Accessible Distance Education 101

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Abstract

Currently, there is a quiet but insistent discussion gaining voice and prominence among educators, legislators, and students alike to actively evaluate and enforce the development of new standards that address the specific educational accessibility needs of those individuals with disabilities. Unfortunately, understanding the process of implementing accessible distance education has been slow to come to fruition despite the increasing enhancements of technology. With each new technology developed and implemented by institutions of higher learning, the need to address the accessibility component of each course offered is essential. Since approximately 600 million people worldwide have some type of disability, public and private entities should be aware of the many issues which may affect the learner of the media being utilized (United Nations Educational, Scientific and Cultural Organization, 2006). Campuses are pushing the latest and greatest technology in regards to distance education, but as the debate regarding online accessibility continues, institutions are in need of comprehensive training in order to work proactively to ensure that all learners can benefit. The key to moving toward full and equal accessibility for everyone begins with a clearly defined definition of the term, as well as an understanding of the term in relation to the types of technology that exist.

Begin with Keywords: accessibility, compliance, disability, distance education, higher education

Accessibility's Legislative History

In 1973, Congress laid the groundwork for the equal access for all Americans when it passed Public Law 93-112 Rehabilitation Act. The law advanced the Civil Rights movement and mandated that all persons, whether disabled or not, have equal access to employment. The Rehabilitation Act of 1973 was designed primarily to help people with disabilities obtain, maintain, or retain employment. However, the Act also contained Title V, Section 502, provisions which mandated accessibility of buildings and telecommunications. Section 504 of the Rehabilitation Act of 1973 also states that … "no otherwise qualified individual with a disability… shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal Financial assistance…" (U.S. Department of Labor (USDOL), 2006). Within this statement, institutions of higher learning are included, as is any public system of higher education (USDOL, 2006). This law laid the groundwork for more extensive legislation that would be established within the next seventeen years.

In 1990, Public Law 101-336, the Americans with Disabilities Act (ADA), was passed, which covers disability compliance for all aspects of society, ranging from "commercial establishments, public accommodations, and telecommunications…" (Wheaton & Granello, 2003, p. 4). The ADA is built on an existing foundation of which all private business, as well as local, state, and federal governments, are mandated to make their products and services accessible to all people, including those with disabilities, in order to be in compliance with equal access regulations. To clarify, the ADA addresses four main areas of compliance: ". . . (a) the full participation and maximum independence of people with disabilities, (b) the dynamic nature of disability, (c) discrimination as encompassing both prejudice and barriers, and (d) environmental alterations to reduce functional limitation" (Danek, Conyers, Enright, Munson, Hanley-Maxwell, & Gugerty, 1996, p. 40). While the ADA strengthened the foundation for equal access for all, future amendments addressed the technology boom that took place in the 1990s.

In the 1990 ADA legislation, Congress did not specifically mention web pages or online courses, although Section 508 of the Rehabilitation Act does stress that federal and state agencies will ensure their electronic information is accessible to all. Section 508 was established in 1998 as an amendment to the Rehabilitation Act and was designed to specifically set minimum guidelines for information and technology accessibility standards for electronic information. "Such information must be available in alternate formats upon request at no additional charge. Alternate formats or methods of communication can include Braille, cassette recordings, large print, electronic text, Internet postings, TTY access, and captioning and audio description for video materials" (General Services Administration, 2006). Accessible distance education would also be included under Section 508. Since the passage of these laws, new standards have been developed to ensure that electronic information will be accessible to persons with and without disabilities. However, until recently, accessibility in distance education programs has not been formally addressed.

Accessibility and Distance Education: The Necessity of Reciprocal Recognition

When developing courses for online instruction, it is essential that educators are equipped to meet the needs of all of their potential audience members, which may include individuals with disabilities. By taking the approach that meeting accessibility standards is a tool to enhance

learning, it becomes a fundamental element to the educational success of all students, which is the central value of any educator and/or educational institution. Understanding accessibility as a skill that can be taught is essential to the overall success of a particular program or course, and educators will more readily embrace the concept and take action. If implementing accessibility is communicated to be a method in which all faculty members are invested, then the collective body will be more apt to move toward such design. Since approximately 600 million people worldwide have some type of disability, public and private entities should be aware of the many issues which may affect the learner of the media being utilized (UNESCO, 2006). It is also important that designers and instructors recognize the difference between accessibility and usability with regards to course design. By making online courses accessible, educators will be making the course usable by all persons regardless of whether or not a disability is present.

