

Online Instructional Materials for Universal Web Accessibility

2002/2003 TIGERS Grant Final Report

(as published in the 2003 EdMedia Conference Proceedings)

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Overview

In Spring 2002, California State University (CSU) System information technology staff identified web accessibility training materials as an important system-wide need. A project team formed to determine: *How can we efficiently deliver training to our colleagues on important aspects of web accessibility?* The team included two instructional designers and two webmasters from four campuses (including one outside the CSU System). The team was funded by the CSU Center for Distributed Learning to develop a series of online modules to create a flexible format and to ease statewide access to instruction on universal web accessibility. The online format also provided an opportunity to illustrate universally accessible web-based instructional materials. Technical support staff or instructors can use the materials to offer training to other faculty, students, and staff. Originally intended for CSU use, the materials are also freely available for any non-profit educational purpose.

Covering six general topics, each module has a uniform format including learning objectives, topic overview, selected readings, study questions, exercises, discussion questions, and reference materials. The modular format allows topics to be used independently or in any combination. Thus, the modules can support staff professional development, a comprehensive institutional educational campaign, or instruction in credit-bearing courses that include web page design and development. The digital format allows instructors to adapt the materials to the scope of the content to be covered or to a specific audience.

The topics include an introduction, legal impetus, assistive technologies, design tips (I and II), and accessibility tools.

Instructional Design

The project team first identified the intended audience: persons offering training to others regardless of that person's own familiarity with web accessibility. These people are most likely to be technical support staff conducting an educational campaign or faculty with a web design component in a class. Given this audience, introductory and advanced topic materials were necessary.

Every module follows a uniform format: objectives, study questions, topic overview, reading list, two or more exercises, discussion questions, and a list of reference materials. The study questions identify key points of the unit. These questions may also be used as test questions or offered for student self-assessment. Discussion questions help the instructor incorporate interaction among students on the topic. They were written with care to have more than one "correct" answer. The reference list includes all websites, books, and articles used in the module as well as selections for further study.

Each module is designed to be able to be used independently or in combination with any other module. Therefore, some material or exercises are included in more than one module. However, when used together, this enhances connections among the topics.

The instructor may customize these materials for a particular audience or scope of study. For instance, each module has multiple readings, discussion questions, and exercises. An instructor may opt to select only one reading, one exercise, and no discussion questions for a particular instructional opportunity. Another instructor may want to incorporate all readings, all discussion questions, and all exercises for a more thorough exploration of the topic. Both scenarios can be easily accommodated. The instructor can direct the students to selected web-based readings, much like assigning certain questions for math homework. Or instructors may download the module files, edit them, and upload to their own web sites.

Even though the instructional materials are published online, the modules are not intended exclusively for online instruction. For instance, a list of all URLs (Uniform Resource Locators) makes printed versions accessible also.

It was critical to carefully evaluate accessibility concerns for the project's web pages. One of the project goals was to demonstrate universal accessibility principles for instructional materials. All pages were constructed with simple HTML to extend their accessibility to the widest audience.

In addition to editorial issues normally addressed in a collaborative publication, the project team debated the relative merits and accessibility concerns for such matters as including explicit URLs with the associated hyperlinked text, whether to have related information open in a new browser window, and what would be an appropriate navigation plan for the site. The decisions: Explicit URLs are included at the bottom of each page, facilitating use of the material offline without interrupting the flow of text. The link uses the TITLE tag to avoid screen readers speaking the letters of the URL. New browser windows are not opened; the choice to do so is left up to the student. The navigational structure is most easily seen by viewing the modules.

Examples of specific elements included in the uniform design of the modules follow:

Learning Objectives

List some problems persons with disabilities face when using the Web; Describe the difference between equitable and alternative access; Design a page that transforms gracefully when “viewed” using a screen reader or text browser; Identify methods for making PDF files accessible to users of screen reading software; Determine literacy level of text on a web page using a specialized evaluation tool.

Study Questions

Why is web accessibility important? What types of web sites are required to be Section 508 compliant? What design techniques will make it easier for users with disabilities to access the Web? What techniques make it harder? How do you make an HTML form accessible? What advantages and disadvantages exist among the alternatives to PowerPoint presentations published on the Web? What are the limitations of accessibility repair tools?

