Determining Faculty Needs for Delivering Accessible Electronically Delivered Instruction in Higher Education

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Abstract

The purpose of this study was to determine if a need exists for faculty training to improve accommodation for students with disabilities enrolled in electronically delivered courses at a statewide university system. An online survey was used to determine if instructors had students who had been identified as needing accommodation in their online courses, to identify which tools instructors used in electronically delivered instruction, and to determine how familiar the instructors were with strategies for accommodating students with disabilities in their courses. Over half the respondents reported identifying students in their classes with disabilities either by an official notice or through other means of identification. The respondents identified a variety of electronic delivery tools used to provide instruction in distance courses. A low percentage of the faculty surveyed reported they were aware of strategies to improve accessibility in their electronically delivered courses.

In a report issued by the U.S. Department of Education, Setzer and Lewis (2005) noted that over one-third of public high schools offered distance education courses in the year 2002-2003 with 50% of those courses offered as online or Web-based courses. In keeping with the growing interest in online learning, the push to offer online or distance education has moved from individual schools to statewide initiatives in some areas. In 2006, Michigan passed legislation that requires high school graduates to take an online course (Michigan Merit Curriculum Guidelines, 2006). Deubel (2007) reported that in the same year Michigan passed their legislation, 38 states had either initiated online educational projects or had developed proposals for regulating such programs. This move to involve K-12 students in online education will result in more students entering higher education with expectations of furthering their education online.

Interest in online learning has continued to increase for higher education as well. The Sloan Report describes a growing population of students in the United States who are taking online courses and reports that 3.9 million higher education students took at least one online course during the fall of 2007 (Allen & Seaman, 2008). In fact, the Sloan Report states that enrollment in online learning has increased at a higher rate than enrollment in higher education in general.

Terminology used to describe instruction provided electronically has varied and shifted as institutions and schools try to describe new strategies for using technology to deliver instruction. Distance education has been defined by the National Center for Education Statistics (NCES) as "any education or training delivered to remote sites (via audio, video, live, or prerecorded), or computer technologies, including both synchronous… and asynchronous…instruction" (NCES, 2003). Online is another term often used to describe electronically delivered instruction. The Sloan Report considered online courses as those for which 80 percent of the course content was delivered online (Allen & Seaman, 2008). However, neither distance or online delivery accurately describe blended or hybrid delivery in which students receive instruction on-site. For the purposes of this study electronically delivered instruction (eLearning) will be used as a more inclusive term with virtual, online, and hybrid models considered types of a broader category of electronically delivered instruction.

Because of the rapid growth of interest in online learning, institutions of higher education and K-12

schools have moved beyond asking if they should offer online courses to asking how to best meet the needs of a growing population of online learners. In an attempt to ensure quality in online programs initiated by K-12 schools, the North American Council for Online Learning (NACOL) has developed national standards as guidelines for schools offering online education (NACOL, 2007). NACOL's standards include guidelines for providing accessible instructional materials to meet all students' needs. Accrediting agencies for higher education also have set standards for distance delivery of instruction. The Council for Higher Education Accreditation (2002) surveyed 59 national accreditors for higher education institutions to determine what guidelines were being used to ensure quality instruction in distance-delivered courses. They reported that most accreditors, at that time, applied the same standards to distance and site-based learning but that a majority of the accreditors were examining how to modify or expand their standards to apply to distance learning. One example of the growing awareness of the need to improve the quality of instruction delivered by distance is the National Council for Accreditation of Teacher Education (2008) accreditation standards which now require units involved in teacher education to address specific questions related to distance delivery.

The increasing presence of electronically delivered instruction in K-12 and post-secondary education offers expanded opportunities for many students (Altbach, 2008; The State Educational Technology Directors Association [SETDA], 2008). The SETDA report on virtual learning states that "Virtual learning provides each student the promise of access to age- and ability-appropriate curriculum, rich and extensive resources, and accurate and up-to-date assessments regardless of location, economic situation, or time" (2008, p. 1). Can eLearning live up to the promise envisioned by so many educators for increased access to learning opportunities for students with disabilities as well?