In light of the growth pattern of distance education across the nation and the globe, making online courses accessible can easily fit into any institutional vision. In a Sloan study conducted by Allen and Seaman, surveys were sent to the chief academic officers of 4,491 institutions of higher learning, of which 2,251 responses (50.1% response rate) were combined with responses from annual surveys encompassing 2002 through 2005 to determine a growth rate of and commitment level to distance education (2006). Results of the study illustrated "…that almost two-thirds of all institutions of higher education currently have some form of online course or program offerings" (Allen and Seaman, 2006, p. 133). In addition, the overall agreement with the statement that "online education is critical to the long term strategy of their school" was found to be at 58.4% for the 2006 survey year (Allen and Seaman, 2006, p. 137). Clearly, it is of equal importance for educators to recognize the difference between accessibility and usability in order to adequately assist students with disabilities via distance.

Usability affects all users of electronic information, and all users are equal. Accessibility, however, affects whether a person with a disability can access a website or the corresponding course materials; thereby, materials that are usable are not automatically accessible. Herein lies the true distinction between these two buzz words of the technological age, and it is this distinction, so minute in it application but so vastly different in terms of implementation, that initiates heated debates over exactly what qualifies as fully accessible or simply usable. Trying to find a starting point for coming to terms with the necessary knowledge and skill base for this implementation can be both frustrating and overwhelming. While it is clear that institutions of higher learning are pushing the latest and greatest technology in terms of distance education, the hope is institutions will come to terms with accessibility – its meaning and its application – proactively rather than reactively. Only via such a thoroughfare will accessibility standards not only be met but exceeded. Since exceeding standards of academic rigor, faculty excellence, and accreditation are part of the norm in higher educational institutions, then the discussion regarding meeting accessibility standards should be focused on supporting these ideals.

To emphasize an earlier point, educators must understand the importance of accessibility and how it affects all members of the audience for which the instruction is intended. They must ensure that when they are developing online education programs their "materials are developed in more than one media to allow all students access…" as well as those with mental, physical, or other sensory disabilities (Persichitte, Ferrell, Lowell, Nathan & Roberts, 2000, p.157), and "all potential characteristics of participants are considered" (Burgstahler, 2001, p. 5), since their target audience will most likely contain people with disabilities in light of the exponential growth of distance education globally. Making sure that all the information is in an accessible format will ensure equal access for all. In 1996, the U.S. Department of Justice ruled that all distance

education courses must be fully accessible to all qualified people with disabilities who enroll in the course (Burgstahler, 2006). Instead of waiting for users to find out that the programs are inaccessible, institutions should provide educators with the necessary tools and training to address accessibility issues in terms of course design.

Multimedia and Disabilities

Accessibility standards have been developed by the World Wide Web Consortium (W3C) based on the mandates set out by Section 508 of the Rehabilitation Act, as well. W3C is an international consortium made up of organizations, the general public, and W3C staff that work to develop standards for the Web, including those that deal with accessibility. Accessibility standards that have been created continue to grow as more and more individuals seek the convenience of distance learning as the only means through which they can obtain a quality education without sacrificing career and family obligations. The standards set forth by the W3C are considered the benchmark for web accessible sites and pages. In order to fully understand the issues with respect to accessibility to online instruction, it is helpful to understand the groups that are most affected, as well as identify the most common roadblocks they are experiencing. Typically, these groups are comprised of people with hearing, visual, mental, and/or mobility impairments (Burgstahler, 2002; Foley & Regan, 2004).

When considering the accessibility of multimedia and people with disabilities, it is helpful to understand how they may use that media. Table 1 illustrates how certain disability groups may access online materials (Thompson, Bethea, 1996; Thompson, Bethea, Rizer, & Hutto, 1997, 1998; Georgia Tech Research on Accessible Distance Education, 2005; Nielsen, 2000). The information provided in Table 1 is not meant to be all inclusive but is intended to provide a basic overview of issues which most often affect these groups. The best starting point for further research is to ask the students what they can and cannot access.
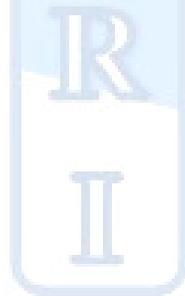
Table 1: Select disabilities and how they interact with different types of media.

