499P Honors Thesis Proposal - Abby Wing

1. Introduction

Description of Thesis

I first became interested in accessibility after taking the class English 381 Professional Writing and Technical Communication II. This class introduced me to disability rights legislation, the prevalence of disability in the U.S., as well as accessibility concepts such as the social model of disability and universal design. In this class, I created a website explaining accessibility concepts to UMass instructors. Some topics that I covered included checking color contrast, providing alt text, and formatting accessible headings. Additionally, in the class English 391C Advanced Software for Professional Writers, I built upon my previous knowledge by learning about how to design for accessibility using HTML and CSS. Over the past summer, I completed an internship with Hewlett Packard Enterprise in which I learned about the functionality of screen readers, used by low-vision and blind users, from the head of accessibility at the company. I then gave a presentation at the company's intern fair on accessibility, which included a demonstration of using a screen reader.

All of these experiences made me more aware of barriers people with disabilities face when using the web, which made me interested in doing a thesis related to web accessibility. My thesis will deepen my understanding of accessibility by providing me with an opportunity to better understand the ways that people with different disabilities interact with websites, and the barriers that may be built into those websites. I propose to do this by observing UMass Amherst students with disabilities as they interact with UMass Amherst web pages through usability testing. This will help me in my future career as a user experience writer, in which I will write microcopy for digital products according to accessibility best standards.

For my thesis project, I will recruit UMass students or employees who self-identify as having a disability to participate in usability testing of the UMass Amherst financial aid website. Usability testing is a research method used within the field of user experience to understand how users would interact with a product. Qualitative usability testing involves observing users completing open-ended tasks in order to gain insights and identify problems or points of confusion. My rationale for including people with disabilities in my testing is to understand potential accessibility issues that people with disabilities–including, but not limited to, those who use assistive devices–may face when interacting with financial aid websites at UMass Amherst. In particular, I hope to go "beyond the checklist" of basic accessibility do's and don'ts and better understand the nuances and particularities of different users' experiences. In so doing, I hope to identify ways to create more equitable web experiences for people with disabilities. I plan to share the findings of my usability testing with University Relations with the aim of improving equity for all students who use these pages. University Relations can use the findings of my usability testing when designing future websites as well.

Statement of Problem

Most websites are not designed with disability in mind. Because of this, people with disabilities face many barriers when interacting with the web. These barriers marginalize people with disabilities by denying them equal access to web content. This marginalization not only affects people with disabilities, but organizations as well. Organizations that do not design for accessibility face lawsuits, lost sales, and reputational damage (Pernice and Nielsen, *Usability Guidelines* 9). By designing for accessibility, designers can provide equitable web experiences to all users. One tool designers can use is guidelines for making websites more accessible. Such guidelines are appealing because they provide designers with an overview of accessibility

concepts. However, these guidelines have their limits, as they do not provide insight into how people with disabilities would interact with websites. Using accessibility guidelines *in conjunction with* feedback from people with disabilities helps designers better understand the need to design for accessibility (Henry and Abou-Zhara). In particular, user feedback from people with disabilities gives power to people with disabilities to define how a product fits their goals and expectations.

For my thesis project, I decided to test financial aid websites at UMass Amherst because many students interact with these sites. These websites provide prospective and current students with an estimate of the cost of attendance. As a public university, UMass Amherst possesses a moral and legal responsibility to design for accessibility across all of its websites. For my thesis, I am conducting qualitative usability testing of UMass Amherst financial aid websites, consistent with user experience best practices, due to the high number of students who interact with these sites, as well as the importance of transparency regarding cost. When people with disabilities cannot interact with these websites, they may feel marginalized. Designing for web accessibility benefits all students—not just students with disabilities—by making these sites more usable overall. By improving web accessibility, UMass Amherst can support the inclusion of students with disabilities. My thesis seeks to understand the needs of students with disabilities at UMass Amherst, as well as the factors that make websites inaccessible. By testing these pages on people with disabilities, I will look beyond web accessibility guidelines to understand how people with disabilities would actually interact with these pages. After conducting my testing, I will propose revisions to these pages to University Relations in a report of my findings.

