

Container, Content, and Capability: The Three C's of Accessibility and Distance Education

Understanding the dynamics of accessibility as it relates to Web-based distance education has proven to be a challenging undertaking. Many California community colleges continue to struggle with the question of which Web-based distance education delivery tools are, or are not, accessible for use by students with disabilities. Although the legal requirements and responsibilities have been clearly delineated under Title II of the Americans with Disabilities Act, Section 508 of the Rehabilitation Act, and various legal opinions from the California Community College Chancellor's Office, the pragmatics of understanding and selecting Web-based delivery systems continue to generate questions.

This white paper from the High Tech Center Training Unit will attempt to highlight some of the most fundamental and underlying issues generating these questions. We will explore this issue by dividing the dynamics of accessible distance education into three components: the container, the content, and the container's capability for authoring accessible content.

The Container

For the purpose of this paper, we will define "containers" as the Web-based platforms used for delivery of educational materials and content. Within the California community colleges, the primary containers for the delivery of Web-based distance education are Blackboard, WebCT, and Etudes. Although there are many additional software programs designed to facilitate delivery of Web-based distance education, a comprehensive list of software titles is not necessary to explore this first concept.

Regardless of the specific delivery system, the first issue to be addressed is the innate accessibility of the container itself. Questions to consider before any content is added to, or created by, the delivery tool include the following:

- Have appropriate accessibility standards and guidelines been followed by vendors or software developers so that assistive computer technologies (e.g., Dragon NaturallySpeaking, JAWS, Window-Eyes, etc.) can interoperate with the container?
- Will assistive technology successfully operate with technologies integrated within the container (e.g., whiteboard tools, synchronous chats, calendars, quizzes and assessments, etc.)?
- What skill level with assistive computer technologies must the student possess in order to successfully navigate the container?

Ideal containers allow students with disabilities to navigate and interact with the program while focusing on course content. Optimally, the container should provide the student with options for selecting various modalities in which to access the information (i.e. rich media, text only, fully annotated media), thus elevating the content, rather than the container, to the forefront of the user's experience. While most containers currently do not provide such options, these platforms may still be accessible by assistive computer technologies.

It is essential that developers structure containers to interface with assistive computer technologies. In the absence of such an underlying structure, the container itself will become a barrier to those attempting to use assistive computer technologies to interact with any information or technology within the container.

Not only is the accessibility of the container itself important but also the accessibility of technologies integrated within the container that provide for a more interactive learning environment. Integrated technologies, such as whiteboards or synchronous chat applications, are important interactive tools that can aid in enhancing online courses. The accessibility of such "value-added" options must be addressed by the software developers during the initial design cycle of the product as opposed to embedding technologies without considering the ramifications for accessibility. These embedded technologies need to provide the same level of access to assistive computer technologies as the container itself.

When posing the question "What skill level with assistive computer technologies must the student possess in order to successfully navigate the container?" it is necessary to consider a number of related factors. Does the college possess the industry-standard assistive computer technologies with which the container has been designed to operate? Does the college possess current versions of the assistive technology software? Does the student already possess, or can the college, through its High Tech Center program, provide the student with sufficient training in the use of screen readers or voice-input systems to navigate Web-based containers?

Developers and students each share responsibility for academic success in the use of Web-based distance education delivery systems. The container must support accessibility in order for a student with a disability to interact with the container. Likewise, students with disabilities must possess the necessary skill in the use of assistive computer technologies to interact successfully with the container. Within the California community colleges, a majority of High Tech Centers provide the levels of training needed by students with disabilities to achieve those requisite skill levels.

The Content

The design of instructional content placed inside the educational delivery tool (i.e., container) represents a second step in determining the overall accessibility of Web-based education platforms. Content might consist of text, images, video, audio, animated graphics, tables, graphs, PDF documents or other materials that students would utilize as part of the online course.

Accessibility of the content placed inside a container is an entirely separate issue from the accessibility of the container itself. While faculty or course designers have little ability to modify the accessibility of the container, they do have control over the accessibility of content that is placed within the container. When using Web-authoring tools, such as Macromedia's Dreamweaver, Microsoft's FrontPage, or document applications such as Microsoft Word or Adobe Acrobat, designers can include the accessibility information necessary to ensure that created content can be accessed and used by students employing assistive computer technologies. The resulting accessible content, authored outside of the container, can then be imported and

displayed within the container. While the container itself may not be fully accessible, the externally authored content can provide the information necessary for using assistive computer technologies.

One advantage of authoring content then uploading it into a container is the potential to review the authored materials for accessibility errors. A variety of third-party accessibility tools are available, including Web accessibility checkers, digital captioning software, and other utilities, that can render text and many forms of rich media into an accessible format. Web accessibility tools can highlight the accessibility errors and assist content authors with the repairs necessary to make the Web-based materials more accessible to students with disabilities.

Providing accessible content is one step in the accessibility of educational platforms. The process of making content accessible is, more often than not, completely separate from constructing content within the container.

Whereas instructors are subject matter experts fully qualified to make informed decisions about the content of a Web-based distance education course, the process for creating accessible content might be outside their experience and understanding. While the need to provide fully accessible Web-based distance education does not restrict academic freedom, it remains incumbent upon the California community colleges to support academic freedom by providing the necessary expertise to ensure that the content stored within the container is fully accessible. Whether that expertise is vested in the instructor creating the content or a team of Web accessibility specialists who work closely with instructors to identify and coordinate the means through which proposed content will be made accessible, is a decision for each California community college.

The Capability

The last component to be considered when examining accessible Web-based educational platforms is the innate capability of the container to support the creation of accessible content. This capability is a separate issue from the accessibility of the container itself (as the container may or may not be accessible) or the accessibility of content authored outside of the container.

Often there is the potential to create course content from within the container interface and the accessibility of these container authored materials must also be considered.

Web-based containers that possess the functionality to input text, upload images or other rich media content, or format the style and presentation of the content present a separate challenge. Developing content in this fashion generally does not include options for embedding accessibility information that makes the content functionally accessible for students using assistive computer technologies. Ideally, a container should include tools for identifying and correcting potential content accessibility errors so that, in and of itself, the container is capable of generating a fully accessible learning environment without the need for third-party software or resources.

In the absence of such built-in tools, providing options to course designers for the development of accessible content through third-party software can improve access for all students. Many Web accessibility tools can identify accessibility errors and prompt a course designer to include specific information to improve accessibility. Web accessibility tools generally exist outside the container itself. The question then arises: can content initially created by the container be extracted, rendered accessible, and reinserted into the container? While possible, this process does require additional steps and is not the most efficient methodology for insuring the creation of accessible content.

Conclusion

And so we return to the original questions motivating this white paper: What platform is fully accessible? What software should I buy? Unfortunately, there are no simple answers to these questions. Colleges must consider each of the three elements — container, content, and capability — before reaching a conclusion about the institution's ability to work successfully with the attributes and limitations of the current generation of Web-based educational platforms.

While the innate accessibility of some containers is arguably better than others, the capacity of these containers to interact dynamically with their content in order to present information in a

fully accessible manner remains in its infancy. The vast majority of content accessibility modifications must still be produced using third-party authoring tools, products, and software. Beyond the usability of the container and its value-added features, the greatest challenge to accessibility remains in the content uploaded to these containers. While faculty are enthusiastically creating Web-based distance education resources, the time, expertise, and skills needed to include appropriate accessibility modifications to this instructional content remain limited by training, technical support, time and staffing resources.

We hope you will find this paper useful in helping to better understand the question of accessibility of Web-based instructional resources and look forward to your comments and suggestions.

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