Preface

INTRODUCTION TO WEB ACCESSIBILITY

In April 1997, World Wide Web Consortium (W3C) organized the Web Accessibility Initiative (WAI) "to promote accessibility in five areas: technology, guidelines, tools, education and outreach, and research and development." One of the projects coordinated by WAI established the *Web Content Accessibility Guidelines* to serve as the recommended standards for the design of accessible Web documents. Since these standards have not yet been mandated as the legal protocol for Web design, it has been rather challenging to convince various groups of people that Web accessibility is a matter of importance.

One reason for this challenge is that Web accessibility is hard to define; it is a dynamic construct having different meanings for different people. Some people believe that Web accessibility is a disability issue. Advocates for the disabled have actively promoted this opinion, and most of the literature written about Web accessibility seems to support this general view. Still others see Web accessibility as a crucial element in the development of universal design. Universal design refers to "the design of products and environments [that are] usable by all people, to the greatest extent possible, without the need for adaptation" (Center for Universal Design). When Web pages do not adhere to the principles of universal design, they tend to be very difficult to navigate. Almost each of us can recall a situation where we have had some challenge in trying to retrieve information from a Web site. Finally, others consider Web accessibility a disparity issue. Those of us who cannot afford state of the art computers or the latest version of software may have difficulty gaining access to graphic-intensive Web pages, because they are designed with scripted code that does not work well with older versions of browsers. For the average computer user, this situation can lead to challenges in Web accessibility.

Web accessibility also is important for technology. Search engine robots that are text-only and support HTML 2.0 cannot access graphic-rich Web sites or sites that hide content in images. In his study on the "deep Web," Michael Bergman (2001) found that traditional surface Web sites are fraught with many quality problems. Of the sample Bergman examined, "45% of existing Web sites were half finished, meaningless, or trivial." Bergman's study also revealed that most traditional search engines could not even retrieve materials from dynamically charged Web sites, most of which include subject-specific databases and multiple thread technology. Since "the deep Web is the largest growing category of new informa-

tion on the Internet," individuals who rely on the Internet for the latest information and research should be concerned about their inability to access this material (Bergman, par. 5).

Another reason why people do not really understand the importance of Web accessibility is that only recently, the standards of implementation for Web accessibility have been enforced. In June 2001, Section 508 of the 1973 Rehabilitation Act was put into effect to ensure that federal employees with disabilities have equitable access to electronic and information technology. As a result, many people in the private sector are confused as to how the legislation applies to them. Already, this legislation has had far-reaching implications for business and industry and educational institutions that receive funding from the federal government, but until the requirements of Section 508 are enforced more consistently, most people will continue to disregard their responsibility for compliance.

Since the compliance to Web accessibility is not regulated, people who are aware of the guidelines will still make excuses for ignoring the standards. Some Web designers argue that having to learn new code for the design requirements will take too much time. This rationale is foolish, because there are several applications that will generate the code into the document. For example, there exists a freeware program called the "alt" generator that allows Web designers to describe their images up to 500 characters. The "alt" tag is generated when the designer moves a mouse over the image on a page. In addition, the various tags associated with Web accessibility are easy to use within the structure of traditional HTML coding. Web-accessible tags are created to complement, not deconstruct, existing code.

Still, there are some people who will insist that the *Web Content Accessibility Guidelines* are too restrictive. Some Web designers think that if they have to follow Web accessibility guidelines their pages won't "look good," but if the information on their pages cannot be accessed, no one will be looking at anything. The truth is that the WAI guidelines do not direct us to create only text-based Web documents; these guidelines demonstrate ways in which we can design pages that will be accessed more effectively. And for those of us actively involved in the creation of Web documents, this objective should be a top priority.

EXISTING RESEARCH AND INFORMATION

Currently, most of the literature on Web accessibility is found in journal literature and electronic resources. The W3C has published several online documents and materials to assist in the development and use of the WAI standards for Web accessibility, and most disability organizations have published similar documents that provide additional information on the WAI's *Web Content Accessibility Guidelines*. At present, three books that provide detailed analysis of Web accessibility

issues include: Michael Paciello's *Web Accessibility for People with Disabilities*, Barbara Mates's *Adaptive Technology for the Internet: Making Electronic Resources Accessible to All* and Tom McNulty's *Accessible Libraries on Campus: A Practical Guide for the Creation of Disability-Friendly Libraries.* These texts serve as foundations for gaining an understanding on why Web accessibility is important and offer a wide scope of resources and references for further assistance.

