

Kansas Library Association College and University Libraries Section Proceedings

Volume 12
Number 1 *Better Together*

Article 1


2022

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Recommended Citation

Pope, Barbara M. and Creed-Dikeogu, Gloria F. (2022) "Increasing Accessibility to Academic Library Services with Alt Text, Color Contrast, Captioning, and Transcripts in YouTube Tutorials," *Kansas Library Association College and University Libraries Section Proceedings*: Vol. 12: No. 1. <https://doi.org/10.4148/2160-942X.1085>

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Increasing Accessibility to Academic Library Services with Alt Text, Color Contrast, Captioning, and Transcripts in YouTube Tutorials

Abstract

Accessibility of library resources and services in academic libraries is fundamental to serving the discovery and scholarship needs of students and faculty, regardless of disability status. Equitable access in higher education affects student grades and retention, and within the library, involves making library buildings, video tutorials, library instruction, the website, Libguides, and resources accessible to students. Accessibility is vital for disabled students to obtain a college degree. It complies with federal law while improving access to education for all students, such as English as a second language students, undiagnosed disabled students, and students with different learning styles. This article focuses on how using alt text, color contrast analysis, closed captioning, and transcripts can improve the accessibility of library video tutorials, assisting the disabled and non-disabled students alike in their discovery and scholarship.

Keywords

accessibility, academic libraries, video tutorials, library instruction, disabled students

Introduction

Merriam-Webster (n.d.) defines disability as “a physical, mental, cognitive, or developmental condition that ... limits a person's ability to engage in ... activities.” However, the National Center on Accessible Educational Materials reports that accessibility allows disabled people to “acquire the same information ... engage in the same interactions ... [and] enjoy the same services” as non-disabled students (Mozilla Foundation, 2022, para. 1). Towards that end, it is possible to increase the accessibility of library resources and services for all users. To achieve library accessibility, the Association of Specialized, Government, and Cooperative Library Agencies, a division of the American Library Association, states, “Libraries should use ... principles of universal design to ensure that [the] library ... meet[s] the needs of all people” (2001, para. 3). The concept universal design encompasses Universal Design for Learning (UDL), which aims to improve learning for all learners, disabled and non-disabled; however, not everyone buys into it. For example, Whitver points out that the National Center for Education Statistics (NCES) describes disabilities in a way “that situates it as a problem ... [and] labels them as not belonging” (2020, p. 382). Singleton et al. (2019) note that in that model, students must go through a lengthy request for accommodations process (p. 206). While adaptations of learning materials after the fact can fill gaps, the problem of inaccessibility still exists. Disabled students encountering such obstacles are excluded “from the learning process” (Whitver, 2020, p. 382). Academic librarians create videos about library resources and services without knowing the need for accommodation because they are not privy to that information (Whitver, 2020, p. 384). Instead, they deal with disabled students on a “case-by-case basis, [but] ... should reconceptualize how the learning environment functions” by adopting UDL (Whitver, 2020, p. 382) to better serve all students. Designing library video tutorials from the beginning with UDL principles can enable librarians to do just that. This article illustrates how librarians can use alt text, color contrast analysis, closed captioning, and transcripts to make library video tutorials accessible. While this process cannot solve all academic libraries’ accessibility issues, it is a step to that end.

Accessibility as a Legal Requirement

Accessibility is important in academic libraries because equal access to education is a legal requirement, and academic library services support education. The Rehabilitation Act of 1973 “was the first legislation to address the notion of equal access for individuals with disabilities through the removal of architectural, employment, and transportation barriers” (Wilcher, 2018, para. 4). While the law is generally applied to many areas, Section 508 of the law addresses giving “disabled employees and members of the public access to information comparable to the access available to others” (General Services Administration, para. 1). Like the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990 protects against discrimination in several areas, including “discrimination against individuals with disabilities in ... education” (U.S. Department of Justice, Section on Findings and purpose). Both laws apply not only in the classroom but in library services and other areas of universities and colleges. The necessity of ensuring academic libraries’ accessibility has only grown in recent years, as the NCES reports that the number of disabled undergraduate students increased from 6% in 1995-1996 (*Postsecondary students with disabilities*, p. 1) to 19.4% by 2015-2016 (*Percentage distribution*, p. 1). Whitver notes that two decades ago, libraries “began to assess the intersection of disability and library services,” remedying some problems, but not “service[s] ... to accommodate” disabled students (2020, p. 385). The library should not be considered unnecessary for the disabled, as it supports the discovery and scholarship efforts across all areas of universities and colleges.

