Chapter XII

Implementing Accessible Online Learning for Blind and Visually Impaired Students:
A Pilot Study

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Abstract

This chapter presents a framework for the design of accessible online learning environments for blind and visually impaired students in terms of accessibility and the design process. The conjunction of the Web content Accessibility Guidelines Version 1 and the Principles of Universal Design for Learning (Centre for Applied Special Technology) into the instructional design process forms the basis of our approach. The first cycle of this iterative study implements objectivist instructional

design theory to teach blind and visually impaired students how to write Web pages in HTML. For future iterations, we argue for the implementation of objectivist instructional design theories to provide clarity of structure beneficial for blind and visually impaired learners, together with constructivist notions such as a client-centred design approach and mechanisms for interaction to promote collaborative construction of knowledge.

Introduction

Accessibility is mainly concerned with designing in such ways as to make items, services, learning materials, and others, available to people with disabilities. Clark defines the concept as "making allowances for characteristics a person cannot readily change" (Clark, 2003, p. 37). A particular area of concern within this sphere is accessibility on the World Wide Web (WWW) for blind and visually impaired (BVI) students. A number of guidelines for the creation of accessible online material, such as the Web Content Access Guidelines (WCAG 1.0) and the Principles of Universal Design for Learning (Centre for Applied Special Technology), aim at guaranteeing accessibility for all. The previous are good attempts to safeguard the rights of disabled users; nonetheless, it is feasible to adhere to one of these guidelines and still create inaccessible online learning for BVI students.

Our work presents an approach to the development of accessible online learning environments for BVI learners through the combination of instructional design theory and universal design principles. Given the proposition that hypertext markup language (HTML) is a universal language to write Web pages (Berners-Lee, 1999), and that the WWW is an increasingly universal medium of communication, arguably for a predominantly sighted audience, the authors propose to arm BVI students with the skills to communicate with sighted people. Thus, core to our approach is to teach BVI students to create Web sites that are not only aimed or created for a BVI audience, but rather for the widest possible audience, including sighted people. While this approach may present difficulties for the students, inherent to their condition (i.e., some might not have a two dimensional concept of table), it will potentially contribute to overcoming communication barriers within the context of HTML- and WWW-mediated communication.

The structure of this chapter is as follows: the literature review briefly establishes some characteristics of BVI students in relation to accessing and engaging in online learning. It also outlines key features of HTML, the language used to write Web pages, within the context of our work. This is followed by an introduction to premises of online accessibility through exploring existing guidelines such as the WCAG 1.0, and the Principles of Universal Design for Learning (Centre for Applied

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