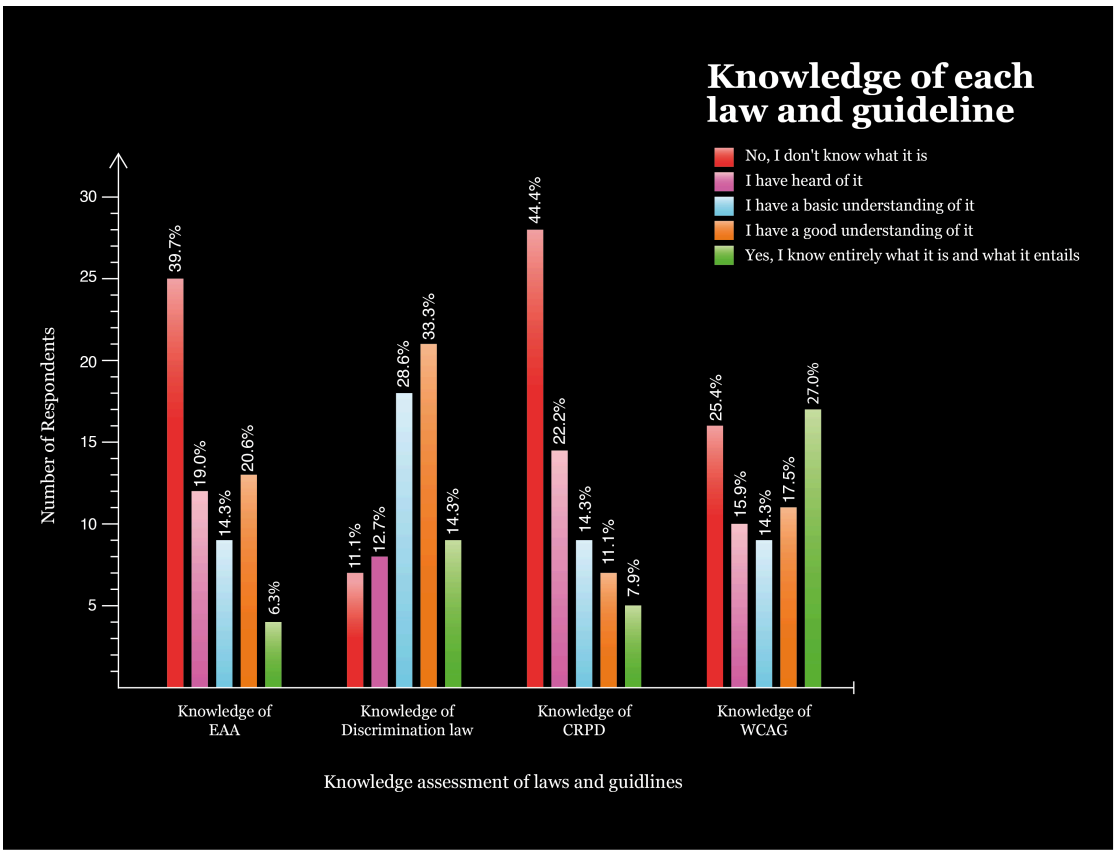
CRPD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	28	44,4	44,4	44,4
	2,00	14	22,2	22,2	66,7
	3,00	9	14,3	14,3	81,0
	4,00	7	11,1	11,1	92,1
	5,00	5	7,9	7,9	100,0
	Total	63	100,0	100,0	

WCAG

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	16	25,4	25,4	25,4
	2,00	10	15,9	15,9	41,3
	3,00	9	14,3	14,3	55,6
	4,00	11	17,5	17,5	73,0
	5,00	17	27,0	27,0	100,0
	Total	63	100,0	100,0	

J. Appendix J: Participants Knowledge of Each Law and Guidelines



K. Appendix K: Frequency Analysis of All Assessment Questions Combined, SPSS

Case Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
$Frequency_answers_assessment_questions_all[a]	63	100,0%	0	0,0%	63	100,0%

