Practical Tools for Ensuring Web Accessibility for All
in the Electronic Classroom

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Rationale

The exponential increase in the development and popularity of online and hybrid courses since 2002 alone has given learners around the globe unprecedented access to educational opportunities in a wide variety of fields. Yet internet instruction, with its reliance on electronic documents, has created multiple challenges for learners with disabilities—a population of learners increasingly represented in the nation’s fast-growing enrollments in Web-based courses (Kaye, 2000). These students struggle to access the information they need in order to have a meaningful learning experience. Educators face an equal struggle to adapt their course materials to meet the needs of variously-abled learners.

Yet the faculty, instructional and Web designers that develop materials for online use—from Web pages to Word documents, PDFs to PowerPoint presentations, as well as the use of course management system—often have a limited understanding of the Section 508 Guidelines mandated by the U.S. Electronic Rehabilitation Act. While the 508 guidelines set out the design standards to which all electronic documents must adhere to ensure accessibility for all learners, they don’t ensure that the diversity of people producing them know how to make them accessible.

Web Accessibility Begins at Home

The range of obstacles posed by electronic documents that are not designed with accessibility in mind can intimidate most of us—whether expert or novice, faculty or Web developer. But when you consider the sheer number of electronic documents we create every day—be they Word, PowerPoint or PDF documents—we can make a significant contribution to making the documents we most commonly design more fully accessible not only to learners with disabilities, but for all us as well.

Among the responsibilities of instructional and support staff when developing and using the Web in campus coursework are the following skills:

- Recognizing electronic accessibility issues that violate the Section 508 guidelines of the Electronic Rehabilitation Act when they encounter them;
- Understanding and appreciating the challenges presented by inaccessible electronic documents for variously-abled internet users;
- Selecting and applying the appropriate tools for addressing their most commonly-encountered Web accessibility problems;
- Implementing long-term strategies for maintaining the accessibility of electronic documents used in Web-based learning materials in the classroom.
A familiarity with the Section 508 guidelines of the Standards of the Electronic Rehabilitation of Act as amended in 1998 is an essential starting point for developers of all electronic documents used in instruction.

Section 508 Guidelines

1194.22 Web-based intranet and internet information and applications.

(a) A text equivalent for every non-text element shall be provided (e.g., via “alt,” “longdesc,” or in element content).
(b) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.
(c) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.
(d) Documents shall be organized so they are readable without requiring an associated style sheet.
(e) Redundant text links shall be provided for each active region of a server-side image map.
(f) Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.
(g) Row and column headers shall be identified for data tables.
(h) Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers.
(i) Frames shall be titled with text that facilitates frame identification and navigation.
(j) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.
(k) A text-only page, with equivalent information or functionality, shall be provided to make a Web site comply with the provisions of these standards, when compliance cannot be accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes.
(l) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology.
(m) When a Web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with §1194.21(a) through (l).
(n) When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.
(o) A method shall be provided that permits users to skip repetitive navigation links.
(p) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

Relevance for Faculty, Instructional Staff & Designers: Electronic Accessibility Benefits All

While many faculty and other instructional staff are quick to celebrate the ability of Web-based classes to reach many audiences, they may occasionally fail to remember the relevance of using specific accessibility guidelines and/or standards as a touchstone as they develop their teaching & learning tools. Indeed, many diminish their role as powerful tools for building active learning into the course design.

Among the course development strategies instructional staff can use to maximize accessibility to and effectiveness of learning are adhering to Universal Design & accessibility standards as best practices for creating Web-based course materials.
In addition, the online instructor’s need to consider multiple learners’ differences in learning style when designing effective course materials significantly impacts the accessibility of a course. Just as, for instance, an over-emphasis on written, verbal communication can thwart the learning of any of us with a short attention span, so will it doubly or triply challenge a learner with dyslexia (Bradford, 2003).

The characteristics of verbal explicitness, along with succinctness and precision, are promoted as practices of good instructional design—tools of writing that will go a long way toward assisting instructors create the effective short descriptions known as “alt-text” for images—and for the lengthier descriptions necessary for making charts, diagrams, graphs and other informational images accessible.

Finally, instructors’ willingness to provide alternate formats for instructional information such as graphs, diagrams, etc. for learners with disabilities (e.g. a transcript and real-time captioning for a video) supports the idea of creating learning that uses a combination of learning styles (in this case verbal and audio learning styles) (Abbey, 2000).

**Web Accessibility for All Project Resources**

The University of Wisconsin’s Center on Education and Work has identified and developed a wide variety of resources available for instructional staff and designers to use, many of which were developed by the Center’s Web Accessibility for All project, funded by the U.S. Department of Education’s Office of Postsecondary Education. These resources include training on how to make PowerPoint slides and PDFs accessible, as well as how to use structural markup to make word-processed documents more accessible.

Among the practical techniques and tools the Web Accessibility for All project has available for making electronic documents fully accessible to learners are:

- Using structural markup to make word processed documents accessible;
- Making PowerPoint slides accessible;
- Making accessible PDFs;
- Developing appropriate alternate text for images in electronic documents;
- Creating accessible tables & forms;
- Negotiating the accessibility of course management systems.

Training resources developed and delivered by the University of Wisconsin’s Web Accessibility for All project are among the resources available to instructional designers, Web developers, faculty and other instructional staff as they work to meet their responsibilities to create accessible Word, PowerPoint and PDF documents, and to recognize best practices in instruction and design.

**References**


Biographical Sketches

John Gugerty is a Researcher at the University of Wisconsin-Madison. Mr. Gugerty directs/co-directs five national, competitively funded projects at the Center on Education and Work. These include the Wisconsin AP Distance Learning Consortium, Web Accessibility for All, and Success from the Start [implemented via WebCT in year 4, and via two-way videoconferencing and WebCT in years 1-3]. For twenty-nine years, he has focused on improving the career aspirations, preparation, opportunities, and outcomes for youths and adults with disabilities and other special learning needs. He has made more than 70 national presentations, and was organizer/co-organizer for 40 national workshops.

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