

How assistive technology impacts college students and faculty

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Abstract

2019-2020 enrollment data for universities and colleges reports that the number of students enrolled exclusively in online programs increased from 3.5 million to 5.8 million, an increase from 17.6 percent to 22.7 percent. This is higher than previously reported. The number of programs and courses that institutions of higher education offer online are continuing to increase in response to meeting the needs of a diverse population of students. Yet, a group that is significantly impacted in meeting specific needs with online learning are students diagnosed with one or more disabilities. According to the United States (U.S.) National Council on Disability, in 2015 approximately 11 percent of undergraduate students have a disability, equating to approximately 11 million individuals. In supporting students with disabilities, a larger population are positively impacted. Providing typed transcripts or closed caption for videos and lectures is imperative for an individual with a hearing disability, but it also improves learning for students where English is a second language. Few institutions would argue the importance of providing needed access and support to students, yet there may be a disconnect with faculty having the understanding and training to support online learning utilizing Assistive Technology (AT). Possessing the skillset to implement AT in online courses lags significantly. This paper evaluates current trends related to college students with disabilities and the impact of providing AT to improve online academic success, the role faculty play in developing and teaching courses that implement AT, as well as the responsibility of college and university administration in supporting the implementation of these strategies. Examples of implementation of AT in business courses is presented and discussed.

Introduction

Prior to 2012, the U.S. Department of Education did not collect data related to distance education ((Smalley). To understand the current and future state of higher education, it is imperative that this data is collected to support decision making by colleges and universities. Understanding the demographic data of current and future students allows institutions to adapt to the needs of those individuals. This is especially true with the continued growth of online programs and classes. The number of college students in online courses continues to increase with 51.8 percent enrolled in at least one course online during the 2019-2020 year. It is important for colleges and universities to meet the academic needs of a very diverse population of students. Students with disabilities are a segment of the college population that has particular requirements in obtaining a degree.

College enrollment rates for young adults in the United States (U.S.) with disabilities in 2017 was 25.4% compared to 40.9% of a peer population without disabilities. In addition, the average national rate for college completion was only 3.6% of young adults (ages 18-24) with disabilities compared to 10.9% of young adults without disabilities—the gap between those with and without disabilities earning a bachelor's degree or higher was 7.2% (Hill, Schwitz, and Queener, 2020).

It is important for institutions of higher education to look for ways to decrease the barriers to earn a college education. The Rehabilitation Act of 1973, The American with Disabilities Act (ADA) of 1990, and the 2008 Amendments to the ADA (ADAAA), full inclusion has not been obtained. Not only must the legal rights of students with disabilities be supported, every faculty, administrative and staff member on campus requires training, but this training must be implemented in the strategic and daily mission of each institution. To meet the needs of all students studying at colleges and universities a culture of inclusion is

necessary. Utilizing “best practices” by incorporating techniques and tools related to assistive technology improves the learning success of not only students with disabilities, but all students.

Hill, Schwitz, and Queener (2020) report that in “2019 that 26% of people in the U.S. have a disability. Youth and young adults with disabilities are less likely than those without disabilities to complete secondary school, enter postsecondary education, or complete a bachelor’s degree.” As individuals with disabilities enter institutions of higher education, support structures are required to improve the success and graduation rates. This can be even more challenging with online courses and programs this population may enroll in. The majority of colleges and universities have removed physical barriers such as high curbs at crosswalks, adding handicap parking spaces on campuses, automatic doors to buildings, Braille signage, and handicap restrooms. It is as important that assistive technology be incorporated in designing and teaching online courses.

Assistive technology refers to “any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of an individual with a disability” (Individuals with Disabilities Education Act, 2004). This could include notetakers, readers, interpreters, voice synthesizers, or assistive listening devices. For online classes, this could mean closed captioning or transcripts for videos or lectures, and online forms that meet or exceed Web Content Accessibility Guidelines² (WCAG 2.1).

