

**DESIGNING AN ACCESSIBILITY IN USER EXPERIENCE DESIGN COURSE FOR
THE UNIVERSITY OF VIRGINIA**

**WHY ACCESSIBILITY IN USER EXPERIENCE DESIGN IS OFTEN NOT TAUGHT
IN COLLEGE COURSES**

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By
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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

Imagine that one day you suddenly develop a visual impairment. For the first time in your life, you have to rely solely on your computer's keyboard and auditory assistance tools to help you get to your favorite website. This site, usually filled with vibrant pictures and stories, is not a page you can navigate easily because the web developers did not account for accessibility concerns when designing the application. Their HTML code is not clean enough for your screen reader to properly read, and you cannot visualize the pictures because they have no descriptions.

This is a reality for billions across the globe who have a disability. In fact, over 1.3 billion people in the world have a disability (World Health Organization, 2023), and over five billion people in the world use the internet (World Bank, 2021). There is a significant overlap between the two groups, especially with how much technology is integrated into society. Since the internet is an incredible source of information, communication, and connection, it is vital that those with disabilities are also able to use it. Studies show that “Web content equality promotes a higher quality of life and the chance to live independently” (Blanck and Braddock, 2014). The internet provides opportunities that improve people's lives substantially, and it is imperative that those with disabilities also have access to those same resources.

When designing websites and mobile applications, it is important that developers consider how digitally accessible they are making their products. Accessibility in web content is a huge factor to consider when developing applications, and unfortunately, it is not taught in most computer science degree programs. This is a massive problem for the software engineering industry, and my STS project will explore reasons why accessibility in user experience design (UXD) is not taught in college curricula. Similarly, my technical project will put forth a proposal for an accessibility in UXD course for the University of Virginia computer science department

that teaches students about web content accessibility guidelines (WCAG) and accessibility tools. It will also teach them about how to integrate ADA compliant features when designing digitally accessible applications.

Overall, it will be important to explore the relationship between web content accessibility and why it isn't often taught in higher education computer science curricula. Understanding the root of the issue will allow for a change in the computer science curriculum at the University of Virginia, as it will teach future software engineers the significance of accessibility considerations in their work.

Technical Project

I propose to design a course curriculum for the University of Virginia that teaches the importance of considering accessibility when building web content applications. This course will utilize web content accessibility guidelines (WCAG) as a framework to teach students how to design features or products accessible to those with disabilities that are ADA-compliant. This course will be different from other computer science classes at the University of Virginia (UVA) since it will bring attention to accessibility in user experience design (UXD) in a more comprehensive manner.

For example, there is one course at UVA that briefly touches on accessibility. CS 3205, HCI in Software Development, is a class that teaches students how to implement computer systems for human use. It goes into the details of the user experience (UX) design process and how to create products that take the user into account (Apostolellis, 2022). However, in this class, accessibility is mentioned briefly in a few lecture slides and is not further explored. More

importantly, WCAG is not even mentioned and that is the industry standardized guidelines that UX designers must follow in their design work.

WCAG serves as the most widely accepted set of web content accessibility guidelines (WCAG, 2019). It explicitly lists standards to make web content perceivable, operable, understandable, readable, predictable, and robust to all users. It has over eighty standards for developers to implement in their web applications, and they're all based on accessibility concerns surrounding disabilities. Some of these guidelines are created to support accessibility tools, such as screen readers.

The main idea of this course will be to teach students how to achieve universal usability by designing functional features and products, intuitive website interfaces, and informative content (Horton, 2006). These three concepts are often framed as the core topics in digital accessibility textbooks. I plan to carefully study how these authors lay out the framework for their textbooks and present crucial ideas important to the world of web content accessibility. With this literature review, I will see where there is overlap in the information being taught in the textbooks and base my curriculum around topics that most web content accessibility educational materials touch on.

Furthermore, the new curriculum design will teach students about universal usability by covering common disabilities and accessibility tools, all aspects of WCAG, producing projects that give hands-on experience implementing WCAG standards, the importance of accessibility in web content, and more. It also will cover the Americans with Disabilities Act (ADA) and legal efforts from members of the disability community (Anderson, 2022).