Changing existing instructional material to be accessible is difficult but creating it from the beginning so that it is as accessible as possible allows everyone to have multiple learning avenues. Whitver (2020) notes that “The preparation required for implementing universal design can be challenging,” but, she emphasizes the “key ... is flexibility, not technology” (p. 389). In

addition, the fact that the change can be challenging should not stop librarians from adopting UDL in creating instruction, as instruction needs to be continually improved to stay fresh and relevant. While several different terms have been used over the years to describe the idea of making learning materials accessible to all learners, UDL is one of the most used terms. It provides a structure “to improve and optimize teaching and learning for all people based on scientific insights into how humans learn” (CAST, para. 1), which benefits all students, regardless of disability status. UDL allows librarians and instructors to create instructional materials, including video tutorials, to be as accessible as possible from the beginning. Faculty who has implemented UDL in the classroom “see the benefits attached to implementing UDL ... to support [disabled students]” (Singleton et al., 2019, p. 207). However, some faculty are “slow to adopt UDL” and “research shows [they]... are ... confused about their role” (Singleton et al., 2019, p. 206-207). Therefore, additional training and coaching as to the need for accessible learning materials and how to create them may be needed for some librarians and instructors.

Types of Accessibility Issues

Disabled students may have one or more disabilities and different students may have different degrees of disabilities or different modalities of learning that work well for them. The NCES reported in 2015-2016, people have various disabilities, including vision, hearing, mobility, speech or language, and learning, among others (*Percentage distribution*, Footnote on p.1). NCES adds that in 1995-1996, some undergraduate students reported: “multiple disabilities” (*Postsecondary student with disabilities*, p.3). Vision impairment can range from complete blindness to color blindness. Those with mobility issues may have difficulty with using a computer mouse, for example. Some students may have invisible disabilities, such as learning disabilities or medical problems. In addition, different students learn best through distinctive styles or a combination, including visual, auditory, reading/writing, and kinesthetic (2U, Inc., graphic below para. 4), so any video tutorials need to have multiple methods for students to use the content for the greatest accessibility and impact. It is considered best practice for librarians to be mindful of these needs and create video tutorials that are as accessible as possible; accessibility not only enables disabled students to have access to information, but also enhances all students’ discovery experience.

How Do Educators Serve Disabled Students?

To provide accessible resources to students, librarians must create educational materials in accessible formats and be aware of what makes the different formats and technologies accessible. The National Center on Accessible Educational Materials notes that it sounds simple, but accessibility best practices are different for different disabilities. “Accessible educational materials (AEM) are print- and technology-based educational materials, ... that are designed or enhanced in a way that makes them usable across [various] ... learner variability, regardless of format” (What is Accessibility, para. 5). So, if a librarian creates a video tutorial, the librarian should be aware of accessibility principles and accessible and assistive technologies to make it accessible to all. Web Content Accessibility Guidelines (WCAG 2.1) can assist librarians in creating video tutorials, as it “defines how to make web content more accessible to people with disabilities” (W3C, 2018, Background on WCAG 2).

WCAG 2.1 Guidelines

The WCAG 2.1 guidelines are embraced in the Rehabilitation Act of 1973 (U.S. Access Board, n.d.) and the Americans with Disabilities Act of 1990 (Guidance on Web Accessibility and the ADA, Section on Resources). WCAG 2.1 covers four principles – perceivable, operable, understandable, and robust (Designing for accessibility with POUR, para. 1). The authors will cover some of the requirements in WCAG, but WCAG encompasses a great deal more. The National Center on Accessible Educational Materials says that the principles are represented by an acronym, POUR (Designing for accessibility with POUR, para. 1). The first principle, perceivable, means that content must be provided in ways that people can perceive; for example, the instruction needs to contain text alternatives, otherwise known as alt text, including captions, transcripts and link text that describe non-text elements in a meaningful way. It is acceptable for the librarian to label non-text items as “image described in text” or “decorative” (W3C, WCAG 2.1, Guideline 1.1 Text Alternatives). This article will address captioning and transcripts later. Librarians should make sure that links make sense when read aloud by a screen reader and use descriptive text to distinguish them from other text. Also, librarians should use easy to read language, as students with cognitive disabilities or second language learners may have trouble understanding it. The second principle is operable, which means that content can be operated and navigated by keyboards or other devices and does not require interacting with the content “with specific timings” (W3C, WCAG 2.1, Guideline 2.1 Keyboard Accessible). The video must also allow adequate time to read and use content (W3C, WCAG 2.1, Guideline 2.2 Enough Time). In addition, the video must not contain content that “that flashes more than three times in a one second period” or has red flashes more than three times in one second (W3C, WCAG 2.1, Section labeled Success Criterion 2.3.1 Three Flashes or Below Threshold), as these can cause seizures. The third principle is understandable, meaning text is readable, the content appears and operates predictable ways, and helps users avoid and correct mistakes (W3C, WCAG 2.1, Guideline 3.1 Readable). In addition, the librarian should use sans serif font, because screen readers and other devices can read it more easily. The fourth is robust, meaning the content is robust enough that it can be interpreted reliably by various user agents, such as screen readers, and be compatible with current and future tools (W3C, WCAG 2.1, Section 4. Robust).