Data gathered from the National Longitudinal Transition Study revealed approximately 13% of high school age students received special education in 2000-2001 (Wagner, Cameto, & Guzmán, 2003). According to the Institute for Higher Education Policy ([IHEP], 2004), the majority (73%) of those students with disabilities continue on to higher education. IHEP also found that 9 to 10% of students in higher education reported a disability, a percentage similar to that of the NCES (2006) profile of undergraduates in U.S. postsecondary institutions that reported 11% of the students identified themselves as having a disability. However, students with disabilities in higher education have a lower course completion and graduation rate than the general student population (Katsiyannis, Zhang, Landmark, & Reber, 2009). A case study of 604 students with disabilities enrolled in undergraduate courses at Athabasca University determined that fewer students with disabilities completed their courses than that of the general student population but that students who received support services were more likely to complete their courses (Moisey, 2004).

Unfortunately, eLearning can create additional challenges to higher education students with disabilities (Blansett, 2008; Bruyère, 2008; Lewis, Yoder, Riley, So, & Yusufali, 2007). Of the 600 million people worldwide reported to live with disabilities, only 5 to 15% have access to the assistive technologies that would allow them to access to expanded opportunities for education (World Health Organization, 2008). Difficulties in access go beyond lack of access to assistive technologies.

Web sites are often the first encounter students have with their institutions in higher education, however only a small percentage of Web sites meet basic accessibility guidelines (Mariger, 2008). Harper and DeWaters (2008) noted that in spite of the increase of students with disabilities enrolling in higher education, few university Web sites are completely accessible and that Web accessibility continues to be an issue for higher education institutions.

The technologies involved in providing access to students can actually deny access to populations of students with disabilities. Web-based course materials and online content create new challenges for students with disabilities. Students with visual disabilities encounter Web sites and course media unreadable by screen readers. Disorganized and cluttered course Web sites confuse all students, but especially those with learning and cognitive disorders. Uncaptioned videos, podcasts, and video conferences limit access to students with hearing disabilities.

Students with non-traditional learning styles who are not documented as needing accommodation can also encounter the same types of barriers encountered by students with disabilities. In addition, students with learning modalities not well supported by the textual environment of online instruction, students learning in a foreign language or from a different culture, and students with age-linked sensory declines can also face barriers to full access in eLearning environments.

Course management systems such as Blackboard and software companies such as Adobe have attempted to meet accessibility requirements of disability legislation mandated by major developed countries (Seale, 2006). However, many online delivery tools and course materials are used and developed by instructors who have little awareness of accessibility criteria mandated by federal legislation and who, even when aware, have little incentive to make their materials accessible (IHEP, 2004). In addition, popular new instructional tools such as blogs, wikis, and podcasts are easy to implement but not readily accessible to all users (Driscoll, 2007).

The goal of the study was to provide the leaders and instructional designers on all campuses of a state-wide institution of higher education in the U.S. Northwest with more information about numbers of students identified by instructors as needing accommodation and what strategies were being used to provide instruction to those students. This study also attempted to identify tools and strategies used by instructors to accommodate students with disabilities enrolled in online courses. The study asked instructors to indicate their awareness of universal design and to what extent they had been trained to accommodate students with disabilities in their online courses.

In a state spread over a large geographic area with isolated rural areas, the institution involved in this study has a long and rich history of providing distance education. Early in the 1970s the state's department of education collaborated with the U.S. Department of Education to explore the potential of satellite technology (Bramble, 1986). Before Web-based instruction, the university delivered distance education through correspondence courses, itinerant instructors, and remote education centers (Sunde, 1999). Since then the university has implemented e-mail, audio and video conferencing, ITV, and Web-based instruction to provide training and professional development to its service areas.