Significance of Problem

Starting in the 1970s, the disability rights activists began to advocate for legislation regarding disability. Disability rights activists successfully lobbied for the passage of Section 504 of the Rehabilitation Act of 1973, as well as the Americans with Disabilities Act of 1990, which provided more protections to people with disabilities ("Disability History: The Disability Rights Movement (U.S. National Park Service"). During this time, Ronald Mace, a disabled architect and wheelchair user, developed Universal Design as a framework for designing products, services, and environments to make them accessible for all people, with particular emphasis on people with disabilities (Hamraie, "Universal Design" 6). Before this framework, designers made retrofit accommodations for people with disabilities to comply with legislation rather than consider the needs of people with disabilities from the beginning of the design process. Designers found that following a Universal Design approach proved less costly and more time efficient than providing retrofit accommodations. Starting in the 1990s, however, Universal Design became depoliticized as a marketing concept (15). This depoliticization shifted the focus of Universal Design to the needs of everyone, while ignoring the needs of people with disabilities. In response, people with disabilities developed the social model of disability to advance and protect the rights of people with disabilities. The social model of disability states that societal barriers create disability (Hamraie, *Building Access* 12). The social model thus implicates web designers in creating disability when they fail to design for accessibility.

The modern disability rights movement seeks to ensure equal opportunities and rights for people with disabilities. This movement intersects significantly with other social movements such as Black Lives Matter and #MeToo. Movements such as these seek to raise public awareness about social inequities to change societal attitudes. In particular, the disability rights

movement made the public more aware of the need to design for accessibility. My thesis builds on existing accessibility research by seeking to understand the needs of students with disabilities at UMass Amherst. This will allow me to make suggestions that will improve the experiences of all users when interacting with UMass Amherst websites and, I hope, inform the design of future websites. UMass Amherst can stand as a model for accessibility for other institutions, thereby normalizing web accessibility best practices on a wide scale among higher education institutions.

2. Literature Review (MLA Format)

The Importance of Accessible Web Design

Introduction

The purpose of this literature review is to solidify my understanding of key accessibility concepts that will help me when completing my thesis. For my thesis, I plan to conduct usability testing on people with disabilities interacting with financial aid websites at UMass Amherst. After conducting usability testing, I will present my findings to University Relations with the goal of improving equity for all students who use these pages. In terms of structure, this literature review will move thematically from a discussion of the evolution of the disability rights movement, to the problem of inaccessible web design, universal design, disabilities and assistive technologies, web accessibility guidelines, usability testing, and the consequences of inaccessible design. I will conclude by talking about the benefits of improving web accessibility at UMass Amherst.

The Evolution of the Disability Rights Movement

In the 1970s, the disability rights movement arose to bring attention to issues encountered by people with disabilities. In this movement, people with disabilities advocated for the passage of legislation such as Section 504 of the Rehabilitation Act of 1973, which prevents the

exclusion of people with disabilities from programs that receive federal funding ("Disability History: The Disability Rights Movement (U.S. National Park Service"). Prior to the passage of Section 504, the public saw no need for disability rights legislation. Through advocacy efforts such as sit-ins in federal buildings, disability rights activists forced the public to become more aware of issues faced by people with disabilities. Section 504 also laid the groundwork for future disability legislation such as the Americans with Disabilities Act of 1990, which prohibits discrimination against people with disabilities in all areas of public life. Despite important legislation such as the ADA, people with disabilities still face discrimination.

In addition, people with disabilities developed the social model of disability to counter the medical model of disability. While the medical model of disability reduces people with disabilities to their medical diagnoses, the social model of disability asserts that societal barriers create disability (Hamraie, *Building Access* 12). Rather than acknowledge the work that society could do to minimize barriers for people with disabilities, the medical model of disability focuses on the functional limitations of people with disabilities. This focus on functional limitations marginalizes people with disabilities. Designers participate in the social construction of disability when they do not design for accessibility. By considering accessibility throughout the design process, designers can combat marginalization.

The Problem of Inaccessible Web Design

According to a WebAIM accessibility analysis of 1,000,000 websites 97.8% of websites displayed accessibility issues (Gillen). This WebAIM analysis indicates the prevalence of web inaccessibility. The organization WebAIM provides resources to designers to create more accessible web content and certifies websites' compliance with the Web Content Accessibility Guidelines (WCAG) ("About WebAIM"). Web accessibility seeks to ensure that "people with

disabilities can equally perceive, understand, navigate, and interact with websites and tools" (Henry et al.) Designers play a major role in shaping the web experiences of people with disabilities. To create more equitable web experiences for people with disabilities, designers must design for the needs of all users.

