

A Guide to Designing Accessible eLearning

Breana Hidalgo & Nikisha Watson

When teachers deliver instruction online, they require adequate training and support to do so successfully because an online instructor's role includes different responsibilities than traditional classroom instruction (Kim & Bonk, 2006). This chapter includes information on the practical application and adoption of an accessibility training program for online instructors, developed by instructional designers at a state college for two- to four-year degrees located in central Florida.

Introduction

In January 2017, the US Access Board published a final rule updating accessibility requirements for information and communication technology (ICT) covered by Section 508 of the Rehabilitation Act, 29 U.S.C. §701 *et seq.* (1973). Federal agencies and contractors must comply with the Revised 508 Standards beginning on January 18, 2018. Given the recent Section 508 refresh and updated Americans with Disabilities Act (ADA) requirements, instructors and instructional designers are responsible for designing curricula that all learners can navigate, use, and understand. This responsibility applies to both the individual and the collective. Education professionals must prioritize evaluating materials and designing content that is more accessible, while institutions must support accessibility initiatives and creative problem solving to overcome barriers.

When teachers deliver instruction online, they require adequate training and support to do so successfully because an online instructor's role includes different responsibilities than traditional classroom instruction (Kim & Bonk, 2006). This chapter includes information on the practical application and adoption of an accessibility training program for online instructors, developed by instructional designers at a state college for two- to four-year degrees located in central Florida. The professional development training course aims to provide faculty with the conceptual and technical knowledge of accessibility principles to promote a deeper understanding of ADA compliance and its applications in facilitating and managing online course materials. The training was administered and went through continuous improvement for two years. It included a pilot program and subsequent cohorts culminating in over 300 eCertified online instructors.

Legal Context and Background

In general, guidelines for accessibility have followed the implementation of new laws or updates made to the legislation. There are currently three federal laws pertaining to the needs of individuals with disabilities in the United States. These are:

1. Section 504 of the Rehabilitation Act of 1973
2. Section 508 of the Rehabilitation Act of 1973
3. The Americans with Disabilities Act of 1990 (frequently referred to as ADA)

The Rehabilitation Act of 1973 is a federal law that requires programs and activities funded by federal agencies to be accessible to people with disabilities, including federal employees and members of the public. Section 508 covers ICT developed, procured, maintained, or used by federal agencies. The goals of the Revised 508 Standards include:

- Enhancing accessibility to ICT for people with disabilities
- Making the requirements easier to understand and follow
- Updating the requirements to stay abreast of the ever-changing nature of the technologies covered
- Harmonizing the requirements with other standards in the U.S. and abroad

Section 508 standards reflect Web Content Accessibility Guidelines (WCAG) 2.0 (Initiative, 2005), taking effect on January 18, 2018.

- Title II of the ADA prohibits disability discrimination in services, programs, and activities provided by State and local government entities. These entities include publicly-funded universities, community colleges, and vocational schools.
- Title III of the ADA prohibits disability discrimination in the full and equal enjoyment of the goods, services, facilities, privileges, advantages, and accommodations of any place of public accommodation. This includes private universities and vocational schools.
- By Title II and III, institutions of higher education in the U.S. must make online lectures, courses, materials, websites, LMS, MOOCs, and any other technology accessible to students with disabilities and the public if made freely available.

It is in every institution's best interest to meet WCAG 2.0 Level A.A. conformance, not WCAG 1.0 conformance, to ensure that students with disabilities have equal access and that the university does not violate federal law.

These laws protect individuals with disabilities from discrimination based on disabling conditions and require that all programs, activities, and services offered by employers and public and government institutions are accessible to people with disabilities. Section 508 compliance requires that we create courses that people with visual, auditory, or mobility disabilities can use as effectively as people without disabilities, thus creating accessible learning experiences for any learner.

The Positive Impact of Accessible Content

Higher education faculty are becoming increasingly familiar with accessibility requirements. However, it is critical to fill gaps in this skill set for educators because inaccessible content has real consequences for learners, including limiting students' ability to complete work on time. In the experience of implementing this accessibility training, a common reason that faculty gave for not creating accessible content is that they do not have students with disabilities or none who had officially requested accommodations. Though that may be accurate for an individual instructor in a highly specialized, physically-intensive, limited access field, it does not mean that those same students would benefit from accessible content. Furthermore, the National Center for Education Statistics (2019) found that nearly 19% of undergraduates reported having a disability.