$Frequency_answers_assessment_questions_all Frequencies

		Responses		Percent of Cases
		N	Percent	
Frequency of all assessment questions[a]	1,00	76	30,2%	120,6%
	2,00	44	17,5%	69,8%
	3,00	45	17,9%	71,4%
	4,00	52	20,6%	82,5%
	5,00	35	13,9%	55,6%
Total		252	100,0%	400,0%

L. Appendix L: Cross-tabulation on WCAG Assessment Question and WCAG Evaluation Question, SPSS

Source EAA * EAA Crosstabulation

			EAA				
			1,00	2,00	3,00	4,00	5,00
Source EAA	1,00	Count	25	0	0	0	0
		% of Total	39,7%	0,0%	0,0%	0,0%	0,0%
	2,00	Count	0	4	4	5	3
		% of Total	0,0%	6,3%	6,3%	7,9%	4,8%
	3,00	Count	0	0	0	3	0
		% of Total	0,0%	0,0%	0,0%	4,8%	0,0%
	4,00	Count	0	0	0	3	1
		% of Total	0,0%	0,0%	0,0%	4,8%	1,6%
	5,00	Count	0	6	2	1	0
		% of Total	0,0%	9,5%	3,2%	1,6%	0,0%
	6,00	Count	0	1	0	0	0
		% of Total	0,0%	1,6%	0,0%	0,0%	0,0%
	7,00	Count	0	1	3	1	0
		% of Total	0,0%	1,6%	4,8%	1,6%	0,0%
Total		Count	25	12	9	13	4
		% of Total	39,7%	19,0%	14,3%	20,6%	6,3%

Source EAA * EAA Crosstabulation

			Total
Source EAA	1,00	Count	25
		% of Total	39,7%
	2,00	Count	16
		% of Total	25,4%
	3,00	Count	3
		% of Total	4,8%
	4,00	Count	4
		% of Total	6,3%
	5,00	Count	9
		% of Total	14,3%
	6,00	Count	1
		% of Total	1,6%
	7,00	Count	5
		% of Total	7,9%
Total		Count	63
		% of Total	100,0%

M. Appendix M: Cross-tabulation EAA, Knowledge Assessment Question and Source, SPSS

Source Discriminatory Act * The Discriminatory Act Crosstabulation

			The Discriminatory Act			
			1,00	2,00	3,00	4,00
Source Discriminatory Act	1,00	Count	7	0	0	0
		% of Total	11,1%	0,0%	0,0%	0,0%
	2,00	Count	0	2	0	5
		% of Total	0,0%	3,2%	0,0%	7,9%
	3,00	Count	0	1	7	4
		% of Total	0,0%	1,6%	11,1%	6,3%
	4,00	Count	0	0	1	2
		% of Total	0,0%	0,0%	1,6%	3,2%
	5,00	Count	0	2	7	7
		% of Total	0,0%	3,2%	11,1%	11,1%
	6,00	Count	0	1	1	0
		% of Total	0,0%	1,6%	1,6%	0,0%
	7,00	Count	0	2	2	3
		% of Total	0,0%	3,2%	3,2%	4,8%
Total		Count	7	8	18	21
		% of Total	11,1%	12,7%	28,6%	33,3%

Source Discriminatory Act * The Discriminatory Act Crosstabulation

			The ...	
			5,00	Total
Source Discriminatory Act	1,00	Count	0	7
		% of Total	0,0%	11,1%
	2,00	Count	4	11
		% of Total	6,3%	17,5%
	3,00	Count	1	13
		% of Total	1,6%	20,6%
	4,00	Count	3	6
		% of Total	4,8%	9,5%
	5,00	Count	1	17
		% of Total	1,6%	27,0%
	6,00	Count	0	2
		% of Total	0,0%	3,2%
	7,00	Count	0	7
		% of Total	0,0%	11,1%
Total		Count	9	63
		% of Total	14,3%	100,0%