In academic year 2007-2008 the university's distance gateway listed 421 faculty members as instructors of distance (asynchronous or synchronous) courses for all campuses in the statewide institution. In addition, many faculty members taught hybrid courses in which some materials were available online but the classes also met face-to-face so these classes were not listed as "distance-delivered" courses. Of the three main academic campuses and their satellite campuses in the university system, the two more remote campuses in the university system identified 19% and 17.6%, respectively, of the course sections as distance delivered courses. The third campus identified 5.4% of its courses as distance delivered. These numbers do not include hybrid courses that utilize some of the same electronic delivery methods and tools as distance delivered courses. Because of the institution's history and commitment to quality distance education, the institution offers a window into current practices in providing accommodation to students with special needs enrolled in electronically delivered courses.

In academic year 2007 through 2008, the three main campuses of this institution identified 536 students with documented disabilities out of a total enrollment of 28,934 students. In addition to the 1.8% of the student population with documented disabilities at these institutions, students with varied learning preferences and language or age-related challenges can also encounter the same barriers encountered by students with disabilities and may benefit from more accessible courses. When students come to their classes with varied skills and abilities, the one-size-fits-all design of electronically delivered courses can create barriers to full access in both traditional and online learning environments.

Purpose

The purpose of this study was to determine if instructors teaching online at this institution had students who had been identified as needing accommodation in their online courses, to identify which tools instructors used in electronically delivered instruction, and to determine how familiar the instructors were with strategies for accommodating students with disabilities in their courses.

Methods

Participants

For this study 421 instructors were identified as delivering instruction via distance through the university's distance gateway and were invited to complete an online survey to determine if they had identified students with disabilities in their courses, which electronic delivery tools they used in their courses and how aware they were of ways to accommodate students with disabilities. E-mail invitations were distributed to all instructors listed in the gateway. These instructors included both tenure-track faculty and adjunct faculty. Teaching assistants were not included. Participation was voluntary,

and responses were anonymous since participants were only identified by academic units.

Procedure

The survey was developed online using the SurveyMonkey.com survey tool to provide easy access for the instructors and to facilitate collection of data. The survey contained eight questions with multiple responses and was field tested on two directors of disability services at the main academic units for the university and three instructors who delivered distance instruction. The three faculty members were identified by instructional designers at the university as representing faculty who used different types of distance learning and represented different levels of use. One instructor used Elluminate for real-time instruction, a second instructor used audio conferencing supplemented by the Web-based course management system, and the third instructor used Web-based, asynchronous instruction only. Elluminate (also available as WebMeet at this university) is a Web-based tool that allows instructors and students to interact and collaborate in real-time through texting, audio, video, application sharing, and an interactive whiteboard (Elluminate, 2009). Responses and feedback from the participants in the field test were used to revise the survey to modify the listed types of disabilities, to better describe the tools used for distance delivery at the university, and to reword for clarity.

A reminder e-mail invitation was sent before the two-week deadline for responses and provided additional responses. Responses were collected and summarized using SurveyMonkey tools.

Results

Eighty-one responses to the survey were divided almost equally between the three major campuses and their satellite campuses. Sixty-seven percent of the respondents reported that they have suggested a student contact the disability services at their university at least once; 51% reported that they had been notified at least once by their institution that a student needed accommodation; 37% reported that a student had contacted them with a faculty notification letter from their disabilities services office; and 47% reported that a student had requested accommodation without a faculty letter of notification. Twenty-one percent of the respondents reported that they did not include a statement in their course syllabus that provides information on how to obtain disability services.

Table 1 identifies the types of disabilities the instructors have encountered in their instruction. Learning disabilities (40%) were the largest group reported by the respondents in this study and comprise the largest and fastest growing population of students with disabilities in higher education (Henderson, 2001; IHEP, 2004; NCES, 2009). Vision (18.8%), hearing (17.5%), mobility (12.5%), and speech (5%) disabilities were also reported.

The university in this study delivers eLearning in a variety of formats. Table 2 identifies the type of electronic delivery used by the respondents. Respondents for this survey reported using methods of instructional delivery as follows Blackboard (56), a university developed course management system (21), the open source course management tool, Moodle (3), audio conference (26), instructor designed Web pages (15), hybrid face-to-face and online (15), satellite delivered (1), and compressed video (6).