Design and Implementation of Web-Enabled Teaching Tools builds upon the existing foundation of information on Web accessibility by providing further discussion and research on topics associated with this issue. The book serves as a resource for anyone interested in learning more about applications of Web accessibility in distance education and the importance of adapting Web accessibility practices in the design of Web-enabled teaching tools. It provides practical information, an extensive collection of resources, and useful suggestions on how to create more accessible Web documents.

In addition, the contributors in this project are actively involved in the research of Web accessibility issues and can be considered expert resources on this topic. Their research, insights, and recommendations for developing implementation plans for Web accessibility initiatives should be useful to administrators and business leaders assigned to coordinate the development of equitable resources in electronic and information technology. Some of the contributors even discuss their own experiences in the design and implementation of Web accessibility at their institutions to offer models of practices for readers to consider.

TOPICS OF DISCUSSION

Design and Implementation of Web-Enabled Teaching Tools is organized into five sections that each focus on a current issue in Web accessibility. The sections of the book are arranged in somewhat of a logical progression, beginning with an explanation of the laws associated with Web accessibility and ending with current research and application of the standards. The organization of the book leads readers through a progression of issues and discussions, all designed to make people more aware as to why Web accessibility is an important matter of concern.

Part One addresses "The Legal Implications of Web Accessibility." In this section, Holly Yu examines "Web Accessibility and the Law: Issues of Implementation" and I discuss "Understanding Section 508 and Its Implications for Distance Education." Holly Yu's discussion begins with an overview of the emergence of Web accessibility and discusses what constitutes universal accessible design. Yu provides a detailed analysis of the existing legislation and the Office of Civil Rights rulings related to accessible Web design along with definitions of the

legislative jargon often associated with Web accessibility laws and regulations. Following this discussion, Yu explains why barriers in implementation of Web accessibility laws exist and what should be done to improve application of the standards. Recommendations and suggestions regarding ways to encourage policy development and training are given. This chapter also provides a list of resources and tools for developing more accessible Web design.

In the second chapter, I examine how the passage of Section 508 will inevitably impact higher education, specifically in the area of distance education. I begin with a general discussion of the mandate and attempt to show how this legislation has already begun to yield implications for higher education. After this discussion, I review the technical provisions of the standards of Section 508 that specifically relate to technologies in the following distributed learning formats: videoconferencing, Web-assisted/Web-based instruction and computer-mediated instruction, which involves the use of courseware products. Suggestions on what educators and administrators need to do in preparation for Section 508's application to distance education are also given.

Part Two of the book,"Understanding Web Accessibility Guidelines" offers an examination of the WAI's *Web Content Accessibility Guidelines* and their application. In "Strategies to Increase Web Accessibility and Usability in Higher Education," Barbara Frey, Ashli Molinaro and Ellen R. Cohn address the current status on Web accessibility and usability in higher education and provide a comprehensive review of the WAI's *Web Content Accessibility Guidelines*. The authors explain and provide several illustrations to demonstrate how to use the guidelines in creating an accessible Web document. These illustrations and examples are designed to help readers understand how to apply and use accessible code. The chapter includes a list of resources for reference in developing Web-accessible pages.

Jody Condit-Fagan's "Text-Only Alternatives: Are They Right for Your Site?" offers a detailed discussion on developing text-only alternatives for Web documents. Fagan begins her discussion by explaining the difference between "text-only" Web pages and "text-equivalents" created for Web pages. She then demonstrates through a series of examples how Web developers can write accessible code for common nontext features found in a Web site. Her discussion is presented in such a way that even if you are unfamiliar with HTML code, you will understand how to apply the specific tags to create the desired text-equivalents. Following this section, Fagan provides a review of a variety of text-only applications and browsers. She closes with a discussion of emerging technologies and future research underway.

In Part Three of the book, the focus is on "Implementing Web Accessibility in Distance Education." Sheryl Burghstahler introduces the subject in "Web-Based

Distance Learning and the Second Digital Divide." In this chapter, Burghstahler reveals the failure of distance education programs to comply with ADA standards. Students with disabilities who attempt to enroll in distance learning courses are met with additional challenges, and what Burghstahler refers to as a "second digital divide." Burghstahler notes that there exists only limited research on the applicability of accessibility standards in distance education programming. For this reason, she presents a discussion on how distance education administrators can respond to the needs of students with disabilities who may enroll in distance learning courses. Burgstahler offers suggestions for implementation, including polices and guidelines for improving assistance and support for students with disabilities. She outlines some of the accessibility issues that may arise in specific distributed learning formats and concludes with a list of recommended sources and materials for further reference.

