Chapter 16
Coping with Accessibility and Usability Challenges of Online Technologies by Blind Students in Higher Education

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ABSTRACT

This study examined the usability challenges and emotional reactions blind college students experienced in accessing educational materials and communicating with professors and colleagues through online technologies. A case study approach was adopted. Five students were interviewed regarding their online learning experiences using Blackboard, a popular Course Management System. Analysis of the interviews revealed that the blind students found Blackboard poorly accessible, which affected their academic achievements. However, despite their frustrations and feelings of marginalization, the study also showed that the blind students were motivated and optimistic of their successes. The research suggests that academic administrators and CMS designers work jointly with adaptive software developers to create enhanced user interfaces, ensure universal access and usability of online technologies, and reduce educational inequities and frustrations encountered by blind students.

INTRODUCTION

According to the Sloan Consortium and the Babson Survey Research Group, a total of 5.6 million college students in the United States were taking at least one online class during the 2009 fall semester (Allen & Seaman, 2010; Kaya, 2010). There were one million more online students during the fall 2009 than during the fall 2008, with the number being the highest ever annual increase in online enrollment. This number is astonishing when one

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looks at the increasing speed of online enrollment in higher education in the past few years. For instance, during the fall of 2007, the Sloan Consortium reported that over 3.9 million college students in the United States, representing over 20% of the total student population were taking at least one online course; a 12 percent increase over the number reported the previous year (Allen & Seaman, 2008).

With the increasing popularity of online or blended courses, course management systems (CMS) such as Blackboard have become the essential platform for communication and learning in higher education. Blackboard, the term used in this chapter to represent the 2008 and 2009 versions of the Blackboard Learning System, WebCT, or Blackboard/WebCT Vista, is one of the most widely-adopted CMSs by the U.S. postsecondary institutions and it "has become the Microsoft of higher-education technology" (Young, 2008, p. A1). While CMSs are vital media used for instruction and communication, information access in these complex and highly visual virtual environments can be problematic for the blind or visually impaired students who are dependent on adaptive software for web navigation.

Adaptive software is a general term used to refer to computer applications used by people with disabilities to access and retrieve electronic information from computers (Lazaro, 2001). Although referred to as adaptive software, they are only adaptive to specific environments for which they are designed. Consequently, their functionality is limited. While research on web-based distance education has found that sighted students persistently endure frustrations in their computing tasks (Hara & Kling, 1999), studies focusing on blind student populations engaged in web-based learning has been largely overlooked.

The purpose of this study, therefore, was to examine the accessibility and usability challenges of online technologies that are experienced by blind college students. Through this examination, we hope to better understand the impact of online technologies on the blind students' pursuits for their academic goals.

Adaptive Software, Assistive Technologies and Blind Individuals

A wide body of research indicates that while there has been a great improvement in universal access to technology, blind individuals still struggle with poorly designed computer interfaces and that continue to lag behind in detecting some web design features (Gerber, 2003; Craven & Brophy, 2003; Irwin & Gerke, 2004; Leporini & Paterno, 2004; Salampasis, Kouroupetroglou, & Manitsaris, 2005). Gerber (2003) and Craven and Brophy (2003) further observed that most of the adaptive technologies used by blind individuals only navigate the Internet in a linear and serial pattern. Yet, web designs are increasingly incorporating Java-based hypermedia and multimedia elements with various sophisticated visual elements such as graphics, hyperlinks, and pop-up windows. The conflicts between the linear navigation of adaptive software and the trend of non-linear web designs limit blind users from accessing and using information, which sometimes force the blind users to abandon their educational pursuits.

Undoubtedly, most web content developers, page authors, site and tool navigation designers try to follow W3C accessibility and usability guidelines that recommend procedures to ensure universal accessibility to web content (WAI, 1999). More emphasis, however, is placed on web accessibility at the expense of usability concerns for people with disabilities. Leporini and Paterno (2004) view the concepts of accessibility and usability as closely related, but describe accessibility as focused on making a website available to a wider user population, and usability as aiming at making users' experiences with the websites more efficient and satisfying. Leporini and Paterno (2004) observed that "often, when designers consider people with special needs, they tend to address only accessibility issues, and ignore