Disability Type	Access Issues	Possible Modifications
Hearing or Hard of Hearing	• Unable to hear audio based materials. • Background noise may impede ability to hear.	• Closed or open captioning of media. • Transcripts for audio based files. • Use of video cues as well as audio cues.
Blind or Low Vision	• May not be able to see or read small text or graphics. • Materials may not be accessible to the assistive technology devices used by the student. • Screen readers or magnification software most often used.	• Provide alternative text write up. • Save PowerPoint slides as rich text. • Provide descriptive text for other visual information. • Order texts in Braille. • High contrast between background and foreground colors. • Format to allow for mouseless operations.
Mobility Impairments	• May have limited use of hands and arms. • May also have decreased eye-hand coordination. • May be unable to use mouse or make multiple key strokes. • May require the use of screen reader.	• Provide alternative text write up. • Save PowerPoint slides as rich text. • Provide descriptive text for other visual information. • May need information presented in a format in which the student can control the pace of instruction. • Format to allow for mouseless operations.
Learning Disabilities	• May not be able to process information if material moves too quickly. • Material presented with too much background can be distracting.	• Provide information in an alternate format. • May need information presented in a format in which the student can control the pace of instruction. • Provide written instructions.

Accessible Software

A closer examination of distance education platforms and software used to develop distance programs are the basis for determining if those programs meet current accessibility standards. For example, Adobe, the developer of such programs as Adobe Acrobat and

Macromedia's Dreamweaver, is one of the leading organizations working toward ensuring that users of its software products develop sites that meet the current accessibility standards. For example, Adobe products are often used to convert existing materials into accessible products, such as PDF or HTML documents. Macromedia has developed and implemented accessibility checks into their most recent versions of Dreamweaver. These checks enable educators to immediately identify areas of their online courses that do not meet accessibility standards. In the Preferences section, the educator can select the features that they want to make accessible. For example, if the educator has inserted a graphic into the page, the Dreamweaver program will prompt for alternative text to be added. When the mouse then glides over the graphic, the alternative text will appear, telling the student what the graphic was designed to display. If the graphic is intended to provide a great deal of information, the long description option will need to be utilized. Long descriptions are typically separate text and describe in great detail what the image is.

Cascading Style Sheets (CSS) is a style document which dictates how the document should appear and is usually saved as a separate document referenced in the header section of the mark-up. This feature is very popular in that it allows for easy access to codes used for styling, and if the code needs to be changed, educators need only make the appropriate change in one place in order to affect the entire document. CSS not only determines the style of the document but helps with the accessibility of the layout for tables, forms, and graphics within the document.

Although people with disabilities can adjust their browsers to make most pages accessible, the most effective way of making online materials accessible is to design sites using accessibility features that are built into the program (Mills, 2000). Dreamweaver does that for educators; in fact, they do not even need to know all of the regulations. If a problem arises, Dreamweaver will alert educators as to what the problem is and why. This validation check makes it easier for educators to identify, correct, or avoid inaccessibility issues in the earliest stages of development (Mills, 2000). Dreamweaver will check all the multimedia files and prompt educators to add the accessibility elements required for that media; thus, it has passed the accessibility test to date.

Ensuring Online Accessibility

Currently, many validation tests are available to determine if online documents and web pages are accessible. In 1990, when the W3C was officially established, its main objective was to make the web accessible to all users. The Web Accessibility Initiatives (WAI) and Web Content Accessibility Guidelines (WCAG) are the two key guidelines developed by the W3C designed to assist with accessibility regardless if the student(s) has a disability (W3C, 2006b).

To begin, the WAI is comprised of five priority areas that educators use as tools to address accessibility issues. The five priority areas are technology, guidelines, tools, education, and outreach, with research and development components included. If a noncompliant accessibility issue arises within a document and educators are unsure of how to rectify it, they are directed to the W3C website and provided the WAI guidelines with applicable examples of how to resolve the problem and become compliant. Additionally, the WCAG works within a set of priorities and guidelines created to assist educators in order to make all web-based documents accessible to people with disabilities. Each guideline has a checkpoint, each checkpoint has a priority, and each priority has a conformance standard. The checkpoint priorities are illustrated in Table 2 (W3C, 2005).

