
A Review of Accessibility in Online Higher Education

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Abstract

The proliferation of the Internet, computers, and mobile devices means that students of all ages, socio-economic statuses, geographical locations, and abilities have access to higher education institutions that were previously unavailable. As the population of the United States ages and the number of students with diagnosed disabilities grows, colleges and universities will be challenged to accommodate the various needs of their student population. Distance education is often seen as an appropriate outlet to increase enrollment numbers and provide education to students with motor, cognitive, visual, and auditory impairments. Instructional designers, instructors, and institutions are tasked with designing, developing, and maintaining accessible hardware, software, websites, and other technologies that allow disabled students to actively engage in education and become more independent. This paper will discuss how various disabilities effect college coursework and review the best practices, methods, and technologies utilized to create an inclusive education for all learners.

A Review of Accessibility in Online Higher Education

Distance education as a concept has existed since the 1880s and has advanced through the years to arrive at the age of the Internet and web-based learning. Along the way, access to online learning has allowed students with disabilities to learn without prohibitive physical limitations found on the campuses of higher education institutions. The increased use of web-based and mobile technologies improved the access to a quality education for persons with disabilities who may have otherwise been unavailable to them. There are several laws that speak to accessibility including Title II and Title III of the Americans with Disabilities Act, Section 504 and Section 508 of the Rehabilitation Act, and the IDEA Act (the Individuals with Disabilities Act) (Kelly, 2018). To prevent discrimination and inaccessibility, the United States Access Board passed what has become known as section 508 to require that all government funded technology be accessible per the standards and regulations provided.

Originally, section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d) requires that when Federal agencies develop, procure, maintain, or use electronic and information technology, Federal employees with disabilities have access to and use of information and data that is comparable to the access and use by Federal employees who are not individuals with disabilities, unless an undue burden would be imposed on the agency. Section 508 also requires that individuals with disabilities, who are members of the public seeking information or services from a Federal agency, have access to and use of information and data that is comparable to that provided to the public who are not individuals with disabilities, unless an undue burden would be imposed on the agency. (USAB, 2000, § 1194.1, Purpose) Over time, due to court interpretations and revisions to

policies, rules, and laws, the United States Access Board published a final rule that became effective January 18, 2018 changing the scope and specificity of Section 508 which updated the requirements for information and communication technology. Given most colleges and universities take federal funding, it is widely accepted that they are subject to accessibility requirements under Section 508. It is “becoming one of the most challenging areas for higher education to recognize and address proactively. The increase in complaints and lawsuits. . . indicate that this is an area of concern that will not go away” (LaGrow, 2017, para. 1).

Universities, instructors, and instructional designers are federally mandated to accommodate students with impairments that may affect their ability to take coursework in person and online. With nearly one in five people having a disability, according to the United States Census Bureau, designing instruction that is accessible to all types of students is an ongoing challenge as technology evolves and mobile learning increases, specifically regarding distance education. Providing accessible courses is a daunting task that requires the cooperation of many entities. Due to federal regulations, the many types of disabilities, and assistive technologies available, universities would benefit from a centralized department focused on accommodations. This department would be responsible for ensuring the needs of both instructors and students are satisfied and inform all parties of the advantages and disadvantages that are involved with meeting accessibility requirements. The perspective taken is one of *proactivity* meeting Section 508 mandates. This literature review will discuss the types of disabilities that may hinder a student’s ability to successfully complete online courses and review the best practices, methods, and technologies available to create inclusive educational opportunities for all students.

Literature Review

The Americans with Disabilities Act of 1990 (ADA, 1990) defines a disability as a physical or mental impairment that substantially limits one or more major life activities of such individual. People living with one or more disabilities face limited access to physical structures and the increase in distance education in secondary and higher education seemingly provides a solution for those persons to pursue or continue their learning goals. However, despite being able to conduct learning events in an online environment, many institutions, instructors, and instructional designers do not take the necessary extra steps to ensure their material is accessible to all types of students. Colleges and universities typically handle accommodations on a case-by-case basis, providing individualized support as students self-disclose their disability. Once reported and documented, institutions are required to arrange reasonable accommodations and communicate with instructors on the specific needs of each student. Yet, most research on accessibility reports that incorporating accessibility tools and options proactively into a course benefits all students, even those without a disclosed disability. Therefore, accessibility should be included in the analysis, design, development, and implementation phases of course development for all online courses to improve accessibility for all students. By preparing for and including the needs of disabled students automatically in the curriculum, institutions will be able to provide equal access to students on the front end, such as large print or text-to-speech, and will only need to add additional accommodations for students who have very explicit and individualized needs.

