Creating Opportunities and Barriers in Distance Learning Courses

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INTRODUCTION

Internet-based distance learning courses have the potential to make learning opportunities available to anyone. People in rural areas, from poor communities, and who have disabilities are among those underrepresented in the group of people who benefit from new technological developments. This potential cannot be realized, however, unless everyone can truly access course offerings. The rapid development of assistive technology makes it possible for almost anyone to operate a computer (2003 Closing the Gap, 2003). Yet many individuals with disabilities do not have access to these empowering tools (Kay, 2000).

Some people with disabilities who have access to computers, assistive technology, and the Internet still cannot fully participate in distance learning courses because of their inaccessible design (Waddell, 1999). For example, people who are blind often use text-to-speech systems that locate text that appears on the screen and read it aloud to the user. Because this technology cannot "read" graphics, it does not verbalize information embedded within graphic images. Therefore, people who are blind cannot access this content unless it is provided in a text-only format as well.

BACKGROUND

Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990 mandate that no otherwise qualified individuals with disabilities shall, solely by reason of their disabilities, be excluded from the participation in, denied the benefits of, or subjected to discrimination in public programs and services, unless it would pose an undue burden to do so. Such programs include distance learning options offered by postsecondary institutions and other entities. A Department of Justice ruling (ADA Accessibility…, 1996) clarified that that covered entities that use the Internet for communication must offer those communications through accessible means. Clearly, if qualified individuals with disabilities enroll in distance learning courses or are qualified to teach them, these opportunities should be made accessible to them. However, the inaccessible design of many Web-based distance learning courses erects barriers to people with some types of disabilities (Schmetzke, 2001).

If a student who is blind accesses a Web-based course that does not have text descriptions of content embedded in graphic images, he will need special accommodations in order to access the content. Similarly, if an applicant who is blind is the best candidate to teach a Web-based course that has been developed without text alternatives for content displayed using graphics, the course will need to be modified in order for him to teach it. In both cases, if planning for access was done as the course was being developed, costly redesign and/or accommodations would not be necessary.

Simple design decisions can be made to assure accessibility to potential students and instructors with a wide range of abilities and disabilities. Called "universal design," this approach results in "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" (National Center for Universal Design, 2003, p. 1). The concept of universal design was first applied to architecture, but has more recently been applied to the design of household appliances, Web sites, instructional techniques, and many other products and environments (Bar & Galluzzo, 1999; Bowe, 2000; Burgstahler, 2001). By considering the wide range of characteristics of potential students and instructors during all stages of the course design process, distance learning designers can create learning environments that are accessible to all participants, just

as sidewalks with curbcuts are not only used by people who use wheelchairs, but also by people pushing delivery carts and baby strollers.

Few distance learning programs have policies and guidelines that specifically address the accessibility of distance learning tools and resources (Burgstahler, 2000; Kessler & Keefe, 1999; Schmetzke, 2001). It is rare for programs to have comprehensive policies, such as that for the California Community Colleges (1999). However, individual distance learning courses have demonstrated that they can be designed for access to everyone, including individuals with disabilities. One such course, co-taught by the author of this article and a professor who is blind (Burgstahler), is described in the next section.

The distance learning designer can take an important step toward accessibility by simply using the most current versions of software. The current version of HTML (Hypertext Markup Language), as well as commonly used development tools such as WebCT™ (n.d.) and Blackboard™ (n.d.), include programs for accessible design. Software that can test Web resources for some accessibility features as well as training courses and reference materials to help distance learning designers develop skills for making distance learning programs accessible are also widely available.

Two sets of accessibility guidelines are widely accepted nationwide and can be used by distance learning programs to direct their design of accessible courses. The Web Accessibility Initiative (WAI) of the World Wide Web Consortium developed Web Content Accessibility Guidelines (*http://www.w3.org.WAI*) and provides the following quick tips for making accessible Web pages (World Wide Web Consortium Web Accessibility Initiative, 2001).

- **Images and Animations:** Use the *alt* attribute to describe the function of each visual.
- **Image Maps:** Use the client-side map and text for hotspots.
- **Multimedia:** Provide captioning and transcripts of audio, and descriptions of video.
- **Hypertext Links:** Use text that makes sense when read out of context. For example, avoid "click here."
- **Page Organization:** Use headings, lists, and consistent structure. Use CSS for layout and style where possible.
- **Graphs and Charts:** Summarize or use the longdesc attribute.
- **Scripts, Applets, and Plug-Ins:** Provide alternative content in case active features are inaccessible or unsupported.
- **Frames:** Use the noframes element and meaningful titles.
- **Tables:** Make line-by-line reading sensible. Summarize.
- **Check Your Work:** Validate. Use tools, checklists, and/or guidelines at *http://www.w3.org/TR/WCAG.*

Section 508 of the Rehabilitation Act of 1973 requires that electronic and information technologies that federal agencies procure, develop, maintain, and use are accessible to people with disabilities. The U.S. Architectural and Transportation Barriers Compliance Board (Access Board) developed Electronic and Information Technology Accessibility Standards (2000) to which federal agencies must comply. Although most distance learning programs are not covered entities under this legislation, the Section 508 standards are useful as guidelines for designing accessible courses.

CASE STUDY: AN ACCESSIBLE DISTANCE LEARNING COURSE

The following paragraphs describe the development of "Adaptive Computer Technology" (Burgstahler, 2000), later titled "Making Computers and the Internet Accessible to People with Disabilities," a distance learning course designed for teachers, parents, service providers, and computer lab managers. It was first taught in 1995. It is offered for three Rehabilitative Medicine or Education credits through the University of Washington (UW) in Seattle. The course surveys the fields of assistive technology and accessible design, and their impact on the lives of people with disabilities. Topics include legal issues, assistive hardware and software for accessing information technology, universal design, computer applications for people with disabilities, resources, and program implementation strategies. Students enroll through the UW Distance Learning program. The instructional tools for this course are Web-based materials,