A review of 2000-2003 literature at the intersection of online learning and disability

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Literature published between 2000 and 2003 at the intersection between online learning and disability can be classified into didactic, descriptive, research, and opinion pieces. In this article, two research pieces surveying the literature are reviewed. The resounding theme throughout the literature is that improving accessibility of online learning for students with disabilities will promote best practices in online learning for all students.

People with disabilities are among the least considered in the educational context of online learning. Both the potential for personal gain and collective contribution to the field of education warrant reconsideration as a prodigious research populace.

French and Valdes (2002) indicated that one in five people has a disability. Cook and Gladhart (2002) stated that 10% to 15% of postsecondary students identify themselves as disabled. For many of these learners, traditional education is largely inaccessible.

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The accessibility of computer-mediated information and the convenience of distance delivery in online learning have the potential to "level the playing field" for students with disabilities (Coombs and Banks 2000), in large part because planned redundancy of modes (i.e., making equivalent content available via speech, text, and audiovisual) is possible and practical when using digital communication (Negroponte 1995). Multimedia, defined by Mayer (2001) as the delivery of information in both words and pictures, also has the potential to enhance accessibility. Mayer wrote that the promise of multimedia presentation is the enhancement of learning. The benefits extend beyond students with disabilities to those with differential learning styles or simple situational preferences, such as the need to listen to a taped lecture in the vehicle in transit.

The gain in studying online learners with disabilities extends well beyond a disability issue. O'Connor (2000) called online learners with disabilities "early adopters," implying that they are taking advantage of technology-infused education and leading the way for other learners who are slower on the uptake. He predicted that this early adoption will move them from the fringes or "outer edge" to the "leading edge." Authors such as Coombs and Banks (2000) use the metaphor "electronic curb-cut." Curb-cuts, or the portion of the sidewalk that rests flush with the street, were instituted for people in wheelchairs. However, they are much more frequently used by mothers with strollers, shoppers with carts, and cyclists and inline skaters. Opitz (2002) provided numerous examples of how designing an online course, such that it is accessible to students with disabilities, benefits all learners:

Images can be effective in providing alternative examples or explanations of content. The addition of an alternate text tag to the image enables a screen reader used by a visually disabled person to read the textual description to the learner, describing the attributes of the image. Adding a title representative of a description of an image also allows learners without disabilities a more detailed explanation of the image. Sounds can also be used, but captions or alternative text benefit the deaf and those with hearing by providing a written script to follow and to refer back to at a later date. Easy-to-read content benefits all learners by "chunking" the information into blocks of important information that can be easily read and understood by any audience. (Opitz 2002, 12)

The literature has yet to embrace learners with disabilities as "leading edge." Many published works consider the notion of universal design as a
retrofit to existing courses, modifying the norm for the perceived "abnormal." There are a small number of publications positioned at the overlap between online learning and disability. Of those, very few are research based—and the source publications are largely conferences and journals within the field of disability studies rather than in mainstream educational technology.

In a comprehensive search, we found forty-three publications released between 2000 and 2003 that were situated at the intersection of online learning and disability. In this review, "publications" are defined as journal articles, government reports, and full-article conference proceedings. The literature search is informed by participation at the 2003 Technology and Persons with Disabilities Conference at California State University at Northridge's (CSUN) Center on Disabilities. Proceedings from the 2000–2003 CSUN conferences comprise 58% of the publications. The number of CSUN presentations in the topic stream of online learning shows a steady rate of increase, with two presentations in 2000, three in 2001, nine in 2002, and eleven in 2003. Attendance at the conference enabled us to conduct a more lucrative search, expanding key search terms to contemporary constructs, such as "universal design," "assistive technologies," and "accessible learning"; conference presenters (e.g., Burgstahler) as publishing authors; and organizations' Web sites with links, such as Equal Access to Software and Information.

Of the forty-three publications (see Table 1), twenty-two (51%) are didactic. They present guidelines and how-to information in regard to a single or combination of topics including accessibility, communication tools, instructional design, pedagogy, policy, teaching strategies, and universal design. The next highest category of publications (thirteen, or 30%) is description of vendor products and/or educational programs (including postsecondary institutions and private industry). Five articles (10%) can be counted as research. This is amplified in that two of the articles are conference presentations by the first author of this article, and both concern preliminary results of the same research project of interactively interviewing blind online learners. Three articles (7%) can best be classified as editorials or opinion pieces.