Furthermore, designers must also consider the consequences of web inaccessibility from an organizational standpoint. When designers do not incorporate feedback from people with disabilities, organizations face negative consequences. As Pernice and Nielsen assert, brand reputation suffers designers do not consider the feedback of people with disabilities, "Users with disabilities are understandably frustrated with sites that are overly difficult to use, and the companies behind these sites suffer significant damage to their brand reputation" (Pernice and Nielsen, *Usability Guidelines* 9). In conjunction with reputational damage, organizations that do not design for accessibility could also face legal consequences. For instance, The Supreme Court sided with Guillermo Robles, a blind man, in a lawsuit against Dominos, as the company violated the Americans with Disabilities Act of 1990 by not making its website and mobile app screen-reader accessible (Higgins). Such lawsuits prove costly and time consuming. In contrast, organizations that prioritize accessibility in the design process set themselves apart from those that do not (Pernice and Nielsen). People with disabilities feel more loyal to companies that design accessible sites.

As a public university, UMass Amherst must provide all students with equitable web experiences. According to the Office of Equity and Inclusion "The University of Massachusetts Amherst, as a public land-grant institution, has a responsibility to provide access and opportunities for all people, while demonstrating our commitment to inclusion of historically underrepresented groups" ("About the Office of Equity and Inclusion"). By improving web

accessibility, UMass Amherst could better support the inclusion of people with disabilities. Furthermore, improving web accessibility would also enable UMass Amherst to recruit and retain a more diverse student population. Providing equitable web experiences for all students supports the university's goal of honoring diversity and inclusion. Usability testing could help identify potential accessibility issues for people with disabilities interacting with UMass Amherst web pages. In addition, the results of usability testing could inform the design of future web pages. Furthermore, improving web accessibility would help UMass Amherst's distinguish itself in comparison to universities with inaccessible web pages. With a positive brand image, students would feel more inclined to choose UMass Amherst compared with other universities. As former UMass Amherst student Joanna Buoniconti affirms, "UMass was the only college out of the six to which I applied that exhibited no hesitation when it came to meeting my accommodations. I felt accepted and welcomed in the campus, in a way that I had not felt on any other campus" (Buoniconti). By improving web accessibility, UMass Amherst possesses the potential to act as a model for other institutions in regard to accessibility.

Universal Design Theory

Universal Design means designing products, services, and environments to make them accessible for all people. The term Universal Design first emerged from the work of Ronald Mace, a disabled architect and wheelchair user. Ronald Mace envisioned Universal Design as "'a way of designing a building or facility, at little or no extra cost, so that it is both attractive and functional for all people, disabled or not'" (Hamraie, "Universal Design" 6). In the years prior to Universal Design, rather than consider the needs of people with disabilities from the beginning of the design process, designers made retrofit accommodations to conform to regulations, which proved costly and time consuming. Universal Design showed designers that considering the

needs of people with disabilities from the beginning of the design process could save them time and money, while benefiting all people. Due to its benefits, designers began to apply Universal Design to contexts beyond architecture, such as the web.

However, in the post-ADA era, disability began to disappear from Universal Design discourse. While many thought that the ADA solved the issue of inequality between able-bodied people and people with disabilities, in reality, people with disabilities still face discrimination (Hamraie, "Universal Design" 12). Despite this fact, starting in the late 1990s, Universal Design evolved into a marketing buzzword, rather than a civil rights concern. As Aimi Hamraie argues, "By framing diversity as a marketing concept but omitting mention of disability politics and culture, disability-neutral discourses reduce functional limitation to an impartial demographic category" (15). As a marketing buzzword, Universal Design no longer served its original purpose of empowering people with disabilities. Instead, Universal Design focused on everyone's needs, without particular attention given to people with disabilities, leading to further marginalization.