As for methodology for the technical project, I will begin by conducting an in-depth literature review on all the WCAG standards, digital accessibility tools available to those with

disabilities, pre-existing courses about web content accessibility at universities, and pedagogical works about how to effectively design technology courses for higher education students.

As for investigating pre-existing digital accessibility courses, I will begin by looking into how the top fifteen computer science degree programs and UVA teach accessibility in their respective curricula. Exploring computer science degree program curriculums, digital accessibility textbooks, and published works on accessibility guidelines and tools will serve as the basis of the research for my technical project.

STS Project

The Americans with Disabilities Act establishes that those with disabilities also have the right to access websites (Noble, 2002, pg. 401). This is an important notion because it highlights the significance of making websites accessible to all people, especially those with disabilities.

I plan to examine why there is such a lack of information in college courses about accessibility in UXD. This is particularly significant to look at through an STS perspective because designers won't understand the importance of accessibility considerations for the disabled community if they are not part of that community or are never taught it when learning about engineering and design.

As for methodology, I will begin by doing a literature review to explore web content accessibility through a social and historical lens and to look at the actors involved in the web content accessibility curriculum gap. I will find ways to apply Michel Callon's four elements of a sociology of translation to this STS project by identifying the problem and the actors involved, getting actors to fit into their roles and accept their roles, and finding ways to get the actors to tackle the problem together (Callon, 1984). For example, some of these actors may include

people with disabilities, professors, colleges, college administrations, and disability advocates. These actors would have to be willing to work towards fixing the digital accessibility learning gap in college computer science curricula.

Furthermore, I will complete my literature review by exploring who created WCAG, when it was created, why it was created, and how often it is enforced in the workplace. Additionally, I will investigate what classes at UVA talk about accessibility in software engineering and web design and if any colleges have courses solely focused on web accessibility. Similar to the technical project, I will interview professors at the top fifteen computer science universities and at UVA to see how much importance they place on teaching web content accessibility in their courses. Often, professors will not teach topics they don't deem necessary for a student's education. If they place no priority on teaching web content accessibility, then their students will simply not learn about it through their degree program. In fact, students may not learn about digital accessibility at all in their careers—both academic and professional.

Additionally, I plan to interview disability advocates and accessibility advocacy groups both at UVA and prominent in the technology industry to learn about how they are working to advance web content accessibility design courses and training and if they have faced any setbacks when working towards this goal.

Conclusion

Those with disabilities are often excluded from society due to stereotypes in the media, disability culture, and a digital divide (Rimmerman, 2013). These barriers affect their quality of life substantially, and increased levels of social inclusion depend on those with disabilities

having equal access to the internet (Jaeger, 2011). Those who are not part of the disability community often do not understand the struggles unless they are taught about these hardships.

When students are not taught about the importance of accessibility and inclusion in their college degree programs, it is likely that they may not learn about the significance at all since they don't have impairments that affect their daily lives. Web content accessibility is a massive issue for the billions of people across the globe with impairments, so it is crucial that digital accessibility is taught in college courses.

The sociotechnical problem of this study is that web content accessibility is not taught in college computer science degree programs. The technical project will lay out a course curriculum for the University of Virginia computer science department that teaches students the importance of digital accessibility and shows professors that this topic needs to be taught to future software engineers. Professors have a hand in shaping the digital world to be a more accessible and inclusive space, so they will be a key component of the methodology for the project. The STS project will explore why web content accessibility is often not taught in college computer science programs. It will also investigate web content accessibility through a social and historical perspective and apply STS theories to better understand how it can be improved in the future.

Both projects lay the foundation for improvements in the digital accessibility world. They highlight a knowledge gap present in college curricula and society about people with disabilities and their lives. These projects remind me that accessibility is a right that people with disabilities have to fight for each day and that I can positively impact millions of people if I take their concerns into consideration when designing software applications.

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