For example, one of the significant gaps addressed by accessibility initiatives should be the inequitable access to technology for the student population. Because higher education professionals serve a diverse range of students who use many different technologies, it is essential to remember that many students are accessing courses on mobile devices and computers without cutting-edge hardware. In a survey by Clinefelter, Aslanian, and Magda (2019), 60% of students age 45 and younger reported using a mobile device for some or all online coursework. In a different study by Gonzales, McCrory Calarco, and Lynch (2020), roughly 20% of the respondents had difficulty with access to technology, including broken hardware, data limits, and connectivity problems. In this case, students of lower socio-economic status and students of color disproportionately experienced hardships as a result of this digital divide.

In 2020, higher education witnessed the consequences of limited access to high-speed internet for both learners and instructors, experiencing the impacts of those limitations first-hand. The inability to connect to a stable, secure Wi-Fi network is a form of disability because it has a severe impact on learners, especially when completing course assignments and activities that are contingent upon stable, high-quality connectivity. Designing instructional materials with accessibility best practices in mind also mitigates the impact of slow or unstable Internet connections.

Accessible content is “learner-friendly” because thoughtful design takes priority (Myhill et al., 1999). To drive this home, consider another example: a new parent enrolled in courses may only be able to watch instructional videos while their infant is asleep. If the videos have accurate closed captions - as best practices recommend, and accommodation laws dictate - it is much easier for them to access the material without worrying about the volume of the audio or the availability of additional hardware, like a headset. Therefore, closed captions do not only benefit those learners who cannot hear the original audio. They make the learning experience equitable for learners in a variety of life experiences. They benefit students who are deaf and hard of hearing while simultaneously assisting countless others to absorb the same material.

One of the inspiring benefits of online learning is the potential for learning to take place anywhere and at any time. However, this can only be true if the learning materials are designed to support such flexibility. The accessibility course included with this chapter outlines some of the best practices in design and course authoring that impact accessibility. By thinking about accessibility while creating course materials, we can ensure equitable access for all students seeking opportunities afforded by higher education in an increasingly globalized and pluralistic world.

Accessibility Training Course and Resources

The course is designed to be an 8-credit hour, self-paced, asynchronous re-orientation to the andragogical and technological skills required for online teaching and learning that takes place over five weeks. The information focuses on increasing awareness and reinforcing the prioritization of online accessibility for digital instructional materials. Additionally, the course includes essential tools and technologies to make online and face-to-face course content accessible. It is designed primarily for instructors using Canvas by Instructure as their learning management system (LMS).

Download the Course

The training linked below is an example of accessibility training for faculty that was developed and continuously improved over 2 years using techniques discussed in this chapter, as well as

instructional design best practices.

Resources to Download

1. [Accessibility Training in the Canvas Commons](#)
2. [Course export file](#)
 1. [Accessibility Training in the Canvas Commons](#)
 2. [Course export file](#)

The course export file is for use in non-Canvas courses or for importing directly into Canvas. To use it, download the file and import it into a course in the chosen learning-management system.

The course can be adapted for any LMS with changes to (or removal of) Canvas-specific content sections. Technical, skill-based assignments and corresponding rubrics ensure mastery of the objectives so that each submission complies with Section 508 accessibility standards.

Course Goals and Objectives

Assignments in the training are graded as Complete/Incomplete. The accessibility training prepares instructors and instructional designers to:

1. Describe the history and current state of accessibility regulations in the United States and at the organization.
 - a. *Recommend adding specific policies, memos, mission statements, or procedures that support an accessibility initiative at your institution.*
2. Ensure that course(s) meet legal guidelines and standards.
3. Explain the importance of ensuring accessibility for online educational materials.
4. Create accessible online educational materials with text, image, audio, video, and presentation content types.
5. Check for accessibility in text, image, audio, video, and presentation content types.
6. Evaluate third-party digital content for accessibility and remediate accessibility issues.
7. Embed and incorporate accessible content in online courses.
8. Implement the essential skill sets necessary for teaching in an online environment.
9. Incorporate effective best practices and strategies for teaching in an online environment.
10. Optimize student learning using educational technologies and the learning management system (Canvas).