Universal Design supports inclusion, usability, and accessibility by providing designers with a framework that responds to the needs of a range of users. As Sarah Horton and Whitney Quesenbery state, "The terms universal design, inclusive design, barrier-free design, human centered design, and design-for-all are all concepts that strive toward a common goal: to make the user experience the first concern in making design decisions and to expand the description of users to include a wide range of human ability" (Horton and Quesenbery 29). Inclusive design recognizes the importance of representing users of all backgrounds and abilities. For instance, inclusive design seeks not only to represent white people with disabilities, but also people of color with disabilities, whose needs often go overlooked. According to Shawn Lawton Henry et al., inclusion "is about diversity, and ensuring involvement of everyone to the greatest extent

possible" (Henry et al.) In contrast, usability seeks to make products "effective, efficient, and satisfying" for all users. Accessibility removes barriers to access for people with disabilities, thereby improving usability. As Henry et al. affirm, accessibility "addresses discriminatory aspects related to equivalent user experience for people with disabilities." For usability to prove inclusive, it must respond to the needs of people with disabilities.

A Broad Definition of Disability

According to the CDC, over a quarter of Americans over the age of 18 report having a disability, with that number increasing by age (May 10). When designers create products without considering the needs of people with disabilities, a large number of people cannot interact with those products. Furthermore, disabilities fall into multiple categories, such as sensory, physical, intellectual, developmental neurological, and psychological (May 10–13). Sensory disabilities such as blindness or deafness affect a person's ability to see, hear or feel (10). Physical disabilities such as cerebral palsy affect a person's mobility, dexterity, or stamina (12). Intellectual, developmental, neurological, and psychological disabilities affect a person's brain and nervous system (13). These disabilities often involve sensory and physical symptoms as well. In addition, disability presents as a range, and can be either temporary or permanent (9). For instance, as May states, "only 1% of Americans who are totally blind were born without vision" (11). Blindness often develops over the course of a person's lifetime, and the level of blindness a person experiences varies. Some disabilities, such as ADHD and dyslexia, may appear invisible to observers, which tends to make them overlooked in favor of physical disabilities. When designing products, designers must consider the many ways in which disability presents.

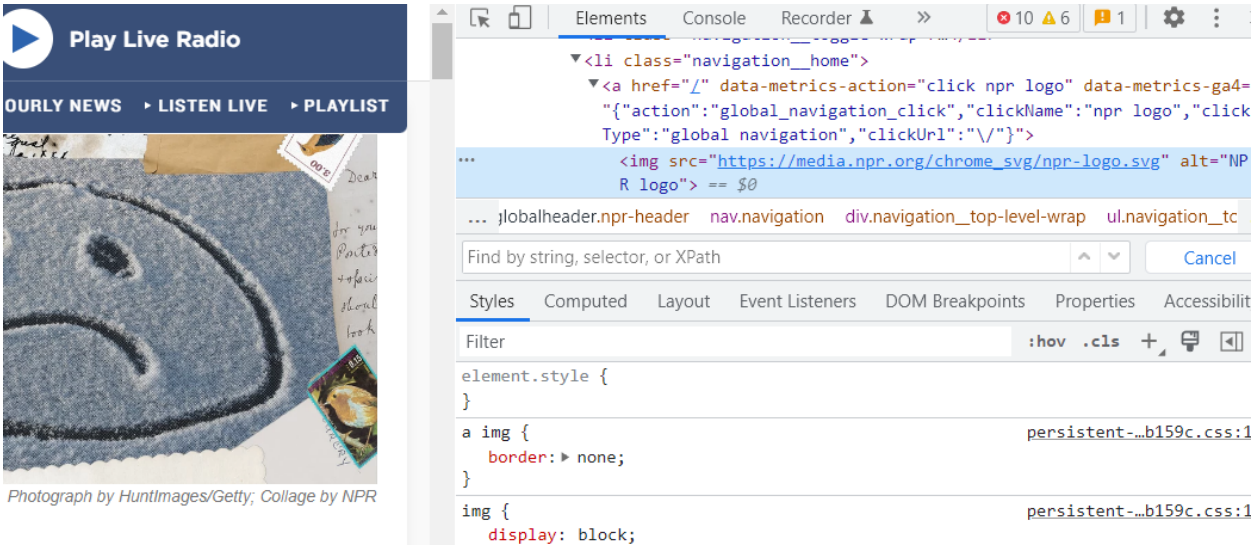
Furthermore, designers should consider the ways that disability interacts with other social categorizations such as gender, race, and age. As Goethal et al. argue, researchers often tend to make assumptions about people with disabilities, "People with disabilities are frequently assumed to share the same views, experiences, and priorities, regardless of gender, age, cultural background, sexual orientation, socio-economic status, religion, and other categories of difference," (Goethal et al. 75). Rather than view people with disabilities as a monolith, intersectionality attempts to explore the diversity among people with disabilities. An intersectional approach to disability recognizes the multiple roles and identities of people with disabilities (77). For instance, the lived experience of a white woman with a disability looks very different from that of a black, transgender woman with a disability. While a white woman with a disability might face ableism, a black, transgender woman with a disability might also face racism and transphobia. Recognizing the intersectional perspectives of people with disabilities can help combat the tendency to essentialize people with disabilities to one broad category.