According to the American Council on Education if incoming students do not encounter a feeling of belonging during the initial eight weeks of beginning college, there is a significant risk of dropping out. (Higher Education Today, 2020). Students with disabilities have an even more significant negative experience with a 25 percent withdrawal rate by the conclusion of the first year and 35 percent withdrawing by the end of year two. This supports the importance of higher education facilitating a culture to support goals related to inclusion and diversity. Students with disabilities do not have diminished mental capabilities, they may just need support to assist in learning or have a processing disability

Literature Review

Most U.S. colleges and universities have introduced the basic requirements of the American with Disabilities Act on their campuses. This has been accomplished by the development of disability offices. These offices provide support for students with disabilities such as providing sign language interpreters, notetakers, recording course lectures, additional examination time, and quiet locations to take examinations. Disability office staff are also an excellent resource for faculty.

Wynants and Dennis (2017) investigated the impact on student learning following faculty completing development training related to Universal Design for Instruction (UDI). The researchers reported improved faculty attitudes and confidence in applying UDI principles, increasing accessibility in course materials and content presentation. Understanding the pedagogy of teaching students with disabilities and of inclusive technologies is imperative. Faculty attitudes also play an important role in willingness to provide accommodation. Faculty may also have a fear of lowering academic standards or that students may be afforded unnecessary accommodations by providing AT.

Institutions of higher education are required by federal and state laws to provide accommodations and support for individuals with disabilities. The U.S. Department of Justice (DOJ) has provided technical assistance in the high stakes testing context that guide institutions of higher education in requiring documentation of disability and needed accommodations (U.S. Department of Justice, Testing Accommodations). According to Hill, Schwitz, and Queener (2020), “the DOJ points to recommendations of qualified professionals, proof of past accommodations, observations by educators, results of psycho-educational or other professional evaluations, an applicant’s history or diagnosis, and an applicant’s statement of their history of accommodations, and notes that only one or two of those methods of proof should be sufficient. In some cases, students may develop or identify their disabilities, such as learning or mental health disabilities, after entering higher education. Obtaining timely medical documentation of the disability while managing a course load may be difficult due to the time and financial resources needed to get appointments with qualified medical professionals. As a best practice, schools that rely on medical testing and verification should take steps to ensure that such testing is readily available to students and that students are informed of the school’s requirements and how to meet them.” Verification of this

information is time-consuming and in some instances the Disability Office on a campus may have a single employee responsible for all disability services. Sufficient personnel support is imperative.

What are reasonable accommodations? Hill, Schwitz, and Queener (2020) report that “the ADA requires colleges and universities to reasonably modify their policies and practices to allow a student with a disability an equal opportunity to participate and succeed in school. Reasonable accommodation is an extremely broad and flexible concept encompassing any change that is necessary and disability-related, as long as it is not unreasonable or unduly burdensome and does not fundamentally alter the school’s program.” This might include course formatting, accommodations for a quiet location or additional time for examinations or emotional support animals permitted in buildings and housing.

Research supports the fact that assistive technology provides independent means for students with disabilities to overcome curricular barriers and increase the quality of learning experiences (Rose, Hasselbring, Stahl, & Zabala, 2005). Craig and colleagues (2002) affirm that assistive technology is an equalizing agent in learning for students with disabilities. In the field of technology, extensive research has focused on how individuals with disabilities use enablement devices to have more independent lives. Hiring staff who are experts in instituting policies and structures with faculty in designing online courses is imperative. According to Hill, Schwitz, and Queener (2020), “schools should require, not just offer, training for staff and faculty on criteria and procedures for accessing and authorizing accommodations. Educating staff should be part of their ongoing professional development...Often the faculty in higher education do not know the legal rights and responsibilities of students with disabilities, do not understand their responsibility for accessibility, and do not understand the role of the disability support services office. Even when campuses offer training on accessibility to faculty, those staff who do not make time to participate may find themselves in an “emergency” situation attempting to respond to accommodation requests.

