Accessibility Basics

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WELCOME

The resounding success of our recent eBook, **_The Nuts & Bolts of Instructional Design_**, showed us that people like having information in one place. _Learning Solutions_ offers fresh, frequently-updated content, and Learning Guild members said they appreciate having a curated compilation of previously published articles.

Here is a collection of some past work on making our work accessible, updated where appropriate by the original authors. Note that specifics of some technologies can change very quickly; for instance, an article on creating accessible Word documents was rendered virtually obsolete as Microsoft began to include better tools like accessibility checkers.

The content included here was chosen with an eye toward information likely to have a longer, more stable life. If you are interested in getting into the weeds of designing for accessibility, please take a look at an excellent new resource, Susi Miller's comprehensive _Designing Accessible Learning Content_ (2021, Kogan Page).

FOUNDATIONS

"

Blind people will never do this work anyway!

—Subject matter expert who pushed back
about helping create a rich description of a training video

Jane Bozarth

I was talking with a vendor who resells eLearning courses. Their "eLearning strategist" explained at length about how carefully she vets the products they resell. When I pointed out that the courses from one of the companies are not accessible to, for instance, learners with visual impairments who use screen reader software like JAWS (Job Access With Speech), the vendor said, out loud: "Well, we have a lot of clients and no one has ever complained about that before."

I'm not sure which is worse: that an eLearning "strategist" is so unconcerned about accessibility issues, or her belief that complaints don't exist because she hasn't heard them.

Disability and different ability

For me the idea of making our products usable for everyone isn't about some theoretical user in some theoretical company. My work involves contact with the state School for the Blind and School for the Deaf as well as our vocational rehabilitation division, all of which employ multiple workers with myriad challenges while serving a public with special needs. My Google-loving husband will always struggle with low vision, a significant recent life change for him. A friend lost most of his hearing when a bomb exploded near him in Afghanistan. Many people have learning disabilities or physical conditions that can affect memory or problem solving.

And it's not only about disability but different ability: I was hired into my first training job ever as a literacy tutor for workers threatened with job loss if they could not meet new state standards for completing written certification tests. 2019 data from the Bureau of Labor Statistics says the median age of the American worker is 41.9. We're talking about a lot of people who would appreciate a larger font or the ability to turn the volume up.

How well do you know your users and their needs?

So it's disturbing to me that awareness around this continues to be such a challenge, even in a time when everyone preaches universal and user-centered design. I've found in my career that many in L&D, especially novice designers, are usually more unaware than badly-intended. A SME recently pushed back about helping create a rich description of a training video because, "Blind people will never do this work anyway!"

That's a big assumption, and there's a lot of room between 20/20 vision and complete blindness, and that person's boss who has low vision might want to review the video, and, well, so what? It's an hour's worth of work. Arguing about it took longer than just doing it. I'm frustrated that awareness is still such a challenge. Why don't more people care?

"Accessible" means accessible to everyone

For those of you newer to this field (after all, this column is supposed to be "Nuts & Bolts") accessibility in eLearning may be something that's just isn't on your radar—yet. Briefly, your eLearning materials really should be accessible to everyone, including those with challenges like low vision and blindness, hearing loss and deafness, learning disabilities, and mobility problems. This means having captioning for narration, and avoiding making learners make decisions using only color (for instance, indicate "correct" with a green check instead of a green dot), and avoiding interactions that can only be completed using a mouse or trackpad. It means giving choices between, say, listening to or reading an assignment. It may mean providing ALT tags for images or richer description of an onscreen idea, or adding controls for videos. It means rethinking your overall approach.

There are myriad resources for the designer with little knowledge of this. If it's new territory for you, please look over the universal and user-centered design resources mentioned above. Do a dive into (US) Section 508 of the Rehabilitation Act, the Americans with Disabilities Act, and the Web Content Accessibility Guidelines.