Accessibility Templates, Rubrics, and Checklists

All resources for this chapter and the training are provided in a [public Google folder](#) for easy access and download. Folder structure and summary of documents:

1. [Training Course](#)
 - a. Contains an .IMSCC course export from Canvas of the Accessibility Training for Faculty
 - i. Follow LMS instructions to import course package
 - b. Accessibility Training Syllabus

- i. Syllabus for the training course (also available in the course)
2. [Templates, Rubrics, & Checklists](#)
 - a. VPAT-Templates
 - i. Voluntary Product Accessibility Template for publisher content
 - b. Training Prerequisite Skills Checklist
 - i. Checklist of entry-level skills for the Accessibility Training
 - c. Rubric for Evaluating Accessibility in Digital Content
 - i. Scoring rubric for evaluating a piece of digital content and assessing accessibility
 - d. Publisher Content Review Rubric
 - i. A quick-reference rubric for evaluating publisher content
 - e. Course Accessibility Review Checklist
 - i. An outline-style checklist used in assessing an online course for accessibility issues
 - f. ADA Checklist
 - i. ADA-based checklist for evaluating content using criteria that matches Section 508 Standards
 - g. Accessibility Review Checklist
 - i. Checklist designed to assess the level of effort needed to remediate an online course for accessibility; use this in planning for widespread accessibility remediation
3. [Additional Resources](#)
 - a. Links to Online Resources
 - i. Living document with resources for reference

Implications for the Instructional Designer

The following section includes advice for instructional designers or those planning to implement an accessibility initiative like the training course. Advice is provided based on instructional designers' experience implementing the accessibility training course discussed in this chapter.

Fostering Leadership Support

Both individuals and the institution must actively support, promote, participate, and take ownership of the work and outcomes of accessibility. To ensure that this occurs, be sure that faculty leaders and leadership are engaged early in the accessibility program's planning phase. According to the National Center on Disability and Access to Education (NCDAAE) "institution-wide accessibility measures are better adopted and maintained when leadership supports the vision and commitment to accessibility" (GOALS Project, n.d.). Leadership support is one of the first indicators for Institutional Web Accessibility, a set of benchmarks that would "indicate" that "an institutional climate can foster and maintain web accessibility efforts" (Indicators for Institutional Web Accessibility, n.d.). The NCDAAE and the World Wide Web Consortium (W3C) offer strategic planning guides on how to roll out a successful accessibility initiative:

1. [GOALS Benchmarking and Planning Tool](#) (NCDAAE)
2. [Strategic Planning for Web Accessibility](#) (W3C)

Designing Relevant Training

Because digital materials and physical materials have different accessibility requirements, ensure that the training is tailored to the type of instructional content most frequently developed and distributed by faculty. To ensure the training is designed for their needs, administer a preliminary survey to determine what type of content faculty use the most in their courses and how they share content with their students. For example, if the survey finds that:

- 65% of the content used by faculty is text-based
- 30% of the content is presentation-based instruction (i.e. PowerPoint presentations)
- 5% of the content is video

The training design should follow a similar structure, with text-based training occupying most of the time. Furthermore, the survey indicates course methodology for additional insights to create relevant training for faculty. For example, if survey respondents report that the delivery of their courses is as follows:

- 65% entirely online
- 30% face-to-face
- 5% hybrid

It would be useful to address the creation and management of course materials for online courses for a majority of the training with some instruction for materials provided in face-to-face classes. If this is not included, expect to be approached by learners seeking this instruction.

Keep in mind that accessibility in the hybrid delivery method is satisfied by making both online and face-to-face content accessible. While this is true, it would be considerate to ensure that teachers are still engaged and able to complete assignments in a way that is most relevant to them, regardless of the delivery method.

This survey does not have to be extensive (see Figure 1 for an example which is also included in the first module of the accessibility course).

