The role of aesthetics in redesigning accessible information literacy modules

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Abstract

The outbreak of COVID added an increased sense of urgency to creating accessible online materials for higher education professionals, including academic librarians, as they explored new ways to engage with users online. Librarians who relied on in-person sessions to provide information literacy instruction to students shifted to synchronous and asynchronous instruction methods. This article shares the experiences of an instruction librarian tasked with evaluating and redesigning a set of asynchronous information literacy modules for first-year undergraduate students in the summer of 2020. The evaluation and redesign were informed by contemporary debates about the design of online instructional materials from a web design and instructional design perspective. In particular, the author sought to investigate the claim that increasing the accessibility of online learning objects decreases their aesthetic appeal.

Discussions of aesthetics and design are largely absent in the professional literature of library and information science, yet they are relevant, as many librarians perform instructional design duties. Since definitions of aesthetics are far ranging, the author employed a specific framework discussed by Brown et al., contrast, alignment, repetition, and proximity (CARP), for assessing the aesthetic value of the modules. After utilizing a variety of tools to evaluate the accessibility of the modules along with the CARP framework, the author concluded that increasing the accessibility of the modules also increased their aesthetic value.

Keywords: online education, accessibility, aesthetics, instructional design, library and information science, academic librarianship
Introduction

While the issue of creating accessible instruction materials has been a concern of academic librarians for some time, the outbreak of COVID and the resulting shift to online instruction made that issue even more important than in the past. Academic librarians sought new ways to engage with their library users in fully virtual and hybrid environments. With the closure of many college campuses, libraries that relied on in-person sessions to deliver library instruction were forced to shift to synchronous and asynchronous online instruction. After this shift, the different modes of online instruction requested varied from institution to institution, with some libraries experiencing an increase in requests for synchronous sessions and others seeing an increased demand for asynchronous tutorials. While the trend towards creating online learning objects, like tutorials, existed in academic libraries prior to the pandemic, many note that this trend has accelerated due to the pandemic. As a result, concerns about ensuring the accessibility of those online learning objects came to the forefront. When most students receive library instruction through virtual environments, it becomes even more apparent when those online instruction materials are not accessible. Basham et al. argue that one benefit of COVID was forcing educators to rethink how they design materials to overcome “the pre- and post-pandemic barriers inherent in the education of all learners” and to embrace approaches like Universal Design for Learning (UDL).

Questions regarding how to design accessible online learning objects were a concern for librarians in the Student Learning & Engagement (SLE) department at the University of Central Florida (UCF) Libraries in the spring and summer of 2020. The University of Central Florida is a large metropolitan university, and its main campus is in Orlando, Florida. UCF Libraries consists of the John C. Hitt Library on the main campus, three branch libraries, and additional libraries at
UCF partner college locations. The Student Learning & Engagement Department is housed at the John C. Hitt library. The SLE department provides library instruction to support general education courses, particularly for students in the first year of study, including introductory college composition and student success courses. Prior to the COVID pandemic, most library instruction for these courses consisted of a single 50-75 minute in-person session, often conducted in the library, in which students were introduced to library resources and research strategies during a given semester. This type of library instruction is often referred to as a “one-shot session.”

A set of online modules covering basic information literacy skills in Canvas, the university’s learning management system, were available to students in the college composition and student success courses. Students were asked to complete the modules before the in-person session, following a flipped classroom model. After the outbreak of COVID in the Spring 2020 semester, the department offered faculty the option of requesting synchronous online sessions to replace the in-person sessions that were usually scheduled. However, the department observed a steep decline in requests for synchronous library instruction in the Spring 2020 semester. Statistics from the online modules in Canvas, though, showed that students were still completing the asynchronous modules even if they weren’t receiving accompanying synchronous instruction. As a result, it became a priority in the summer of 2020 to review the content of the online modules to ensure that the material was accurate and accessible.

This article examines the challenges and benefits of evaluating and redesigning the modules, considering debates about design and accessibility from an instructional design (ID) and library and information science (LIS) perspective. While discussions of access and accessibility have been core elements of the professional literature in library and information science for some time, discussions of design and design thinking are more recent additions to
the literature. One can find articles about librarians applying design thinking to library spaces and services⁸,⁹ but not many examining the role of design thinking in creating online learning objects. In particular, the concept of aesthetics and the design of accessible materials for library instruction is an overlooked area. Indeed, this lack of scholarly attention to aesthetics and online instruction materials is not unique to the field of library and information science. Bader and Lowenthal¹⁰(p2) fault the field of instructional design, specifically online course design, for discounting the value of aesthetics; they argue that “colleges and universities have a responsibility to focus on aesthetics and how online courses are visually designed if they are to improve the overall learning experience.” Debates about the role of aesthetics in creating accessible websites can be found in web design literature as well. Tseng’s¹¹ 2019 article, “The aesthetic-accessibility paradox,” published on the UX movement website, exemplifies one of those debates. Tseng¹² claims that aesthetics and accessibility work against each other, arguing that “in general, the more accessible an interface is, the less aesthetic appeal it will have.” Tseng’s¹³ argument is filled with inflammatory rhetoric about “accessibility extremists” and gross generalizations about the needs of “minority” and “majority” users, resulting in many responses published online refuting his claims. Tseng’s article and the responses that followed raise worthwhile considerations regarding the role of aesthetics in designing effective and accessible instructional materials. Consequently, the author used this question of “what is the relationship between accessibility and aesthetics” to frame the review and redesign of the online modules.