Applying Web Accessibility Guidelines

Web accessibility guidelines provide designers with considerations that respond to the needs of people with disabilities. In particular, the Web Content Accessibility Guidelines (WCAG) seek to make web content more accessible to people with disabilities. The most recent version of WCAG, WCAG 2.0, breaks its guidelines into the four POUR principles: Perceivable, Operable, Understandable, Robust ("Introduction to Understanding WCAG 2.0"). For a website to conform to the POUR principles, users must be able to perceive information and user interface components, operate the user interface, and understand the information and user interface. Furthermore, web content must be robust enough so that various user agents and assistive technologies can interact with it.

Accessibility guidelines provide designers with information on how to make web content more accessible for people with disabilities. However, whenever possible, designers should avoid using accessibility guidelines as a checklist, "...when designers, developers, and project managers approach accessibility as a checklist to meet these standards, the focus is only on the technical aspects of accessibility. As a result, the human interaction aspect is often lost, and accessibility is not achieved." (Henry and Abou-Zhara). User feedback can help designers understand the human aspect of accessibility by showing designers how people with disabilities actually interact with products. However, when designers cannot get user feedback, accessibility guidelines can still provide them with a strong understanding of the technical aspect of accessibility. When designers consider both accessibility guidelines and user feedback, they can create web content that more completely responds to the needs of people with disabilities.

Figure 1: POUR Compatible Website



NPR provides an equitable web experience to all users by embedding accessibility features into the code of the website. For instance, all images on the NPR website come with alternative text, which allows screen reader users to understand their purpose and context. The above image shows alt text describing an image on NPR's homescreen.

When interacting with web content, people with disabilities often use assistive technologies to accomplish tasks. Some common assistive technologies people with disabilities use include screen readers, screen magnifiers, and modified keyboards. In particular, screen readers read text aloud for people with visual disabilities. Screen readers interact with semantic HTML on a webpage, which helps them determine the significance and context of web content. Keyboard shortcuts enable screen reader users to navigate between parts of a webpage, such as links, headings, and images, indicated in the semantic HTML. When screen readers encounter a link, they read the link aloud the user. A descriptive link, as shown in Figure 1, in contrast with an empty link, provides users with an understanding of where the link will take them. In addition, when screen readers encounter visual content, they read the alternative (alt) text embedded into the code of a web page, which provides a description of visual content. Inadequate or absent alt text, as shown in Figure 2, prevents screen reader users from interacting with visual content. For formatting consistency, designers often use styles. Styles apply semantic HTML to web content, which improves navigation for screen readers. With an understanding of the functionality of screen readers, as well as other assistive technologies, designers can better design for accessibility.

Figure 2: Using Descriptive Links

Poor (empty link)	Good (descriptive link)
Click here	Web accessibility resources at UMass Amherst

The words “Click here” do not provide information on the link’s destination.

Figure 3: Using Alternative Text

Poor	Good
A tiger.	A tiger swimming in a body of water.

Inadequate alternative text provides screen reader users with insufficient information.

When creating web content, designers must pay special attention to the visual elements of a page. For instance, low color contrast between the text and background of a web page makes it difficult for low-vision users to read text (Gillen). Providing sufficient contrast between the text improves usability for low-vision users. Horton and Quesenbery identify additional visual elements of a page that impact accessibility, “Elements of the presentation that are especially important for accessibility are…the fonts used, the text size, line spacing, and the use of white space to make areas of the screen easy to differentiate” (Horton and Quesenbery 215). Using readable and recognizable fonts such as Calibri, Times New Roman, and Arial enables people with cognitive disabilities to read text more easily in comparison with hard to read, unrecognizable fonts. Furthermore, a small font size can often pose readability challenges for low-vision users. Choosing a large font size helps low-vision users read information. Additionally, presenting information as a wall of text decreases readability for people with cognitive disabilities. Using line spacing and white space can make it easier for people with

cognitive disabilities to skim information. Presenting an accessible visual layout provides a more equitable web experience for people with disabilities.