As shown in Table 3, respondents of this survey also reported using the following tools at least some of the time: online discussion (67), Adobe Acrobat PDF documents (67), CD/DVDs (42), instructor-designed Web pages (37), real-time chat (34), Breeze presentations (18), podcasts (16), Weblogs (16), and Camtasia presentations (9).

Table 4 illustrates the instructional strategies that the respondents reported using at least some of the time: Lecture outlines (51), extended testing time (49), tagged and accessible PDF documents (46), audio archives (36), Word documents formatted in styles (33), accessible computer station (28), enlarged print handouts (22), advance organizers (21), captioned videotapes or CD/DVDs (19), and captioned or scripted audio (13).

The respondents indicated, as shown in Table 5, that only 8.8% of the respondents could report that they had received training or professional development on accommodating for disabilities in distance delivered courses. As shown in Table 6, only 13.8% of the respondents could affirm that they were aware of the principles of universal design and had adapted their instruction accordingly.

Discussion

The high number of reported incidents requesting accommodation indicates that a substantial need exists for instructors to be aware of and to be able to provide accessible materials and instruction. The data collected

Table 1

Q3. For which disability or disabilities have you provided accommodation in your distance classes?

Disability type	Percentage	Number
Learning Disability	40.0%	32
Visual Impairment	18.8%	15
Hearing Impairment	17.5%	14
Mobility Impairment	12.5%	10
Other or unknown	11.3%	9
Speech Impairment	5.0%	4
None	36.3%	29
	answered question	80
	skipped question	1

from this survey illustrates a disconnect between the number of online instructors who have students with documented disabilities and the instructors' awareness of and training in strategies to improve accessibility to their course materials. This disconnect is not necessarily the result of a lack of available or effective training. In spite of training and materials available through the institution's Disability Support Services, the results of this survey show that few respondents had been trained in how to accommodate for students with disabilities. This survey did not address possible reasons why the training had not been received.

The principles of Universal Design as described by Rose and Meyer (2002) provide a context for understanding and applying strategies for accessibility in eLearning. Those principles include "multiple means of representation to give learners various ways of acquiring information and knowledge", "multiple means of action and expression", and "multiple means of engagement" (CAST, 2008). As shown in Table 6, only 13.8% of the respondents to this survey reported that they know and use the principles of Universal Design in their instruction. The responses indicate a majority of the respondents utilize text-based delivery and materials such as online discussion, online tests, and course outlines, while few used a variety of media such as podcasts, presentations with audio and video (Breeze or Camtasia), or captioned audio.

Scott, McGuire, and Shaw (2003, p. 371) challenge the perception in higher education that accommodation for students with disabilities is best achieved through the "special education model of identify, label, tutor, and accommodate." Instead they recommend that instruction and learning strategies should be the main focus for effective accommodation. Adjustments in instructional delivery and an increased awareness of possible strategies can greatly improve accessibility. The results of this survey show high use of course management systems and print materials such as course outlines by the respondents. While course management tools supported

Table 2

Q4. Please identify the type of distance delivered courses that you teach.

Answer Options	Response (Count)	Response (Percent)
Blackboard	56	70.0
Audio conference	26	32.5
University developed course management system	21	26.3
Web-based with instructor designed Web pages	15	18.8
Hybrid (face-to-face and distance delivered)	15	18.8
Compressed video	6	7.5
Moodle (open course management system)	3	3.8
Satellite delivered	1	1.3
Other (please specify) Elluminate was the response submitted most often in the other category.	25	31.3
answered question	80	
skipped question	1	

Table 3

Q7. Which of the following tools do you use in your instruction?