Many universities pride themselves on establishing, promoting, and upholding core values. Those ideals represent the environment, goals, and philosophy of the school and places accountability on the faculty, staff, administrators, and students to meet those standards. Accessibility includes acceptance and understanding for people with different abilities and backgrounds. Despite the insertion of these core values, stigmas and barriers or impaired students still exist at many colleges and universities (Marquis, Jung, Schormans, Lukmanji, Wilton, & Baptiste, 2016). Professional development regarding accessibility and inclusivity are needed to provide strategies, resources, and design principles to increase the awareness of these issues on campuses. Physical disabilities, such as blindness, hearing impairments, and immobility, are the most commonly recognized disabilities. While commonly recognized, these are low incident disabilities. There are many ways in which

individuals can be diagnosed with a disability. The United States Census Bureau has reported that as many as one in five people have a disability (USCB, 2012) that can interfere with the use of a computer and a survey conducted by the Center for Disease Control indicated that at least 27 million working age Americans have disabilities that could interfere with e-learning (Buzzard, 2004). Learning disabilities such as lack of computer literacy, dyslexia, illiteracy, auditory and visual processing disorders are of the greatest concern for academic institutions as they are often undiagnosed, undisclosed, and differ greatly between individuals. Modifying face to face courses and previously existing online courses to accommodate students with so many varying types of disabilities is an arduous task for instructors and instructional designers. Due to the federal mandate passed by the Rehabilitation Act Amendments of 1998, section 508, the repercussions for non-compliance of accessible web sites, software, hardware, and computers include the loss of federal funding and litigation. In response to the federal guidelines, instructors and instructional designers are becoming more familiar with screen readers, closed captioning, and the ability to modify text size on screens; yet, there are still improvements that can be made to provide students a better learning experience regardless of ability.

Types of Disabilities

Visual impairments/processing. The United States Census of 2010 reported that eight million people have impaired vision and two million are completely blind (Bozarth, 2015). Accessibility compliance for students who are blind, have low vision, and/or color blindness requires the use of assistive technology. Assistive technology refers to the equipment, software, and any other technology-based device that can assist a person with disabilities in their daily activities. Many common applications, software, and websites have already imbedded assistive technologies into their systems. Instructional designers must be aware of these technologies and use them to the benefit of all learners and design courses that are compatible for students who need additional services. Screen readers, braille displays, screen magnification, and speech to text technology are some of the types of assistive technologies available for students with vision impairments. Additionally, when charts, graphs, and pictures are used, designers will need to include an accurate and detailed description in the event the assistive technology cannot be used or is incompatible.

Auditory processing/hearing impairments. When using video or other multimedia graphics, synchronized closed captioning should always be available. Despite its popularity, many pre-recorded YouTube videos are not captioned; therefore, use of someone else's video is not recommended. Deaf and hard of hearing students will also take advantage of videos that have adequate lighting for those who use lip-reading as a technique to overcome auditory issues. Other students with auditory processing disabilities or who are deaf/hearing impaired will need an interpreter.

Cognitive disabilities. This is a broad concept encompassing many intellectual or cognitive deficits, "including intellectual disability, deficits too mild to properly qualify as intellectual disability, various specific conditions (such as specific learning disability), and problems acquired later in life through acquired brain injuries or neurodegenerative diseases like dementia" (Disabled World, n.d., para. 2). These types of disabilities are often invisible to the naked eye, which means they must be self-disclosed and are often overlooked by instructors. Because cognitive disabilities are so broad and affect each individual in their own way, accessibility tools should include as many options as reasonable. In addition to assistive technology, including multiple avenues to complete assignments, exams, papers, and discussion posts is another way to be inclusive. Students with cognitive disabilities also benefit from the accommodations for other impairments, as well as having unlimited access to the resources, materials, and course syllabi online.

Physical impairments. Motor disabilities require equipment for each learner dependent upon their specific needs. Wheelchairs, walkers, and prostheses are all physical indications of a disability and access to distance education allows these students to be able to take courses without needing to

navigate classrooms, doorways, and other barriers. Since these learners may have limited to no mobility, courses will need to have the option for keyboard shortcuts and setups for mouth sticks or hand wands. The inclusion of an easy to find menu and keyboard navigation will also enhance the operation for students using mobile phones and tablets without access to a standard mouse. Instructional support staff will need to research the equipment used by students with motor impairments to ensure software and hardware is compliant with those products.

Information and Communication Technologies

Though the use of assistive technologies is beneficial to many with physical disabilities, they may be cost prohibitive or unavailable for the lower-income population of students. As stated by Barlott, Adams, and Cook (2016), for persons with disabilities in lower-income countries to participate fully in society, mainstream information and communication technologies should be used as assistive technology. Information and communication technologies, also known as ICT's, are mobile phones, tablets, and smartphones that are more commonly used and available to individuals of all income levels worldwide. Given this fact, designers and instructors will benefit greatly by developing online education modules and courses that can be used via handheld devices and are compatible with multiple operating systems.

Disadvantages

A common misconception about asynchronous online courses is that they will be less time intensive and allow for more freedom than traditional face to face classes. However, distance education courses require the same, if not more, time investment, personal responsibility, and accountability. Therefore, while distance education is a viable option for students, specifically with motor disabilities, the current format for online learning may not be the best fit for students with other impairments. Students with cognitive disabilities may require more instructor-to-student interaction, student-to-student interaction, extra time to complete assignments, in addition to assistive technology and equipment. Asynchronous online classes are typically designed for the student to manage their own time and resources without instant feedback and communication from the instructor. Utilizing effective strategies for students with disabilities needs to be considered during the initial phases of course design, rather than modified afterwards to accommodate the needs of all students.