In addition to focusing on the visual elements on a page, designers must also pay attention to their use of language. Particularly, by using plain language, designers can support a broader audience. Horton and Quesenbery define plain language as "language that fits the context and the audience" (Horton and Quesenbery 246). As shown in Figure 3, plain language allows users with low literacy and cognitive disabilities to access information more easily. Additionally, designers should avoid making assumptions about their audience's familiarity with a particular subject. To respond to the needs of users with different levels of familiarity, designers can define terms, use a glossary, and link to more detailed information (246). This way, users of all familiarity levels benefit.

Figure 3: Using Plain Text

Poor	Good
The location of the book is on top of the table.	The book is on the table.

Unnecessarily wordy information makes information less readable.

Conducting Usability Testing for People with Disabilities

Usability testing allows designers to evaluate a product by testing it on sample users. This process reveals potential problems that designers can address during the design process based on users' interaction with a product. During a test, participants try to complete tasks while observers take notes. This process helps designers understand how users would interact with a product. As Jay Dolmage states, designers must include user feedback prior to the design process, "The key to usability was, and is, the priority of feedback from users—the idea that users must be actively

involved in the continued redesign of products, interfaces, and spaces" (Dolmage 127). When conducting usability testing, designers should include people with disabilities to identify accessibility issues. Henry and Abou Zhara further assert that usability testing allows designers to humanize people with disabilities, "When designers and developers see people with disabilities use products like theirs, most are highly motivated by a new understanding of accessibility. They understand the human interaction aspects of accessibility and go beyond approaching accessibility as only a checklist item." Usability testing makes designers more invested in accessibility. Dolmage and Henry and Abou Zhara both state that usability testing provides designers with a more complete picture of the needs of people with disabilities.

When conducting usability testing of web content, designers must consider what kinds of users they want to represent. According to Horton and Quesenbery, designers should avoid grouping all people with disabilities into one category, "People with disabilities…come from a variety of backgrounds and have varied interests, likes and dislikes, goals and skills…They use different interaction techniques, different adaptive strategies, and different assistive technology configurations" (Horton and Quesenbery 41). Designers should aim to represent the four common categories of disability (visual, auditory, physical, cognitive). However, the input from one person with a disability does not apply to every person. As Shawn Lawton Henry states "to represent a range of people with disabilities, usability testing should include more than five users" (Henry). Designers should also consider selecting one to two assistive technology users with medium to high skill using their assistive technology. This way, users would spend less time trying to figure out how to use their assistive technology, and more time testing web content. Furthermore, designers should conduct usability testing "at the user's home or office" (Pernice and Nielsen, *How to Conduct Usability Studies* 4). Conducting usability testing in a

place familiar to the user allows them to feel more comfortable. Incorporating users with a range of disabilities gives designers a fuller understanding of people with disabilities' unique needs.

In addition, designers must consider whether to conduct qualitative or quantitative testing. As Kara Pernice and Jacob Nielsen discuss, qualitative testing provides researchers valuable insights with minimal cost and set-up, "qualitative studies are a sufficient, economical method for learning about usable and unusable elements in your design." (Pernice and Nielsen, *How to Conduct Usability Studies* 6). Some common tasks for qualitative testing include thinking out loud, information retrieval, and comparing and contrasting different options (140). In contrast, quantitative testing costs more and requires more planning, "Quantitative studies are costly, time-consuming, and require more usability specialists to complete them." In quantitative studies, researchers use metrics such as task time and success rate to assess various usability metrics (5). However, quantitative studies provide fewer insights into underlying design because they measure numbers. Pernice and Nielsen recommend using quantitative studies only in certain situations, "We recommend quantitative studies only when you absolutely need numeric data, are comparing two or more products, or are comparing releases of the same product to determine whether it has improved and by how much" (6). For the most part, qualitative testing provides researchers with sufficient overall information regarding usability.