N. Appendix N: Cross-tabulation Discriminatory Act, Knowledge Assessment Question and Source, SPSS

Source CRPD * CRPD Crosstabulation

			CRPD				
			1,00	2,00	3,00	4,00	5,00
Source CRPD	1,00	Count	28	0	0	0	0
		% of Total	44,4%	0,0%	0,0%	0,0%	0,0%
	2,00	Count	0	3	2	0	3
		% of Total	0,0%	4,8%	3,2%	0,0%	4,8%
	3,00	Count	0	4	0	2	1
		% of Total	0,0%	6,3%	0,0%	3,2%	1,6%
	4,00	Count	0	0	1	1	0
		% of Total	0,0%	0,0%	1,6%	1,6%	0,0%
	5,00	Count	0	6	5	2	1
		% of Total	0,0%	9,5%	7,9%	3,2%	1,6%
	6,00	Count	0	0	1	1	0
		% of Total	0,0%	0,0%	1,6%	1,6%	0,0%
	7,00	Count	0	1	0	1	0
		% of Total	0,0%	1,6%	0,0%	1,6%	0,0%
Total		Count	28	14	9	7	5
		% of Total	44,4%	22,2%	14,3%	11,1%	7,9%

Source CRPD * CRPD Crosstabulation

			Total
Source CRPD	1,00	Count	28
		% of Total	44,4%
	2,00	Count	8
		% of Total	12,7%
	3,00	Count	7
		% of Total	11,1%
	4,00	Count	2
		% of Total	3,2%
	5,00	Count	14
		% of Total	22,2%
	6,00	Count	2
		% of Total	3,2%
	7,00	Count	2
		% of Total	3,2%
Total		Count	63
		% of Total	100,0%