In Chapter 6, Robert Luke and Laurie Harrison in "Inclusion in an Electronic Classroom: Courseware Design and Implementation" investigate the level of accessibility in several common courseware tools used in Web-based instruction. In this study, they examine the types of challenges people with different kinds of disabilities experience when they use the selected courseware products. In the discussion of the results, Luke and Harrison suggest ways in which instructors and courseware designers can improve the accessibility of these products. A review of the WAI's *Web Authoring Guidelines* is also provided, and recommendations for courseware developers are given. The authors also discuss some of the ways in which courseware developers have modified their products to enhance accessibility.

Finally, to conclude this section, Maggie Lynch and Patti DeWitz in "Web-based Teaching and Learning for Blind or Visually Impaired Faculty" present a study on what accommodations need to be made to enable blind or visually impaired (BVI) faculty to teach Web-assisted/Web-based courses. In this study, Lynch and DeWitz reveal the challenges in gaining support from distance education administrators and finding technical support staff willing to provide training on the use of the courseware. DeWitz offers her own testimony in her experiences teaching with WebCT. The study reveals the challenges associated with the design, development, and delivery of the distance-learning course from the perspective of a BVI instructor. Lynch and DeWitz also offer a series of recommendations for courseware designers on how to improve their products for people with disabilities. A review of resources and materials for future reference is also listed.

Part Four, "Studies in Application of Web Accessibility," includes research conducted by Axel Schmetzke: "Web Accessibility at University Libraries and Library Schools: 2002 Follow-Up Study" and Amy Metcalfe "Overcoming Organizational Barriers to Web Accessibility in Higher Education: A Case Study."

Both studies provide an understanding of why it is important to implement Web accessibility in academic settings, but can serve as models of practice for other institutions.

Schmetzke's study is a follow-up review of his previous research on the implementation of the Web accessibility standards in libraries and library schools. In his study, Schmetzke examines the range of accessibility found in the Web pages for the main library and the institution's library school using the validation tool "Bobby" created by the Center for Applied Special Technology (CAST). Schmetzke provides a very detailed discussion on the use and limitations of this evaluation tool, citing examples of "false-positive" error-free findings that can occur. In the discussion of his findings, Schmetzke identifies the challenges libraries face in developing Web content that is accessible, but argues that institutions have fallen short in developing projects or programs that make library science graduates more aware of the issues. He closes his chapter by making recommendations for future research and development to promote awareness of Web accessibility issues.

Metcalfe's study offers discussion of the Web accessibility implementation plan developed at the University of Arizona to ensure the development of more accessible documentation consistent through the university's academic and service departments. Metcalfe begins with a detailed discussion of the challenges associated with the coordination of a campus-wide implementation plan and discusses how to overcome administrative and "cultural" barriers. As she takes us the process, she offers advice and lessons learned from the experience. Although this discussion focuses on an implementation plan in a university setting, Metcalfe's model can easily be adapted to other organizations and institutions involved in similar initiatives.

The last section of the book, Part Five, is a "Reference Desk" for additional information. In Appendix A, a list of organizations and additional contacts for further resources are listed. This list includes educational centers, government agencies, organizations, associations, and other nonprofit agencies involved in the promotion of Web accessibility and the design of Web-enabled teaching tools. Appendix B offers a selected bibliography of material for further review. This bibliography includes the listings documented by each of the contributors as well as additional resources such as Web publications. The last section of the book, "Pull and Push: A Select Webliography of Products Serving Section 508," was compiled by Alice Bedard-Voorhees.

In her review, Bedard-Voorhees offers a descriptive analysis of Section 508 product categories with intent to highlight features that can assist current learners in formulating appropriate questions with vendors to save time in the purchase of compliant hardware and software. The book also includes a general glossary for some of the terms and concepts described in the chapters and references.

CONCLUSION

The primary objective in the creation of *Design and Implementation of Web-Enabled Teaching Tools* is to make people more aware of the implications of Web accessibility issues. This book serves as an impetus to promote additional research and development in the field of Web accessibility, and I challenge educators, graduate students and other interested parties to continue investigations into this subject and engage in more studies that will promote the need for Web accessibility. As the multifaceted of the World Wide Web continues to emerge, it is imperative that Web designers and those responsible for coordinating the development of Web-based projects consider the importance of Web accessibility planning and implementation. Those of us who are involved in promoting education must consider our own practices in the creation of Web-accessible documents and begin to regard accessibility as a key component toward enhancing the quality of our instruction. We all realize that the force of the World Wide Web can be amazing and that it has yet to reach its potential, but the Web can only become more powerful and go beyond its limitations only if we always remember to advocate ways to make it completely accessible.

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