Including the feedback of people with disabilities in the design process can lead to more inclusive design. As Dolmage states, inclusive design prioritizes feedback from a variety of users, "Power is shifted to the user who, through use and feedback, can illustrate the ways a technology best fits their needs, tasks, and expectations" (Dolmage 128). By giving power to users to "illustrate the ways a technology fits their needs, tasks, and expectations", designers can understand how different users, including people with disabilities, interact with products, which

can combat marginalization. When designers gain an understanding of the needs of varied users, they can better understand how to respond to the needs of all users. Furthermore, inclusive design prevents designers from viewing accessibility as a checklist. By prioritizing the human element of accessibility rather than the technical element, designers can better understand how users actually interact with their web pages.

Conclusion

In writing this literature review, I hope to shed light on the importance of web accessibility. Despite legislation, people with disabilities still face many barriers when using the web, perpetuated by web designers' lack of awareness of the importance of designing for accessibility. In recent years, people with disabilities popularized the social model of disability, which asserts that societal barriers create disabilities. Designers participate in the social construction of disability when they do not consider the needs of people with disabilities throughout the design process. Failing to design for accessibility leads to many negative consequences, such as reputational damage and marginalization of people with disabilities. My thesis seeks to inform University Relations of the accessibility needs of people with disabilities by proposing revisions aimed at improving equity for all students.

Works Cited

"About the Office of Equity and Inclusion." UMass Amherst, www.umass.edu/diversity/about. Accessed 2 Nov 2022.

"About WebAIM." *WebAIM*, https://webaim.org/about/#:~:text=WebAIM%27s%20mission%20is%20to%20expand, organizational%20leadership%20strategies%2C%20and%20vision. Accessed 30 Oct. 2022.

Buoniconti, Joanna. "Columnist Joanna Buoniconti: UMass the Best School for Me." *Daily Hampshire Gazette*, Concord Monitor, 3 May 2021, https://www.gazettenet.com/Guest-columnist-Joanna-Buoniconti-40276820.

"Disability History: The Disability Rights Movement (U.S. National Park Service)." National Parks Service, Unpr.S. Department of the Interior, www.nps.gov/articles/disabilityhistoryrightsmovement.htm.

Dolmage, Jay Timothy. "Universal Design." *Academic Ableism: Disability and Higher Education*, University of Michigan Press, 2017, pp. 127–128. *JSTOR*, http://www.jstor.org/stable/j.ctvr33d50.7. Accessed 30 Oct. 2022.

Gillen, Mary. "ACCESSIBILITY ANALYSIS: The WebAIM Million." Accessibility Testing & Remediation: Websites, PDFs, Office Docs & Videos, 12 Mar. 2019, accessiblewebsiteservices.com/accessibility-analysis-the-webaim-million/. Accessed 30 Oct. 2022.

Hamraie, Aimi. *Building Access: Universal Design and the Politics of Disability*. University of Minnesota Press, 2017, p. 12.

Hamraie, Aimi. "Universal Design and the Problem of 'PostDisability' Ideology." Design and

Culture, 19 Aug. 2016, pp. 6–15.

Henry, Lawton Shawn. “Accessibility in User-Centered Design: Planning Usability Testing.” *Just Ask: Integrating Accessibility Throughout Design*. www.uiaccess.com/accessucd/ut_plan.html#characteristics. Accessed 30 October 2022.

Henry, Lawton Shawn, et al. “Accessibility, Usability, and Inclusion.” *W3C: Web Accessibility Initiative*, 6 May 2020, www.w3.org/WAI/fundamentals/accessibility-usability-inclusion/. Accessed 30 Oct. 2022.

Higgins, Tucker. “Supreme Court Hands Victory to Blind Man Who Sued Domino's over Site Accessibility.” *CNBC*, CNBC, 8 Oct. 2019, https://www.cnbc.com/2019/10/07/dominos-supreme-court.html. Accessed 30 Nov. 2022.

Horton, Sarah, and Whitney Quesenbery. A Web for Everyone: Designing Accessible User Experiences. Rosenfeld Media, 2015, pp. 27–246.

“Introduction to Understanding WCAG 2.0.” *W3C*, 2016, https://www.w3.org/TR/UNDERSTANDING-WCAG20/intro.html. Accessed 30 Oct. 2022.