For the purposes of this article, two of the research pieces are reviewed: Cook and Gladhart's (2002) "A Survey of Online Instructional Issues and Strategies for Postsecondary Students With Learning Disabilities" and Kim-Rupnow, Dowrick, and Burke's (2001) "Implications for Improving Access and Outcomes for Individuals With Disabilities in Post-Secondary Distance Education." These two articles have been selected for review be-
Table 1. Four Classifications of 2000–2003 Literature on Online Learning and Disability

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<th>Didactic</th>
<th>Descriptive</th>
<th>Research</th>
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<td>Urban and Burks (2002)</td>
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cause they adopt a survey approach, resulting in a breadth of inquiry that contributes to a macro perspective on the phenomenon of online learning with respect to learners with disabilities. In the context of a paucity of research, such global perspective is a necessary predecessor of depth inquiry.

Cook and Gladhart (2002)

Although the title and many of the examples within Cook and Gladhart’s (2002) article are drawn from the context of ‘learning disabilities,’ their content applies to all types of disabilities. Beyond disability, within the first paragraph of their introduction, the authors state their philosophy that “when we encourage the use of adaptive technology in accommodating the needs of learners with disabilities, we also serendipitously make positive strides in addressing the diverse learning styles of students without disabilities as well” (Cook and Gladhart 2002, 1).

This article flanks the categories of didacticism and research. As didactic, the article addresses online learning generally, differentiates between online and traditional approaches to education, reviews educational technologies, and practically applies issues to guide accessible practices in instructional design and provision. In addition, the authors engage in two modes of research—original and secondary. The authors describe their first method as “an extensive search using half a dozen keyword combinations with major databases … various Web sites and software training manuals” (Cook and Gladhart 2002, 2). The authors do not count, classify, or chart their results, as they only address them globally. They comment on the paucity of literature addressing the needs of postsecondary students with disabilities. They elaborate slightly, stating, “there were few publications found which offered recommendations for accommodations and modifications for the electronic classroom, and certainly none that offered an overview of these considerations along with discussion of pedagogical techniques” (2). The article includes forty-eight references. The majority of the citations inform either the issue of online learning or of disability, but do not consider the two in combination. For example, a number of the citations address assistive technology or accessible Web sites, and still others are mainstream online learning citations that do not take up disability issues.

The second research component in Cook and Gladhart’s (2002) article is the 2000 National Survey of Information Technology in Higher Education. The first annual Campus Computing survey was published in 1989 (Green 2000). Computing officials (typically the chief academic computing officer) of two- and four-year colleges and universities across the United States are
surveyed in the fall of each year. The number of institutions submitting completed surveys ranges from 469 in 2000 (the report reviewed by Cook and Gladhart 2002) to 650 in 1995. The Green (1995, 1999, 2000, 2001, 2002) reports do not mention disability. Some of the summary reports include short segments addressing online learning as one of their thematic topics. Examples of other thematic topics include e-commerce and other e-service issues such as online registration; purchasing plans; and number of students with personal computers. The 2000 report indicates "less than one-third [of surveyed higher education institutions] (29.3%) have a strategic plan for distance education" (Green 2000, 3). Further, one-seventh use some type of "course management tool" such as WebCT or Blackboard for their online courses, and three-fifths have "established a single product standard" (5).

Cook and Gladhart briefly apply these survey results to accessibility issues. They write, "in many respects, these services provide increased access for all students, but access can be limited by the institution's lack of experience in how to use these resources to meet the needs of students, particularly students with disabilities" (Cook and Gladhart 2002, 2).

Kim-Rupnow, Dowrick, and Burke (2001)

The question guiding Kim-Rupnow, Dowrick, and Burke's (2001) analysis of the literature was, "Do the increase in distance education programs and use of advanced technology indicate better access and better outcomes in higher education for persons with disabilities?" (25). They answer positively, yet inconclusively due to the paucity of research. Using electronic databases of published journal articles and manual searches of the table of contents of distance education journals, Kim-Rupnow, Dowrick, and Burke derived ten articles. Each of the ten articles includes information about postsecondary students with disabilities enrolled in distance education courses. Most of the articles are written from the perspective of the postsecondary institution and include very brief descriptions of one or two students with disabilities.

Although not explicitly differentiated by the authors, some of the emerging themes resonate with issues for all postsecondary distance education support systems regardless of whether the respective students are disabled, whereas the others appear to be the contribution of technological advances for supporting postsecondary students with disabilities at a distance. The more general themes are student prior experience with computers (this emerged as a common characteristic of the students depicted in the literature), university programs delivering online learning using a combination
of several technologies (including multimedia and some interactive platforms), and varied use of synchronous and/or asynchronous communication tools for collaboration. The themes closely related to disabilities are availability of technical assistance to facilitate content accessibility (examples include transcribed text and interpretation), formats that are not effectively translated by text readers (such as tables and graphics), university supports extended to disabled students (such as access to home computers and assistive devices), and existence of an individualized education (and/or accommodation) plan for learners with disabilities.