Bouck and Long (2021) reported that, “prior to 1997, and presumably, even shortly thereafter, research and practice involving assistive technology for students with disabilities involved students with low incidence or severe disabilities.” (p. 249) Early research also concentrated on K-12 students versus college-aged students with disabilities. Students with learning disabilities were the group to most frequently report their disability, whereas students with emotional/behavior disorders were the least likely of the high-incidence disabilities categories to report a disability. The researchers also noted that less than one fourth of college students reported receiving AT assistance and that students with more sensory impairments (e.g., deaf-blindness and visual impairment) reported the greatest frequencies for receiving assistive technology. College students with autism, other health impairments, and traumatic brain injury were the least likely to report receiving assistive technology. Bouck and Long (2021) reported findings of approximately 30% of students with disabilities, aggregated, reported using assistive technology. This is a relatively low percentages of disabled students receiving the assistance they require for success in college.

Universal Design for Learning Instituted in Business Courses

Both researchers of this paper have a strong commitment to best practices in online and hybrid course development. The preparation of all business students for the workplace is the mission of the Business Department. Most of the accommodations for online course development are low cost, but there is a significant time commitment by course developers and faculty. Kowalewski has completed the Online Learning Consortium (OLC) Online Teaching Certificate (OLC Website). Both researchers completed the Higher Ed Peer Reviewer Course (PRC) and Kowalewski completed the K-12 Peer Reviewer Course with Quality Matters (K-12 RC) (QM Website). These certifications provided the framework to build courses that would be assessible for all students. Quality Matters is an organization that provides research-supported rubrics and standards (eight General Standards and 42 Specific Review Standards used to evaluate the design of online and blended courses) in course design. A QM review provides “objective, evidence-based ways to evaluate the components of online learning” (QM Website). Possessing a strong commitment to teaching and course development provides the impetus to continued excellence. Completion of these courses were integral to the researchers in understanding implementation of universal design and AT in online development.

The researchers of this paper created multiple online courses incorporating UDL. The goal was to develop courses that were customized for all learners by design, virtually eliminating the need for retrofitting versus traditional methods for developing online courses. Examples can include using standardized statements on syllabi, on the course learning management system (LMS) or course site, and in online orientation material.

Developing PDF documents with headings is a preliminary place to begin with pre-set bullets, numbering, and tables. If photos are included, the use of alternative (alt) text that provides an explanation of the photo is suggested. Also, turning on computer accessibility options and dividing long documents into shorter, more easily managed documents improves access.

Best practices of colleges require faculty to include a statement of disability or information related to the Disability Support the campus offers. Including the link in the syllabus is also helpful. QM also provides to members an Accessibility & Usability Resource Site (AURS) that provides 1) Accessibility and Usability Resource Site, 2) Digital Accessibility White Paper Series, and 3) QMs Bridge to Quality Course Design Guide (QM Website). Today, there is more support than previously provided to faculty to develop courses that meet UDI standards.

Discussions and Conclusions

Understanding the complexities of assistive technology and its impact on students with disabilities' success at the college level in online courses brings opportunities, as well as challenges. Additional research from a more egalitarian perspective may ultimately contribute to a more thorough understanding of the impact of assistive technology and its awareness by professors in the process of human development and learning. The use of additional institutional surveys of students with disabilities engagement and academic life is recommended as resources to expand this analysis and compare outcomes of other peer and aspirant groups.