May, Matt. Disability: Module 3. *Adobe*, 2020, pp. 9–13.

Nature Noon. “Tigers Swim and Cats Are Afraid of Water: Why?” Nature Noon, 7 Feb. 2022, naturenoon.com/tigers-swim-cats-afraid-of-water/. Accessed 2 Nov. 2022.

Pernice, Kara, and Jakob Nielsen. *How to Conduct Usability Studies for Accessibility*, Nielsen Norman Group, 2012, pp. 5–9.

Pernice, Kara, and Jakob Nielsen. *Usability Guidelines for Accessible Web Design*, Nielsen Norman Group, 2001, p. 9.

Tina Goethals, et al. “Weaving Intersectionality into Disability Studies Research: Inclusion, Reflexivity and Anti-Essentialism.” DiGeSt. Journal of Diversity and Gender Studies, vol. 2, no. 1–2, 2015, pp. 75–77. JSTOR, https://doi.org/10.11116/jdivegendstud.2.1-2.0075. Accessed 31 Oct. 2022.

3. **Method**

I am hoping to recruit 5-8 UMass students or employees who self-identify as having a disability that affects their ability to use a website. Participants might include, for example, people who are blind or have low vision, have limited mobility in their hands, or have dyslexia or ADHD. All participants will be over the age of 18. I hope to identify ways to create more equitable web experiences for people with disabilities.

During the study, participants will first read the consent form. This consent will: 1) describe the web-based activities in the study, and 2) explain that the study will track and record their on-screen navigation of the website, as well as recording their verbal and facial reactions as they navigate these web pages. Following the informed consent, the participants will complete the usability testing tasks. These tasks will center around navigating and reacting to UMass Amherst financial aid pages. Using hypothetical data provided by me, participants will complete tasks that include navigating UMass webpages to locate information on the estimated total cost of attendance, calculating the cost of attendance minus grants for a hypothetical student, evaluating housing options, evaluating dining options, and finding scholarships. During these tasks, participants will be using a "thinking out loud" procedure of verbalizing their reactions (confusion, decisions, etc.) as they navigate the web pages. After completing the web-page navigation tasks, participants will complete a qualitative interview with me to assess their experiences and reactions to the task. The participants will then be debriefed and have time to ask questions and provide feedback.

4. **Evaluation**

My research committee expects me to complete a report suggesting revisions to University Relations based on the results of my qualitative usability testing by May 8th. My committee chair will provide feedback regarding my progress in weekly check-in meetings over

Zoom. My committee will determine the viability of my Honors Thesis Portfolio with oral defense by assessing my use of usability testing best practices to complete my research. These practices involve recruiting participants, conducting usability testing, and writing a report in a standard format for communicating results and methods in the field of user experience. This report will follow the same format of successful PWTC (Professional Writing and Technical Communication) lab reports previously submitted. In addition, my committee will assess my report for clarity, completeness, skimmability, and accessible documentation best practices. The artifact that I will produce in conjunction with my literature review is my report to University Relations presenting the findings of qualitative usability testing.

5. **Communication**

I will meet with my committee chair for an hour over Zoom on a weekly or biweekly basis throughout the semester depending on need. I will meet with my full committee at the end of the semester in a Zoom meeting to conduct my oral defense. I will prepare for meetings with my committee chair by creating a meeting agenda outlining action items, progress, and questions. I will share my meeting agenda with my committee chair the day prior to each meeting, per my committee chair's expectations. During these meetings, I will talk about my progress and ask questions related to my research. At the end of these meetings, I will discuss action items for the following week. I will dedicate nine hours to my research in between meetings with my committee chair.

6. **Timeline**

All dates listed in this section are subject to change depending on when the IRB approves my research protocol. After the IRB approves my research protocol, I will tentatively recruit participants from February 6th to February 20th. After this recruitment process, I will conduct

usability testing between February 21st and March 6th. I then will organize my findings ahead of writing my report between March 7th and March 20th. After organizing my findings, I will create an outline between March 21st and April 3rd. Between April 4th and April 17th, I will create a first draft. From April 18th to May 2nd, I will create a second draft, with my final draft due May 8th. I will meet with my full committee to conduct my oral defense over Zoom on May 15th.