Chapter V

Web-Based Distance Learning and the Second Digital Divide

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ABSTRACT

Web-based distance learning programs promise learning options anywhere, anytime, to anyone. However, some individuals with disabilities are locked out of these opportunities when courses are designed in such a way that they are inaccessible to individuals using assistive technology. This chapter provides an overview of access challenges for people with disabilities; suggestions for course developers on creating accessible courses; and suggestions for administrators on developing accessibility policies, guidelines, and procedures.

INTRODUCTION

Virtual learning, online learning, distance learning, Web-based learning, distributed learning, E-learning—whatever you call it, the proliferation of Web-based educational programs promises to revolutionize the field of education. The Internet has the potential to deliver instruction anywhere, anytime to anyone who has access to a computer and the Internet. However, with respect to technology
ownership, a digital divide separates the “haves” from the “have-nots.” Poverty, race, ethnicity and disability contribute to putting some people on the wrong side of this digital divide. The “have-nots” sit in stark contrast to the “haves,” who are blessed with the benefits that new technologies promise (United States Department of Commerce, 1999; Kaye, 2000). Options for taking courses, teaching courses and pursuing careers are limited by their “have-not” status.

But being a “have” with respect to technology is not enough. Within the group of “haves,” some people face a “second digital divide.” This line separates people who can make full use of today’s technological tools, services and resources from those who cannot. According to a National Science Foundation letter, “access implies the ability to find, manipulate and use information in an efficient and comprehensive manner” (Lesk, 1998, p. 1). People with disabilities who are on the right side of the first digital divide, too often find themselves on the wrong side of this second digital divide (Waddell, 1999). They have technology but do not have full access to all of the benefits it delivers to others.

For example, Imke Durre, who is blind, recently graduated with a Ph.D. in Atmospheric Sciences from the University of Washington. To complete her studies, including advanced mathematics and science courses, she became a power computer user. Braille translation software and a refreshable Braille display allow her to access any text presented on a computer screen. This display uses movable plastic pins to produce screen output line by line in Braille. A Braille embosser can be used to print hard copy pages of Braille output. Clearly, Imke is on the right side of the first digital divide. She is a “have.”

However, because of the inaccessible design of some applications, Imke sometimes finds herself on the wrong side of the second digital divide. Science Web sites with beautiful graphic displays of atmospheric data are inaccessible to her unless the content of the graphic material is available in text format that her Braille output system can present to her. She cannot access mathematical expressions and equations that are inserted into Web pages as images, unless they are also presented as text (e.g., “one-half” presented as “1/2” rather than as a fraction with a fraction line). It is easy to imagine Imke to be an excellent applicant for a job teaching an established science course offered via distance learning. However, significant rewriting would be needed if the Web pages and other course materials were initially designed in formats that are inaccessible to her. These examples demonstrate how Imke, who owns state-of-the-art computer and assistive technology, sometimes sits on the wrong side of the second digital divide.

Assuring that no one finds himself on the “have-not” side of the first digital divide will require the work of many sectors of our society—political, educational, social, business, legal and governmental. The second digital divide, however, is an “easier” problem to tackle. This divide can be completely eliminated if librarians,
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