Answer Options	Never	Some	Often	Always	Combined Some, Often, Always	Total Response Count
On-line discussion	10	15	16	36	67	77
PDF documents	7	12	28	27	67	74
Elluminate or WebMeet	23	16	10	22	48	71
Online tests	27	10	14	22	46	73
CD/DVDs	26	17	17	8	42	68
Instructor designed Web pages	31	14	10	13	37	68
Real-time chat	33	18	4	12	34	67
Compressed video	40	12	6	4	22	62
Breeze presentations	47	6	8	4	18	65
Podcasts	46	14	2	0	16	62
Weblog	41	10	1	5	16	57
Camtasia presentations	53	6	2	1	9	62
Live satellite broadcast	56	4	1	0	5	61
					answered question	79
					skipped question	2

Table 4

Q8. Which of the following strategies do you use in your distance delivered courses?

Answer Options	Never	Some	Often	Always	Combined Some, Often, Always	Total Response Count
Lecture outlines	23	21	10	20	51	74
Extended testing time	26	18	11	20	49	75
Tagged and accessible PDF documents	25	17	14	15	46	71
Audio archives	36	15	5	16	36	72
Word documents formatted in styles	27	15	19	14	33	75
Access to accessible computer station	40	13	5	10	28	68
Enlarged print handouts	48	13	3	6	22	70
Advance organizers	43	5	7	9	21	64
Captioned videotapes or CD/DVDs	50	13	1	5	19	69
Captioned or scripted audio	55	9	2	2	13	68
					answered question	80
					skipped question	1

Table 5

Q5. Have you received training or professional development on accommodating for disabilities in distance delivered courses?

Answer options	Response Percent	Response Count
No	66.3	53
Not sure	1.3	1
It has been discussed in meetings or other training	15	12
I've explored this on my own	8.8	7
Yes I have received training	8.8	7
	answered question	80
	skipped question	1

Table 6

Q6. Are you familiar with the principles of "universal design?"

Answer options	Response Percent	Response Count
No	36.3	29
Sounds familiar but I'm not sure	31.3	25
Yes but I haven't used it in my course design	18.8	15
Yes and I have adapted my instruction according to the principles	13.8	11
	answered question	80
	skipped question	1

by major vendors such as Blackboard document how they meet the American with Disabilities Act (ADA) requirements for accessibility, these delivery tools rely on the awareness and sensitivity of the instructor to create accessible resources and activities within the structure of the course management system. For example, PDF documents can easily be formatted for access by screen readers if the instructor who created the original document used styles in the word processing program and checked the tagged PDF document for accessibility. However, only 33% of the respondents for this survey reported using styles to format a word processing document as shown in Table 4.

Presentation software such as Breeze and Camtasia can be used to create instructional materials with audio and text notes to provide accessibility for students with vision or hearing disabilities if the instructor is aware of and decides to use those features. Podcasts, Weblogs, and real-time chats are more difficult to make accessible and may require support from Disability Support Services. Online exams may require arrangements by the instructor to administer the test without time limits or to provide alternate means of examination. Configuring a Word document and Adobe Acrobat document with styles and tags can improve students' access using a screen reader. Organizing materials within a course management system to keep resources and assignments together can help students from getting lost within the course site. Providing graphic organizers, outlines, or directed reading questions can help all students focus on the major points in the reading assignment, discussion, podcast, or lecture and is of special benefit to students with learning disabilities (Cook & Gladhart, 2002; Strangman, Hall, & Meyer, 2003). Providing captioning for podcasts or video demonstrations can assist all learners as well by offering multiple means of representation for differing learning styles and abilities. Awareness of how students can configure their browsers and computer screens for easier viewing can be extremely helpful to all students who struggle with the text-based environment of eLearning (Apple, 2008; Microsoft, 2008).

Seale (2006) describes accommodation in higher education as one based on legality rather than equity for all students. However, it is nearly impossible for an institution of higher learning to monitor and hold faculty accountable for making all media accessible in eLearning course delivery. A more practical approach would be to create an environment in which a variety of resources and training formats expose faculty to universal design principles and instructional strategies for improving accessibility and then, most importantly, to provide incentives and support for faculty who do take advantage of training materials and support. Administrative and instructional support is an essential component of providing accommodation to meet the needs of students with disabilities. Policies and procedures for supporting faculty in making their eLearning courses accessible need to be visible and flexible enough to demonstrate the institution's commitment to making eLearning course delivery accessible.

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