Images and Color Contrast Comparison

WCAG 2.1 Guideline 1.4 Distinguishable (W3C, 2018) addresses standards for images, color, and contrast. Alt text is essential for many images, so that disabled students can access information in a comparable way to non-disabled students. The current best practice for making accessible video tutorials with images and color is to provide alt text for non-text content so that it may be accessible by devices unless it is marked as “described in text” or decorative (W3C, WCAG 2.1, 2018, Guideline 1.4). It is important that alt-text be accurate and descriptive, and not vague. In addition, be sure to keep it to 125 characters or less, as some screen readers do not work well with lengthy alt text. There are many programs available to create video tutorials, Microsoft PowerPoint being one that is readily available and is not difficult to use. The authors are currently using Microsoft PowerPoint 2019 to create video tutorials. To add alt text to an image in PowerPoint, the librarian should click on the image and then click on “Format” and then “Alt Text” on the toolbar. Then, add a short, meaningful description.

Color is another important aspect in accessibility. It is not advisable to use color as the only ways to communicate information, as vision impaired students may not be able to see it (W3C, 2018, WCAG 2.1 Guideline 1.4). In addition, there should be enough contrast between text, background, and other elements so that content can be seen or perceived in an alternative way (W3C, 2018, WCAG 2.1 Guideline 1.1). The best practice in achieving high-contrast is to choose high-contrast colors. HTML Color Picker (w3schools, 2022) is a free online resource that enables librarians to choose colors for online tutorials and other web applications. Each color is represented by an RGB code, a series of numbers ranging from 0 to 255. RGB is an

acronym for the red, green, and blue values in colors. After choosing colors, it is crucial to check their contrast for optimum accessibility. One of the authors located freeware called Colour Contrast Analyser created by TPGi (2022), where the librarian can input the background and foreground colors' RGB codes to analyze contrast. Text, images, and images of text must have a contrast ratio of 4.5:1 and large text contrast must be at least 3:1. (W3C, 2018, WCAG 2.1 Guideline 1.4). Images marked decorative are exempt from the requirement (W3C, 2018, WCAG 2.1 Guideline 1.4). If the color contrast is insufficient, the librarian can change one or more colors to a higher contrast color or change the transparency, as described in a later paragraph.

Adding RGB Codes to PowerPoint

As described earlier, the librarian can strategically choose custom colors for the text and background of a video tutorial to create higher contrast and increase its accessibility. In Microsoft PowerPoint, to change text to a custom color, the librarian should highlight the text and click on the capital letter "A" on the toolbar to change the text color. Then, the librarian should choose "More Colors" and "Custom" and enter RGB codes for colors previously located in the HTML Color Picker and tested in the Colour Contrast Analyser. Another way to increase the color contrast in a video tutorial in Microsoft PowerPoint 2019 is to change the background's transparency, which works well with pictures, solid colors, gradient backgrounds, and texture fills, but not pattern fills. To change the background's transparency, click "Design" on the PowerPoint toolbar and then, click "Format Background." Then, click the slide bar next to "Transparency" and change it to a larger number; the larger the number the user chooses, the greater the transparency. If the user wants to change the background, the user may choose a solid background, gradient background, or picture or texture fill. To change the background color, click on the scroll bar next to "Color" and choose a standard color or click on "More Colors." Under "More Colors," users may choose "Custom Colors" and input RGB codes for specific, high-contrast colors, as described earlier with custom text (W3C, 2018, WCAG 2.1 Guideline 1.4).