Table 2: Checkpoint Priorities

Priority 1	Content "**must** satisfy this checkpoint. Otherwise, one or more groups will find it impossible to access information in the document".	"Satisfying this checkpoint is a **basic requirement** for some groups to be able to use Web documents".
Priority 2	Content "**should** satisfy this checkpoint. Otherwise, one or more groups will find it difficult to access information in the document".	"Satisfying this checkpoint will **remove significant barriers** to accessing Web documents".
Priority 3	Content "**may** address this checkpoint. Otherwise, one or more groups will find it somewhat difficult to access information in the document".	"A Web content developer Satisfying this checkpoint **will improve access** to Web documents".

Conversely, WCAG conformance standards indicate at what level the site has met the established priorities. There are three different levels of conformance as illustrated in Table 3 (W3C, 2005). Designers of online materials should aim for Priority 3 and a Conformance Level of "Triple-A."

Table 3: Conformance Standards

Level A	All Priority 1 checkpoints are satisfied
Double-A	All Priority 1 & 2 checkpoints are satisfied
Triple-A	All Priority 1, 2 & 3 checkpoints are satisfied

It is important to note when discussing accessibility compliance that there are many different types of evaluation and repair tools available that can be used to determine if online materials are meeting even the minimum standards of accessibility. Most of these do not cost educators anything but are an excellent resource for providing immediate accessibility feedback. *Bobby was* the most recognized evaluation tool that provided a free service to allow educators to check and repair accessibility barriers. Since Bobby's acquisition by IBM in 2007, it is no longer available (Utah State University, 2009). However, a variety of free resources are available to take *Bobby's* place. One such product is WebAim's WAVE (2009). WAVE will check individual pages to see if it conforms to the WCAG and Section 508 guidelines (see Table 4). Upon completion of the check, *WAVE* provides a report indicating where the barriers to accessibility lie and the guidelines for repairing them (see Table 5). Each symbol tells the web developer what the specific accessibility barrier and how to fix the problem. In addition to *WAVE*, the W3C offers a free HTML validation checker, (See Table 6) which incorporates the W3C standards and ensures that the page and its contents work in all accessible formats (W3C, 2006a; W3C, 2006b). Table 7 illustrates the final report for that particular webpage. The report highlights the line where the error occurred and a brief description of the problem as well as suggestions for repairing the error.

Table 4. WAVE checking a website for accessibility.
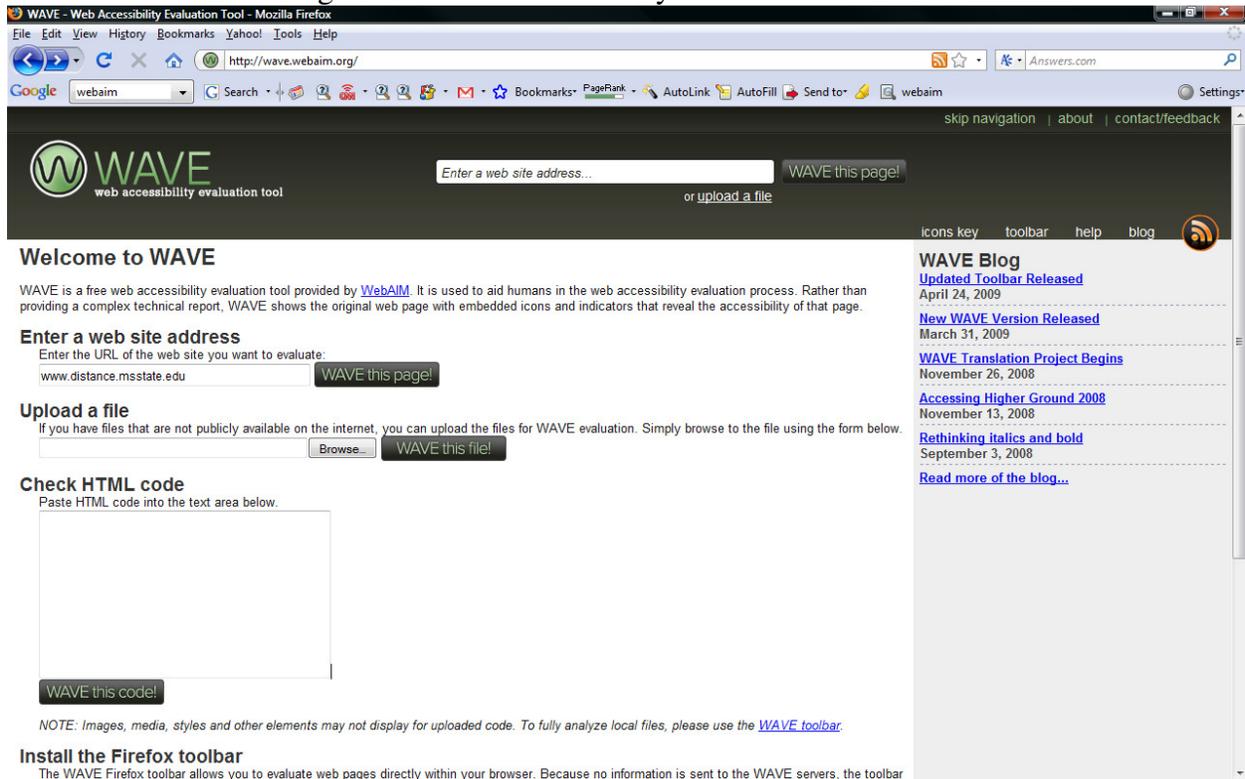