Advantages

Conversely, there are benefits of distance education for students with impairments. Many online classes are formatted with the readings, assignments, grading rubrics, and expectations outlined in the course syllabus and/or on the learning management system. Discussion boards, synchronous sessions, and access to the instructor's contact information provides all students the ability to read, review, and prepare as necessary for their specific needs. Rao, Edelen-Smith, and Wailehua (2015) found that when instructors provide natural supports for learning, teaching methods that consider diverse learning styles, flexible options, and a consistent format, students perform better and report a positive experience.

Administrative perspective

In addition to the Americans with Disabilities Act of 1990 and section 508, the U.S. federal government has also passed the "E-government Act, the Telecommunications Act of 1996, and the Twenty-First Century Communications and Video Accessibilities Act" to prevent discrimination against persons with disabilities (Jaeger, 2014). Unfortunately, many institutions implement changes only when these laws and regulation are enforced to avoid costly lawsuits, loss of government funding, and other penalties (Hollins & Foley, 2013). Studies have shown that instituting accessibility standards at the onset is a significant savings to adjusting for accommodations after a system has been developed and launched.

Institutions around the world are creating policies to provide support, guidelines, and strategies for students with disabilities to establish consistency and equity across all platforms. These policies can dictate use of colors, font sizes, graphics, navigation, and other tools to increase the usability of their websites and e-learning software. Navigational consistency aids students with disabilities to expect where certain functions are located regardless of which page of the website they need to utilize. There are still many more advancements that need to integrate into online education to properly advocate for and support the disabled population and administrators should be at the forefront of these improvements.

Instructor perspective

Creating an accessible online course requires more time, effort, and resources in the design and development stages and frequent monitoring throughout, which is a deterrent for instructors and instructional designers to incorporate accessible elements into their courses. Additionally, meeting section 508 standards without adequate compensation and workload considerations are impediments to consistent and thorough accessibility options. Providing incentives, like the Provost at the University of South Carolina implemented, to pay instructors a bonus after converting face to face courses to online or blended, is an opportunity to promote accessibility on campus (Moorefield, Copeland, & Haynes, 2016). Instructor support can also stem from accessibility working groups or committees, where teachers from different departments work together to ensure accessibility standards are met and issues are managed consistently and equitably (Slater, Pearson, Warren, & Forbes, 2015). Once accessibility software and websites are in place, routine monitoring and trainings need to occur to avoid the possibility of inaccessibility each time a student, instructor, staff, or guest wishes to seek information. The formation of committees, incentives, and guidelines would assist and provide support to instructors to encourage incorporating these requirements into their curriculum and courses.

Student perspective

Since its inception, distance education has been used to serve students of different abilities, economic statuses, and geographical locations. Online courses benefit students with various impairments because it removes the physical obstacles faced when traveling to and attending traditional courses on a college campus. Many higher education institutions have an accommodations office available and studies report that most students will self-report and take advantage of the available assistive technology and additional resources. Still, some studies suggest that students with disabilities experience higher levels of learning-related anxiety because of outdated assistive technologies, cognitive difficulties, and decreased student-instructor interactions (Oh & Lee, 2016). When instructors maintain open and consistent communication, students are more likely to complete the online course and gain confidence to continue their education.

Conclusions

Universities have a responsibility to offer accessible websites that are compatible with assistive technologies to be open to students of diverse backgrounds beyond race, gender, orientation, religion, and class. A challenge to increasing the availability to accessible higher education is the lack of consensus on the definition of the concept, which possibly limits the potential benefits (Persson, Ahman, Yngling, & Gulliksen, 2014). Many names and descriptors are used to label accessibility, including universal design, inclusive design, accessible design, and barrier-free design and each term varies among disciplines, professions, and countries. Persson et al. (2014) advocate that a clearer definition will promote awareness, facilitate discussion, enable implementation and promote the development of better methods for increasing accessibility.

In the United States, a push for lifelong learning means that academic institutions will no longer cater only to the youth, but also to the Baby Boomer generation which is aging rapidly and will use

most, if not all of the accessibility options available. Accessibility is less about labeling specific physical, cognitive, and learning disabilities, but closing the gap between individuals and their difficulty interacting with specific products and services. Based on this idea, Persson et al (2014) defines accessibility as the extent to which products, systems, services, environments, and facilities can be used by a population with the widest range of characteristics and capabilities to achieve a specified goal in a specified context. A common definition will promote unity between nations, programs, professions, and educational institutions to move forward in their mindset of providing accessible tools, goods, and services as a benefit to the population at large.

A more proactive approach than has been taken seems warranted. The danger in doing so, however, is that existing staff and resources can be overburdened without careful planning. Relying too heavily on faculty members to design courses for accessibility is a danger in the approaches advocated in this paper. Fortunately, new versions of hardware and software continue to include better features that benefit accessibility. This, along with IT staff, student disabilities services, instructional designers and faculty can also help improve accessibility for persons with disabilities in online classrooms.

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