Video Tutorial Accessibility

Weeks & Putnam-Davis (2017) conducted a case study of library video tutorials, which they note are developed in four phases that include: planning, creating, publishing, and assessing. The planning phase is dedicated to the creation of tutorial learning objectives and the development and organization of learning content, while the creating phase includes writing the video tutorial script. Information literacy tutorial scripts should be written with the aim of providing the learner with a well-organized, clear, and structured tutorial. Script length must be limited to two minutes and include the tutorial's established learning objectives and using language that clarifies library terminology, but limits library jargon to avoid confusion.

Clossen & Proce (2017) state that library tutorials often present disabled students with accessibility challenges. They should be accessible to both learners using mobile devices with slow connections and to disabled students for improved usability. Therefore, it is important that librarians strive to provide learners with tutorials created with accessible formats and technologies, allowing them to interact with the tutorial content easily. Accessibility features, such as captioning are added to the video tutorial during the creation phase to provide learners with multiple formats supporting disabled students, various learning styles, and English language learners.

Closed Captioning

Captioning is defined as “the process of converting ... [a media] production into text and displaying the text on a screen ... Captions ... display words as the textual equivalent of ... dialogue ... but ... include speaker identification, sound effects, and music description. Captioning is critical for students who are deaf or hard of hearing ... [and] aids the reading and literacy skills development of many others” (National Association of the Deaf, 2022, para. 2). By providing text and displaying it at the same time the audio is delivered, captioning helps to create an experience for deaf and hard of hearing people that is equivalent to the original recording (National Association of the Deaf, 2022). There are two types of captioning available to learners: open captioning and closed captioning. “Open captions always are in view and cannot be turned off, whereas closed captions can be turned on and off by the viewer” (Do-It, 2022, para. 1).

Librarians at the Gangwish Library created a YouTube Channel to make the library’s tutorials available to learners. When the librarians created the tutorials, they did not include the scripts or closed captioning on YouTube. Therefore, the library’s tutorials were not in compliance with ADA, because they were not providing them with “equal access to programs, services, or activities” (Wakimoto & Soules, 2011). Later, the librarians at Gangwish Library decided to add captioning and transcripts to the video tutorials, but they were unsure if they would be able to upload scripts and closed captioning after the fact. However, they learned that closed captioning is simple enough to accomplish if the instructions for uploading video scripts and closed captioning videos on YouTube are followed.

If a library has videos already available on YouTube and wishes to caption them, the library should begin by logging into the library’s YouTube Channel and click “Customize Channel,” and then select the video to close caption. Then, the librarian should click “Edit Video” and ensure that the video is “Public” before clicking the “Subtitles” button. In addition, the librarian must check that the “Subtitles” tab is set to “Automatic” and English “United States” or “United Kingdom,” but other language choices can be made at this time. The librarian should make sure the video being closed captioned has an uploaded script, and if not, she or he must create one and save it as a plain text or .txt file before uploading it to YouTube. If an already uploaded script needs editing, it can be fixed and saved as a draft. Often a script needs to be fixed manually, especially when the automatic English transcription does not match the spoken words. It is also possible to type a script into the script textbox.

When uploading the script, it can be saved with or without timing. However, be aware that if the script is saved “without timing,” YouTube will close caption it automatically, but the “with timing” option should be chosen only if the video script has been timed to the second (Google, 2022, Add subtitles and captions). Be aware that closed captioning may not work on all YouTube videos and that problem-solving requires knowledge of YouTube video editing. The automatic closed captioning process on YouTube takes from 45 minutes to one day to complete. Editing is needed for spelling, punctuation, and timing errors in the dialogue and video sequences (Google, 2022, Use automatic captioning).

Conclusion

Increasing the accessibility of video tutorials in academic libraries is one small step in increasing academic library accessibility for all students, disabled and non-disabled. Critics may say that disabled students are few and making the academic library accessible is difficult and time-consuming or are confused about who is supposed to do it. However, having equitable access to library services is required by law and enhances all students’ discovery experience. UDL is flexible and provides academic librarians with the basis for creating accessible library video tutorials that can be repurposed and shared widely. While the switch to UDL can be difficult, that alone should not deter librarians from attempting it, but it is possible that some librarians and instructors may need additional training and coaching in how to do it effectively.

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