Kim-Rupnow, Dowrick, and Burke’s (2001) article may be considered seminal at the intersection of disability and online learning. Not only is their article one of a mere handful of research initiatives in this area but the authors have sought to establish a foundation, or a platform, from which to launch a more in-depth inquiry. However, the authors’ commitment to including only research articles that documented the distance education experience of postsecondary learners with disabilities severely restricted their source documents. In addition, a large proportion of their source literature is dated before computer-mediation became an instrumental component of distance education. In other words, some of the literature addresses correspondence rather than online learning. The thematic content of Kim-Rupnow, Dowrick, and Burke’s article therefore fails to address some important contemporary concepts. Most notably, their article does not address universal design. Universal design is “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design” (North Carolina State University 1997, 1). Universal design moves best design of online learning beyond a disability issue to enhancing educational technology for all learners.

Conclusion

One of the overarching themes in the small amount of literature situated at the intersection of online learning and disability is that the theory and practical application of research with disabled learners has the potential to enhance the pedagogical potential of online learning for all postsecondary students. Application of accessible online learning provides “electronic curb-cuts” for all learners. Cook and Gladhart’s (2002) article states and supports this proposition explicitly. However, its mainstream reception might be limited by its location in the niche readership of the journal Information Technology and Disabilities. Kim-Rupnow, Dowrick, and Burke’s
(2001) article does not address universal design and the serendipitous results of making online learning accessible to people with disabilities. However, its positioning in The American Journal of Distance Education may, in any case, raise awareness of the existence and needs of online learners with disabilities. Those applying the accessibility modifications may reap the benefits of improved usability for all learners.

To use the colloquial, one of the pivotal issues in online learning can be categorized as a ‘chicken and egg’ debate. Is online learning an ‘authentic educational technology’ wherein problems in higher learning were identified, and online learning was developed as the solution? Or did a technological imperative prompt the adoption of online learning? (Clark and Estes 1999). In the latter case, some would suggest that online learning is serendipitous. The learner needs were rasping against the university systems creating a rash of discontent. Online learning tends to draw learners who are older, employed full-time, married, and often female (Thompson 1998). Perhaps the pedagogical, geographical, and multimedia flexibility of online learning can rectify the problems and match the needs of the contemporary student. Online learning is advertised as facilitating anytime/anywhere learning, and, with more attention to accessibility issues, has the potential to also suit the needs of any learner.

At least one subset of the student population—disabled adults—does not seem to be well-served by the postsecondary system. Students with disabilities are underrepresented. An estimated 6% of 1995–1996 undergraduates in the United States reported a disability (U.S. Department of Education, National Center for Education Statistics 1999). The low proportion of postsecondary students with disabilities is alarming considering that graduates appear to be hired into positions equivalent to their nondisabled colleagues (U.S. Department of Education, National Center for Education Statistics 1999). The small amount of literature that informs what it is like to be a disabled postsecondary student indicates an unwillingness to make courses accessible to disabled learners, and/or to accommodate particular support needs (when these emerge).

A techno-structuralist view of online learning balances the optimism of the potential of online learning to meet the needs of students with disabilities, with provisos and cautions. Full accessibility does not appear to be experienced by learners with disabilities (McGrane 2000). The question remains as to whether the dominance of visual interfaces can and will be balanced with auditory options. There is also a question as to whether an increase in online options for students with disabilities might set off a reactive decrease in traditional options. In short, will instructors and adminis-
trators bother to make traditional course content and communication accessible, if the online alternative exists (Blaser 2001)?

Although our analysis of the 2000–2003 literature positioned at the intersection of online learning and disability somewhat elaborates the debates, the questions posed by Kim-Rupnow, Dowrick, and Burke (2001) remain unresolved. We pose these questions once again, urging further study: Is the prevalence of online learning increasing postsecondary access to students with disabilities? What services are most important in supporting post-secondary online learners? What are the long-term outcomes of online learners with disabilities? And what “standard accommodations” and innovations “especially encourage diverse learners” (Kim-Rupnow, Dowrick, and Burke 2001, 37)? To these, we add this question: How can we promote universal design of the online environment, with particular emphasis on complementing the visual with the auditory interface? The answer to these questions lies, we believe, in the intersection of the promise afforded by online learning technology, and the needs of learners and teachers with disabilities, recognizing the potential of multimedia to support multiple learning styles and needs.

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