Aesthetics, design, and instruction
Any discussion of aesthetics must begin by recognizing the challenges of defining the concept. The philosophical debate regarding the nature and role of aesthetics is long and complex, spanning the work of Aristotle, Immanuel Kant, and John Dewey. It is beyond the scope of this article to provide an overview of theories of aesthetics. Instead, definitions of aesthetics informed by the field of instructional design will be discussed here. Parrish recognizes a debate in the profession between those wanting to reframe instructional design as a ‘design’ discipline versus those who view it as a science or technology; he advocates viewing ID as both a design and science discipline. To do this, Parrish argues that instructional designers and educators need to expand their definition of aesthetics. Instead of narrowly defining aesthetics as merely “the sensual qualities of an object or design experience,” they should consider John Dewey’s pragmatic view of aesthetic experience to encompass “heightened, immersive, and particularly meaningful” experiences, including learning experiences. Parrish contends that learning experiences are also aesthetic experiences and points to “the rhythms of instructional activities; methods for creating intellectual and emotional tension and revealing unity within content sequences” Improving the aesthetics of an online course would also improve the user’s learning experience.

Like Parrish, Brown et al. explore how instructional design can benefit from aesthetic models. While Parrish draws inspiration from elements of literary criticism like plot, character, theme, and context, Brown et al. focus on the relevance of four design actions: contrast, alignment, repetition, and proximity (CARP). The authors connect an effective aesthetic experience incorporating CARP actions with an effective learning experience, claiming that “designers realize the aim of creating effective instruction when the design decisions they make lead to proper use of design actions (CARP) that stir learners’ senses.”
expanded definition of aesthetics and Brown et al.’s connection between CARP actions and ID principles provide frameworks to explore the relationship between aesthetics and accessibility. In his article, Tseng does not explicitly define what he means by aesthetics; instead, he provides examples to illustrate his claim that accessibility contrasts with aesthetics. He references the different levels of compliance (A, AA, AAA) described in the Web Content Accessibility Guidelines (WCAG), claiming that a webpage meeting the highest level of compliance (AAA) fails in terms of aesthetics, while a webpage that meets the middle standard (AA) “respects the aesthetic-accessibility paradox.”

Tseng mentions elements like “color hues, contrasts, font sizes, and weights” in his discussion, elements also referenced in the CARP actions. To explore the relationship between aesthetics and accessibility in the library modules, the author considered CARP actions alongside accessibility features.

Accessibility standards and evaluation tools

The field of accessibility can be overwhelming to anyone starting out; therefore, becoming familiar with major guidelines, organizations, and tools is one place to begin. Tseng’s article references one common standard: the Web Content Accessibility Guidelines (or WCAG), created by the World Wide Web Consortium (W3C). WCAG consists of a series of guidelines to make web content more accessible; it is organized under four main principles, specifying that content should be perceivable, operable, understandable, and robust. Each guideline then lists success criteria, representing different levels of conformance, with A being the lowest level, AA the mid-level, and AAA the highest level. Understanding WCAG and the different levels of compliance is also important for those working in higher education from a legal standpoint, as the refresh to Section 508 of the Rehabilitation Act of 1973 adopted WCAG 2.0 AA as the
standard level of accessibility.25 The organization, Web Accessibility in Mind (WebAIM), provides additional information and tools, like the WebAIM contrast checker and the WAVE web accessibility evaluation tool, to help developers meet web accessibility guidelines.26 Furthermore, consulting resources provided by the accessibility office and online learning department at one’s institution helps to ensure that any accessibility evaluation is utilizing tools available at that organization and meeting the standards set by the institution. While WCAG and WebAIM deal with the broad area of web accessibility for a variety of purposes, Universal Design for Learning (UDL) offers a framework tailored specifically to those designing learning objects. UDL is a more recent development of the area of universal design, which had its origins in the field of architecture after the Second World War; the purpose of universal design was “to create architectural elements/buildings that are both aesthetically pleasing and usable by all regardless of physical limitations.”27(p17) The history of universal design speaks to an original connection between aesthetics and accessibility. Accessibility is also a key feature of the UDL guidelines, which are described as a “set of concrete suggestions that can be applied to any discipline or domain to ensure that all learners can access and participate in meaningful, challenging learning opportunities.”28 UDL focuses on three aspects of learning: engagement (the why of learning), representation (the what of learning), and action and expression (the how of learning). UDL helps improve the accessibility of materials by advocating for presenting information in a variety of formats and giving students the opportunity to interact with content in multiple ways, thereby reducing barriers to instruction while also maintaining a high level of expectations for all learners.29 In addition, the recommendations provided in the UDL guidelines relate to aesthetic design decisions. For example, under the principle of providing multiple means of representation, the suggestion to provide options for perception is included. More
specifically, the guidelines recommend offering ways to customize the display of information, including considering aesthetic elements like the size of visual elements, the use of contrast and color, and the layout of visual elements.\(^{30}\)