Exercises

Familiarize yourself with services available on your campus for persons with disabilities; Manually evaluate a set of web pages against Section 508; Gain an understanding of limitations of computer use for individuals with limited use of their hands; Write effective alt-text for a series of images; View a video using the text transcript and the rich media transcript; Make corrections to web pages using accessibility repair tools; Recommend a strategy for your own organization to implement accessible web design.

Discussion Questions

If you were responsible for implementing Web accessibility on your campus, how would you introduce the topic to faculty and staff? What happens when the focus of accessibility becomes limited to meeting standards and guidelines, and technical aspects get emphasized at the expense of the human interaction aspect? What did you discover that can be changed to improve accessibility on your own web pages? How does the improper use of HTML contribute to the lack of accessibility in web pages? When some required readings for a course are in PDF format on an external web site

how will you address accessibility? How satisfied were you with the results from different evaluation tools?

Instructional Content

Module 1: What is “Universal Web Accessibility” and Why Is It Important?

This module gives a definition of universal accessibility and its relevance in the educational community.

Module 2: The Legislative and Legal Impetus for Web Accessibility

While not providing legal advice, the legal mandate for web accessibility is explored. An overview of Section 508 of the Rehabilitation Act and the World Wide Web Consortium Web Content Accessibility Guidelines (W3C WCAG) is included.

Module 3: How Do Users with Disabilities Use Assistive Technologies to Access the World Wide Web?

Web designers gain a framework for anticipating accessibility problems in this introduction to assistive devices and software used by individuals with disabilities when browsing the Web.

Module 4: Design Tips and Techniques, Part I

This module answers many of the questions web designers have about coding techniques to achieve universal accessibility while still preserving visual appeal. It includes methods to avoid common as well as unanticipated accessibility problems.

Module 5: Design Tips and Techniques, Part II

Many types of non-HTML files create accessibility problems. Separate sub-modules suggest techniques and specialized software for dealing with Adobe’s portable document format (PDF), Macromedia Flash, Microsoft PowerPoint, and streaming media (audio and video) files.

Module 6: Accessibility Tools

A wide variety of accessibility evaluation, repair, and testing tools are examined, including their limitations and variations in cost and reporting capabilities.

Evaluation, Feedback, and Publication

A Fall 2003 pilot offering of the modules is planned for information technology staff at Humboldt State University (Arcata, CA). A group of technical support staff will facilitate the online instructional materials for their colleagues who have indicated an interest in learning more about web accessibility. After the pilot, feedback from students and instructors will be incorporated into both the instructional design and the content.

These modules are published at California State University Fresno on their extensive Web Access site (<http://www.csufresno.edu/webaccess/learningmodules>). In addition, they may be found in the MERLOT depository of educational resources (<http://www.merlot.org/>) and the related site supporting information technology professionals (<http://cats.merlot.org>). The materials are copyrighted by the California State University Trustees and are freely available for non-profit education.

Conclusion: The Collaborative Effort

This project has illustrated the power of synergy of staff from distant institutions. The unit topics were divided among the project team members based on their areas of specific interest and expertise. Each topic had a pair of lead authors and was later peer reviewed by the other team members. Evaluative feedback was incorporated to improve the modules. However, the group members shared more than lead authoring responsibilities. One person took the lead to identify objectives and coordinate the organization of exercises. Another suggested the division of topics and designed a specific bad example webpage. A third designed the final website and contributed substantially to specific examples and exercises. The fourth team member found relevant supporting resources, added accessibility enhancements to content pages, and kept everyone else on track. A final editorial review was made of all modules for standardization and inactive hyperlinks. The team members never met in person to work on the project. All communication was done through email and three conference calls.

Web accessibility is a topic of growing importance to all who seek to capture the power of the web to reach an ever-growing audience of diverse learners. However, as important as it is, developing a comprehensive curriculum for effective instruction seemed to be a task too large for any one individual with other job responsibilities. Through a collaborative effort and a year-long timeline, this project resulted in a compilation of materials providing a foundation for instruction on universal web accessibility.

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