Table 5. WAVE Accessibility Report
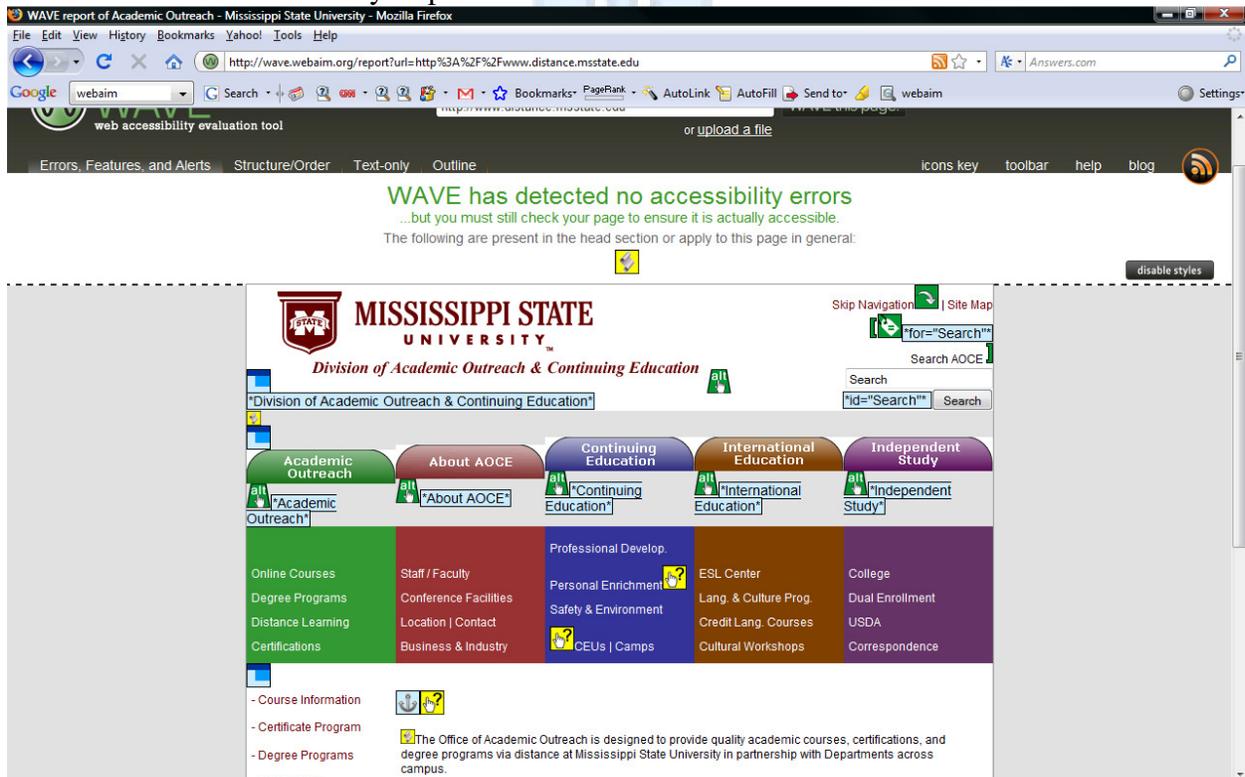
Table 6. W3C Checking website for accessibility.