Supporting individuals with disabilities begins as perspective students are in high school deciding on a college to attend by designing websites and hard-copy materials that are universally accessible. The information in this paper is recommended to be used as relevant information for higher education planning. Application of these findings would benefit students with disabilities success initiatives and further the understanding of AI technology and the important role in education and science. Implementation of this information could positively influence improved approaches to curriculums, skill-development, learning support services, and overall, more supportive, inclusive, and egalitarian college environments. Testing accommodations should prevent a student's disability from interfering with the demonstration of knowledge. The amount of time provide to students for testing is often determined by administrative concerns of the faculty, school, or testing provider. Extending examination time would be a reasonable accommodation for a student whose disability interferes with speed due to cognitive or physical processing if physical or cognitive processing efficiency or communication is what is what is being evaluated (Hill, Schwitz, and Queener, 2020).

Inclusion in college campuses has two facets, services and accommodation overall on campuses, as well as ensuring that the individuals students receive the support and accommodations needed. Faculty can initiate conversations with students facilitating ideas that could assist the student in a particular class. Hiring and training staff who reflect the mission of truly including and supporting 'all' students is an initial clear commitment is imperative (Hill, Shawitz, & Queener, 2020). Supporting diversity increases inclusion for all individuals on a campus. Processes and standards for accommodation for college age students are regulated by ADA accommodations, where special education services for secondary students are regulated by the Individuals with Disabilities Education Act.

Professional development is not only necessary for faculty, but all personnel employed by the institution. Having staff who are knowledgeable about higher education ADA legal requirements who can review and make decisions regarding providing accommodations. It is important to provide the necessary accommodations while being consistent to avoid discrimination litigation by standardizing processes related to approving accommodations. When designing new buildings, incorporating ADA accommodations in the initial layout can ensure access in the classroom as well as when attending activities on campus.

Many students don't disclose their disabilities. Another obstacle for an individual is that it can be very expensive to obtain testing and diagnosis to fulfil disability requirements. The idea is to institute a proactive approach to designing classes to meet the needs of a diverse student population. Leaders and professionals in higher education can utilize current information, such as presented in this paper, to create academic environments that will assist students with disabilities to succeed through their innovation, creative, and critical thinking methodologies in establishing policies and support structure that provide equalizer expertise such as assistive technology. Colleges and universities need to provide tools, such as checklists, testing mechanisms, and training to facilitate accessible technology and content (Hill, Shawitz, & Queener, 2020). It is important for planning and development purposes that faculty are informed before classes begin as to what accommodations are necessary and to allow time for implementation.

Direction for Future Research

It is the responsibility for all members of institutions of higher education to support all students. Professors should design perceivable, operable, understandable course materials that incorporate robust educational activities that are accessible and usable for all. "Recognizing that most facilities, policies, rules, classes, textbooks, and activities were designed for students without disabilities is a basic premise" (Hill, Schwitz, and Queener, 2020). The ADA requires affirmative changes to educational facilities, policies and procedures, practices, and methods of communication when necessary to provide students with disabilities an equal opportunity to benefit, participate, and succeed.

Hill, Shawitz, & Queener (2020) report that as many as two-thirds of students with disabilities may have invisible or hidden disabilities. Adopting principles of universal design for learning will benefit all students. Faculty and staff can take the following steps to improve classroom inclusion by following UDL principles without fundamentally altering the content or changing the standards to which all students are held. Many students with disabilities face stigma associated with being different. Additional research surveys related to students and if they have faced stigma, discrimination, or bias during their studies would support and add to the research that continues to be completed in this field. With the continued growth of online learning, research needs to continue to be done evaluating student experiences, faculty experiences, and organizational support to improve graduation rates for students with disabilities.

It is important that colleges and universities provide the required funding, support, and personnel to lead accessibility efforts. Ensuring that students have access to an array of AT such as screen readers and magnifiers, and text-to-speech equipment is imperative-for on campus use also. Additional research related to the type of AI students are using in colleges and universities would add to the data and information to enrich faculty training. There is a variety of assistive software that is free and gives students options to use technology independently in common areas on campus. Additional research regarding assistive technology and students with disabilities is necessary to develop fully inclusive higher education institutions. Continued research with recommendations instituted in colleges and universities is necessary until disabled and non-disabled students have achieved academic equality.

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