O. Appendix O: Cross-tabulation CRPD, Knowledge Assessment Question and Source, SPSS

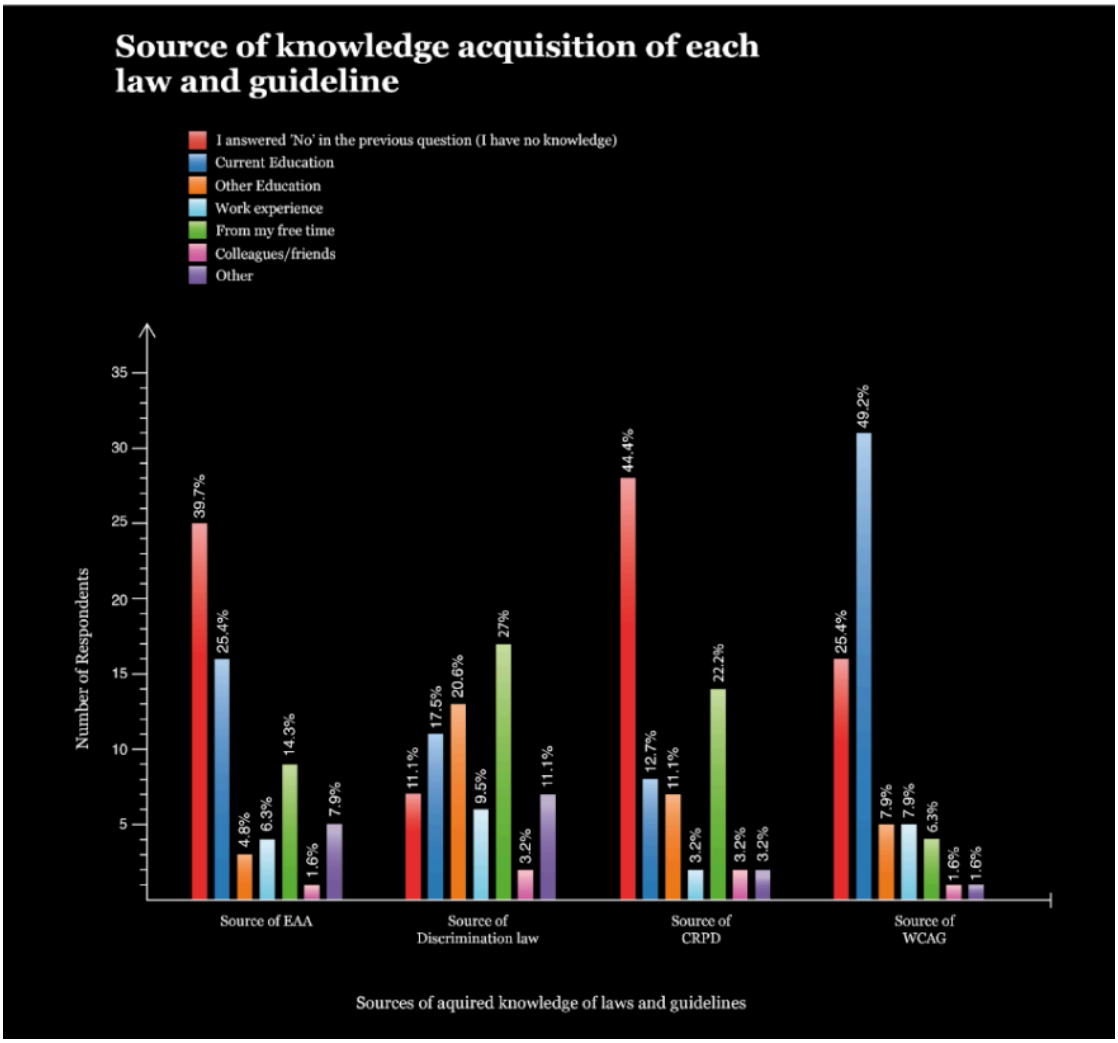
Source WCAG * WCAG Crosstabulation

			WCAG				
			1,00	2,00	3,00	4,00	5,00
Source WCAG	1,00	Count	16	0	0	0	0
		% of Total	25,4%	0,0%	0,0%	0,0%	0,0%
	2,00	Count	0	4	7	7	13
		% of Total	0,0%	6,3%	11,1%	11,1%	20,6%
	3,00	Count	0	1	0	3	1
		% of Total	0,0%	1,6%	0,0%	4,8%	1,6%
	4,00	Count	0	1	1	1	2
		% of Total	0,0%	1,6%	1,6%	1,6%	3,2%
	5,00	Count	0	2	1	0	1
		% of Total	0,0%	3,2%	1,6%	0,0%	1,6%
	6,00	Count	0	1	0	0	0
		% of Total	0,0%	1,6%	0,0%	0,0%	0,0%
	7,00	Count	0	1	0	0	0
		% of Total	0,0%	1,6%	0,0%	0,0%	0,0%
Total		Count	16	10	9	11	17
		% of Total	25,4%	15,9%	14,3%	17,5%	27,0%

Source WCAG * WCAG Crosstabulation

			Total
Source WCAG	1,00	Count	16
		% of Total	25,4%
	2,00	Count	31
		% of Total	49,2%
	3,00	Count	5
		% of Total	7,9%
	4,00	Count	5
		% of Total	7,9%
	5,00	Count	4
		% of Total	6,3%
	6,00	Count	1
		% of Total	1,6%
	7,00	Count	1
		% of Total	1,6%
Total		Count	63
		% of Total	100,0%

P. Appendix P: Source of Knowledge Acquisition of Each Law and Guideline



Q. Appendix Q: Frequency Analysis Overall Knowledge from Current Education

Statistics

Overall Knowledge

N	Valid	63
	Missing	0

Overall Knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	3	4,8	4,8	4,8
	2,00	15	23,8	23,8	28,6
	3,00	21	33,3	33,3	61,9
	4,00	15	23,8	23,8	85,7
	5,00	9	14,3	14,3	100,0
	Total	63	100,0	100,0	