Figure 1

Example of Survey

What kind of digital content do you use **the most** in your online courses? [Fill in the blank]

Digital content includes (but is not limited to):

- Word Documents
- Canvas Pages
- PowerPoint Presentations
- PDFs
- Google Presentations

Picture of a sample survey question

This question is designed as multiple choice, but if it is sent as a preliminary survey, it is possible to use the rank-in-order question type to yield more specific, quantitative data.

Supporting Faculty

There are many approaches and strategies for faculty training, and Schrum (1999) offers four useful points relating to teacher technology training:

1. It takes considerably longer to learn about technology for personal or pedagogical use than learning a new teaching model
2. Access to the new technology at school and home is essential
3. Fear of the unknown must be addressed
4. The use of new technology may require teachers to reconceptualize how they teach

Learner cohorts were useful in implementation, as group facilitation contributed to widespread adoption through peer support and accountability. It is critical to establish the amount of time the trainer will have to grade and provide valuable feedback on the assignments. Limitations in the trainers' schedule might mean that the course design needs to have fewer formative assignments with robust feedback. If that is the case, include peer reviews to ensure that instruction quality and relevancy stay the same. With peer reviews, grading rubrics become the keystone for success. Peer reviewers will need a defined set of criteria to provide high-quality feedback (see grading rubrics included in the accessibility training course assignments).

Furthermore, learners will most likely require one-on-one assistance at some point in the training due to the technical nature of accessibility remediation in digital content. Scheduling open office hours for support is an option. However, it may not reduce the need for one-on-one assistance because of the highly individualistic nature of instructional materials in higher education. If staff availability is limited, the recommendation is that cohorts are no more than ten people at a time to allow for in-depth, quality feedback on assignments and one-on-one assistance as needs arise.

Additional support for these cohorts could take the form of synchronous workshops, but keep in mind that there will still probably have one-off requests for assistance that will be time-intensive for those with a low-to-moderate technology skillset. Having additional support through institutional technology never hurts and can be critical if the training involves software or hardware peripherals that are not typically installed on an institution-administered machine.

Designing for Mastery

Accessibility in digital content is dichotomous in that the content is accessible or it is not. Assessments in the training course follow this same duality in the grading scheme, but that approach is not always learner-friendly. Leveraging learner mastery, providing opportunities for reinforcement and additional practice through branching mitigate this rigidity. Below is a description of how the accessibility course could be adapted with branching to facilitate mastery.

The first assignment in a module creates or remediates content for the digital asset type covered in the instruction that precedes it. Successful completion of this assignment requires a passing score of 100%; learners should be allowed to revise their submission once it is initially graded, using the trainer's feedback to guide successful and complete remediation.

Achieving a 100% score on the first assignment unlocks the next module. If mastery is unsuccessful, learners progress to the next assignment and participate in a discussion activity with their peers about their previous assignment submission. In this second assignment, learners exchange their submissions and remediate each other's work. If this peer-reviewed discussion assignment submission did not earn 100%, the learner progresses to the quiz.

Keep in mind that grading a weekly submission (and multiple resubmissions) can quickly become time-intensive. Additionally, learners may express frustration with having to complete assignments to 100% satisfaction. In this case, recognize that this is a different grading and instruction method, but that failure is not absolute. It is common to remediate digital content more than once, especially as students have different needs with accessibility. It is critical to reinforce the behavior of keeping an open mind towards feedback and requests for accommodations that ask for further improvements.

That being said, be open to revising the training. If feedback from learner surveys and focus groups are pointing towards a much-needed change in the training for better adoption, adjust accordingly. These authors support frequent use of mastery and branching concepts used in more training situations and see immense value in leveraging unique and customized learning experiences to improve cognitive retention, especially for adult learners.

Summary

As accessibility gains more attention, instructional designers need to consider the cognitive aspects, ensuring to account for both message and information design in the learning environment. Instructional designers who have worked with remediating digital materials for online accessibility often state that when the content is made accessible for one set of learners, it is continually improved for all learners (Roberts, 2003). There are legal as well as ethical reasons for making accommodations for learners with disabilities.

Even with the wide variety of accessibility design guidelines, accessibility checkers, and assistive technology tools available, it can be difficult for instructional designers to gauge the accessibility of content. For a more thorough evaluation, instructional designers should elicit the help of other designers and accessibility experts. Work with the institution's Office of Disability Services to evaluate online materials to ensure equitable access to content. Rethinking accessibility and student experience is an ongoing collaborative effort of instructional designers, faculty, disability services personnel, and students.