Table 7. W3C Accessibility Report.
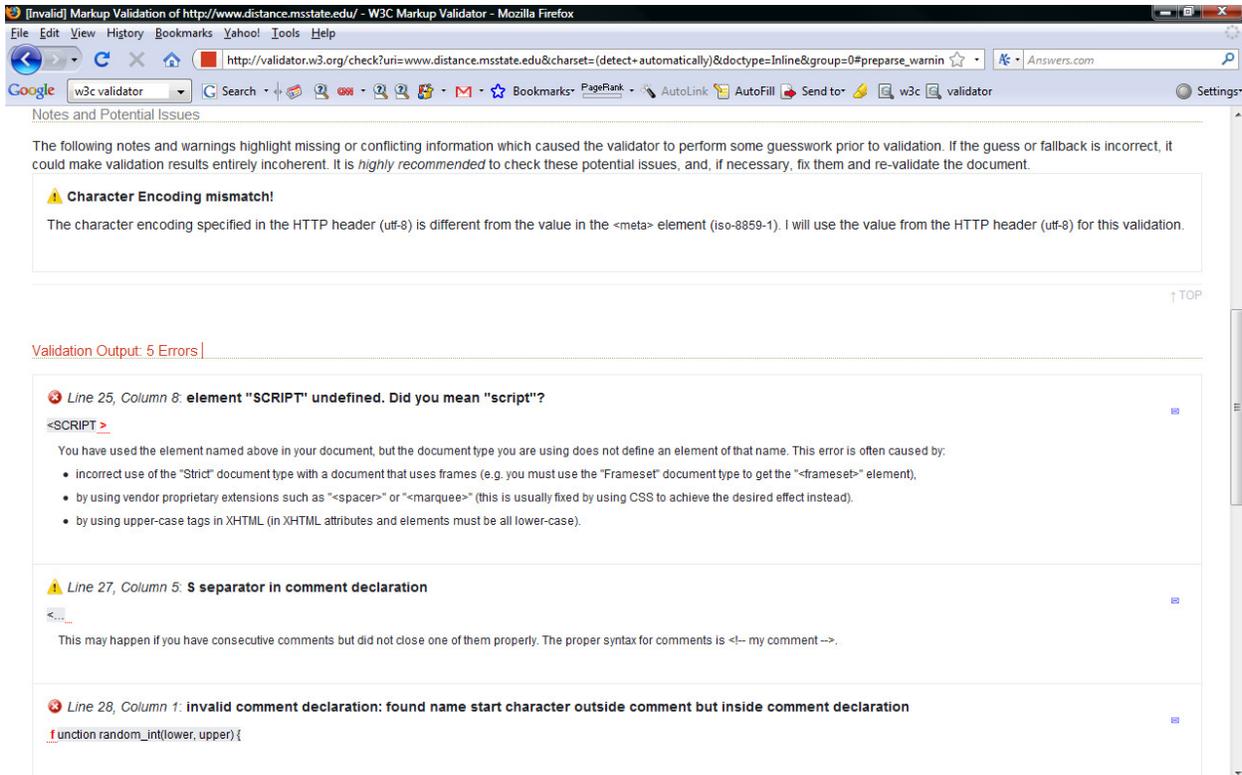
WAVE and W3C are only two of the free resources available to web developers to assist them in complying with web accessibility standards. As demonstrated above, accessibility does not have to be costly or difficult to achieve.

Conclusion

Clearly, there are specific laws in place that mandate accessibility, and while designing accessible distance education courses does require advanced planning, this planning benefits everyone regardless of whether a disability exists or not. Accessibility should be approached from the mindset that understanding its benefits is part of a global and mutually rewarding service. With the free software and other standardized tools available to educators, accessibility can easily become a part of the design process. Meeting the needs of persons with disabilities worldwide continues to rise, as does the need for accessible distance education courses and the increase in the use of technology to access these courses. With this mindset, accessible education compliments the criteria necessary to meet standards of academic quality and rigor.

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