In the summer of 2020, the University of Central Florida had no formal digital accessibility policy specifying required levels of compliance. A policy was later adopted in June 2022, requiring WCAG 2.0 AA compliance for all its information and communication technology (ICT), including modules in the LMS.\(^{31}\) The Student Accessibility Services (SAS) department and online learning support department, referred to as the Center for Distributed Learning (CDL), provide faculty with information and resources for creating accessible course content. One tool of particular interest for the library module evaluation was CDL’s Universal Design Online Content Inspection Tool (UDOIT). UDOIT is designed for faculty members to use to check the accessibility of their modules in Canvas and does not require extensive technical knowledge or instructional design skills. UDOIT functions similarly to other accessibility checkers, like those for Microsoft PowerPoint or Word, in that it examines the content, generates a report listing issues, and provides guidance on how to correct issues. UDOIT checks common accessibility areas such as the use of headings, alternative text for images, color contrast, and video captions.\(^{32}\) As with any automated accessibility checker, though, one must recognize that not all issues will be detected by the program. With background knowledge of WCAG and resources from the author’s institution, the author embarked on a two-pronged evaluation approach, beginning with a manual review of the original course and then running the modules through UDOIT.

The original course was organized into two modules: the course content and the final quiz. Six, three-question practice quizzes were included in the first module. There were ten
content pages, covering concepts like the differences between scholarly and popular sources, characteristics and examples of primary and secondary sources, tips for searching UCF Libraries’ resources, information about avoiding plagiarism, and guidance on citing different source types. The pages included combinations of text, hyperlinks, embedded images, screenshots, videos, and tables. To assess the modules as a whole and identify major areas that might need to be considered, the author visually inspected each page, checking hyperlinks, clicking on the navigation elements, and testing the video player and captions for embedded media. The initial review revealed two areas: the consistency of layouts, navigation, and fonts; and the readability of texts and images. The author then ran the Canvas modules through UDOIT. The initial UDOIT scan detected 23 errors and 56 suggestions. More information about the page location of each individual error is included in the results. The tool provides suggestions on how to correct the error and gives users the opportunity to make the correction in the tool. Errors detected in UDOIT included problems with the use of different font colors, lack of alternative text for images, and misuse of headings. Returning to Brown et al.’s CARP actions, the areas identified in the manual evaluation and UDOIT review connect to aesthetic concerns regarding contrast, alignment, repetition, and proximity. Consistency of layouts, navigation, and fonts is related to the concept of repetition, which focuses on the reuse of elements, like colors, fonts, and images. Alignment, the balancing of interfaces and logical placement of elements, and proximity, which considers the order and grouping of elements, are also connected to consistency. In terms of readability, contrast, particularly between the foreground and background colors, and the use of fonts or colors to create emphasis, plays an important role. The placement of text in tables or lists, which related to alignment and proximity, also plays a role in readability.
To address issues with consistency, the author used a free template provided by Canvas to educators during the pandemic. The template had benefits both in terms of aesthetics and accessibility; it established consistent font types, sizes, colors, and styles across the individual pages in the modules. It also employed a hierarchical structure of headings within each page. Rather than formatting headings using the structure in the html editor, some headings in the original pages were manually formatted, which causes problems for those using a screen reader.

From an aesthetic point of view, the template contained a collection of icons used throughout the pages and ample white space to allow for the chunking of information on the page, improving the areas of alignment, repetition, and proximity throughout the module. By using a template, the author benefitted from the formatting work that had already been done by instructional designers. The template package included a variety of page types: a welcome page, module overview and to-do list pages, different content page options, and a wrap-up page. Reorganizing the course into separate modules and sections was straightforward using the different page types. Two modules in the original course, which contained the course content pages and the quiz, were separated into a welcome page, four content modules, and the final quiz. The four content modules covered similar topics as those in the original course, but the information was subdivided into types of sources, search strategies, locating sources using UCF Libraries, and evaluating and citing sources; each module contained a three-question practice quiz.