References

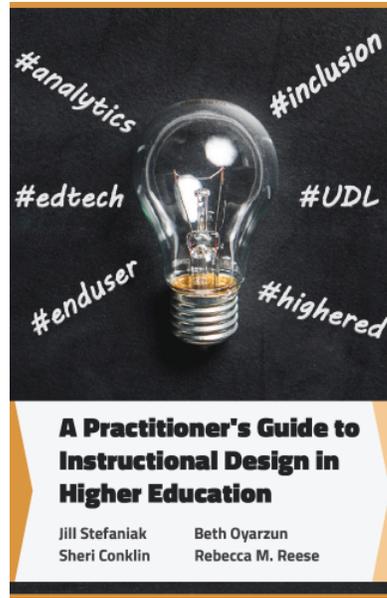
Americans with Disabilities Act of 1990, Pub. L. No. 101-336, § 2, 104 Stat. 328 (1991).

Clinefelter, D. L., & Aslanian, C. B. (2015). *Online college students 2015: Comprehensive data on demands and preferences*. Louisville, KY: The Learning House, Inc. Retrieved July 26, 2021, from <https://edtechbooks.org/-YDvzz>

GOALS Project. (n.d.). The National Center on Disability and Access to Education. Retrieved July 26, 2021, from <https://ncdae.org/goals/>

Gonzales, A. L., McCrory Calarco, J., & Lynch, T. (2020). Technology problems and student

- achievement gaps: A validation and extension of the technology maintenance construct. *Communication Research*, 47(5), 750-770. <https://edtechbooks.org/-kLkj>
- IT Accessibility Laws and Policies. (2020). *Section 508 Law and Related Laws and Policies*. Retrieved from <https://edtechbooks.org/-kemF>
- IT Accessibility/Section 508. (2020). GSA. Retrieved from <https://edtechbooks.org/-esRi>
- Indicators for Institutional Web Accessibility. (n.d.). The National Center on Disability and Access to Education. Retrieved July 26, 2021, from <https://edtechbooks.org/-nVmo>
- Initiative, W. W. A. (2005, July). *Web Content Accessibility Guidelines (WCAG) Overview*. Web Accessibility Initiative (WAI). Retrieved July 26, 2021, from <https://edtechbooks.org/-xWT>
- Kim, K. J., & Bonk, C. J. (2006). The future of online teaching and learning in higher education. *Educause quarterly*, 29(4), 22-30.
- Myhill, M., Le, T., & Le, Q. (1999). *Development of internet TESOL courseware*. Paper presented at the The Fourth International Conference on Language and Development. Retrieved July 26, 2021, from www.languages.ait.ac.th/hanoi_proceedings/marion.htm
- Rehabilitation Act of 1973, Pub.L. 93-112, 29 U.S.C. § 701, 87 Stat. 355 (1973).
- Roberts, S. (2003). Instructional design and accessibility: Cognitive curb cuts. Retrieved July 26, 2021, from <http://hyperformer.com/Steph/Papers/CogCurbCuts.pdf>
- Schrum, L. (1999). Technology professional development for teachers. *Educational Technology Research & Development*, 47(4), 83-90. <https://doi.org/10.1007/BF02299599>
- Section 504 of the Rehabilitation Act of 1973, Pub. L. No. 93-112, 29 U.S.C § 794, 87 Stat. 394 (1973).
- Section 508 of the Rehabilitation Act of 1973, 29 U.S.C § 701 (d).
- National Center for Education Statistics. (2019). *Digest of Education Statistics, 2018 - Post-Secondary Education (Chpt. 3) (2020-009)*. U.S. Department of Education. Retrieved July 26, 2021, from <https://edtechbooks.org/-IIEV>



Hidalgo, B. & Watson, N. (2021). A Guide to Designing Accessible eLearning. In J. E. Stefaniak, S. Conklin, B. Oyarzun, & R. M. Reese (Eds.), *A Practitioner's Guide to Instructional Design in Higher Education*. EdTech Books.
https://edtechbooks.org/id_highered/a_guide_to_designing