The review also identified issues with the readability of images and text, particularly for embedded screenshots. Two common accessibility areas to consider with images are the use of alternative text and appropriate levels of contrast. For alternative text, the alt Decision Tree published by the W3C was useful to determine if alternative text was necessary for images and icons in the course. When alternative text was needed, WebAIM’s page provided guidance on
how to write effective descriptions. One image that was flagged was a screenshot of a table listing the differences between primary and secondary sources; the text for each source type was displayed against a different lightly colored background. Adding alternative text to the image would not have adequately conveyed the information, and the pale background colors also made the text difficult to read. Consequently, the author removed the screenshot and replaced it with text organized in a hierarchical list. In this instance, both aesthetics and accessibility were improved by considering the needs of learners with multiple abilities. When selecting color combinations for text and backgrounds, WebAIM’s contrast checker enabled the author to test color combinations beforehand to ensure that they provided enough contrast for those with visual impairments. An additional area identified in the manual review but not by UDOIT was the use of inaccessible screenshots in quiz questions. The questions asked students to identify types of sources by examining images of magazine and journal covers and the first pages of popular and scholarly. As with the previous example, adding alternative text to the screenshots would not have worked in this case. Since the objective of the questions was to assess whether students understood characteristics of different types of sources, the author concluded that the visual aspects of the question were not integral to it. As a result, the questions were revised so that information could be conveyed in the text description rather than through screenshots.

Conclusion

The design of accessible online instructional materials will continue to play an increasingly important role in the work on instructional faculty and librarians, especially as more institutions are implementing formal digital accessibility policies and responding to accessibility complaints and lawsuits from students. After exploring various discussions of the role of
aesthetics in instructional design, conducting a review of the Canvas modules, and exploring a variety of accessibility tools, the author concludes that Tseng’s “aesthetic-accessibility paradox” is a false paradox. In many debates about the role of aesthetics in design, as in Tseng’s, the concept of aesthetics is not clearly defined. However, using a specific framework like Brown et al.’s CARP to define aesthetics in this case demonstrated that improving the aesthetics elements of the modules also improved their accessibility. The author’s manual visual inspection of the various elements of the online course revealed problems with accessibility when considering users who might have visual impairments. Consider how to design materials to improve the learning experience for all learners is the motivation behind frameworks like Universal Design for Learning. The benefit of UDL thinking is that it is a proactive rather than reactive response to accessibility. The pandemic forced educators to rethink how they were designing materials for a diverse range of learners in various environments, and this commitment to accessibility needs to continue well after the pandemic because designing accessible and usable learning objects is an on-going process. Since the summer of 2020, the course has undergone multiple revisions to improve its accessibility and usability.

The field of library and information science would benefit from more in-depth discussions of how to define aesthetics and assess its the value to the design of library spaces, services, and learning materials. One way to demonstrate the value of aesthetics to librarians, in particular, is to consider one particular refutation to Tseng’s argument. In ‘Accessibility drives aesthetics,’” Chen\(^3\) argues that “instead of acting as an inhibitor, accessibility is often a driving factor in aesthetics;” he connects aesthetics to usability, claiming that “accessibility drives aesthetics because the ability to use something is beautiful.” In contrast to other theories of aesthetics that discount the role of ethics, Chen claims that there is an ethical imperative for
designers to make information available and usable to as many people as possible. The idea of access for all is at the core of the library profession at large and is clearly stated in the American Library Association’s “Core values of librarianship” document. While the Association of College & Research Libraries (ACRL), the major organization for academic librarians in the US, includes “instructional designer” on its list of the “Roles and strengths of teaching librarians,” more attention to the ways librarians serve as designers of library services, spaces, and learning objects would help shape the future of the profession and acknowledge its role in shaping higher education.
References


3. Chee M, Davidian A, Weaver KD. More to do than can ever be done: reconciling library online learning objects with WCAG 2.1 Standards for Accessibility. *Journal of web librarianship*. (2022);16(2):87–119. 10.1080/19322909.2022.2062521

4. Martzoukou, ref 1. above


12. Ibid

13. Ibid


17. Ibid

18. Brown, Lohr, Gall, Ursyn ref. 14 above


20. Ibid

21. Tseng, ref. 10 above
22. Ibid


24. Ibid


https://webaim.org/


https://www.cast.org/impact/universal-design-for-learning-udl


https://udlguidelines.cast.org/representation/perception/customize-display

https://cdl.ucf.edu/teach/accessibility/udoit/

33. Brown, Lohr, Gall, Ursyn ref. 14 above

34. Ibid

https://www.w3.org/WAI/tutorials/images/decision-tree/


https://webaim.org/resources/contrastchecker/


https://www.acrl.org/acrl/standards/teachinglibrarians