If you're still wondering why you should care, take a look at this settlement between the Pennsylvania State University and the National Federation for the Blind in which accommodation was addressed as a civil rights issue. Other countries have their own requirements, often largely mirrors of the US standards, so search a bit for guidelines pertinent to the country where you work—or where your products are deployed. Testing for accessibility is easy: Google around for accessibility checker tools. Sometimes basic testing is built into software you might be using already, like Microsoft Office products (see more about MS accessibility tools) or your favorite authoring tool. Take a look, too, at the assistive technologies that may be in place in your workforce, like screen-reading software or big keys for typing. Be aware that automated testing has its limits and doesn't reveal everything real user testing will.

WANT MORE?

I can't cover the details of all this in 1,000 words, so if I've piqued your interest I'll try to boil it down: Don't think of it as making eLearning "accessible" for special people. Think about making it usable for everyone.

- It's not just about "being blind." It's also having low vision, difficulty detecting contrast, or difficulty with colors. Per the 2010 US Census data, of the eight million people who have impaired vision, two million are completely blind.

- It's not just about "not hearing." One of the agencies I work with sends frontline workers to eLearning kiosks that have no sound. Government funding being what it is, that reality is not likely to change soon.

- Reading issues may have nothing to do with vision: many organizations employ workers with low literacy skills.

- It's not just about "mobility." Many of us employ workers who rarely use a keyboard in their work and find them awkward and frustrating.

- It's not about extremes or just designing for the disability. It's about designing for every user who might access your work.

- Finally? It's not just about being "compliant." It's about doing the right thing.

ACCESSIBILITY BASICS:
WHAT MAKES CONTENT ACCESSIBLBE?

Pamela Hogle

To be considered accessible, eLearning content must meet these attributes, captured by the acronym **POUR**:

Perceivable—Content is available to the learners' senses, primarily seeing and hearing for online content

Operable—Users can interact with the content using standard input devices, including a mouse or keyboard, or an adaptive technology

Understandable—Content is clear and unambiguous

Robust—Content is accessible using a wide range of technologies and abilities

What makes content accessible?

While some accessibility solutions work for multiple access barriers, developers often encounter what Dmitri Belser, executive director of the Center for Accessible Technology (C for AT) in Berkeley, California, calls "dueling disabilities."

"The needs of people with disabilities are incredibly diverse and sometimes completely opposite. It's a really hard thing to work out," Belser said, describing issues in constructing physically accessible spaces. "It also happens in technology. For deaf people, you need to have text and you need to have icons. But blind people can't access that. The needs of those two groups are completely opposite."

Accessibility online, Belser said, "is really all about redundancy, having it in multiple formats so people can do what they want."

An additional challenge in creating accessible eLearning content, Belser points out, is that it is a constantly changing arena. Technology, tools, and adaptive devices change: a tool that was compliant with accessibility standards is discontinued, or the new release isn't compliant. An operating system upgrade means that your laptop or phone no longer works with your favorite software program or app.

Despite the "moving target" nature of creating accessible eLearning content, some general design principles apply. Universal design, also called human-centered design, aims to create content that is usable by the widest range of people operating in the widest range of situations; it addresses issues facing people with visual, auditory, motor, and cognitive disabilities, as well as learners with low literacy or for whom English is a second language. In fact, designing for accessibility builds in flexibility that may make it easier to keep content current.

"There is a pretty big overlap between usability and accessibility," said Jared Smith of WebAIM, a nonprofit web accessibility consulting organization based at Utah State University. "A lot of building in accessibility is building in flexibility and compatibility." Smith cited design for mobile, where many of the same features that constitute responsive design, content that adapts itself to the learner's environment—laptop, tablet, or smartphone—seamlessly accommodate screen magnifiers and other assistive technologies.

UNIVERSAL DESIGN FOR LEARNING: UDL

Pamela Hogle

How can creating eLearning that offers more options and access to more learners save time for instructional designers and developers? It's not a riddle; it's an argument for Universal Design for Learning, designing eLearning using what UDL experts Thomas Tobin and Barbi Honeycutt call "plus-one thinking." Plus-one thinking means that, for every interaction between a learner and something—the instructor, the material, another learner, or something else—an additional option is provided.

What might this look like?

- In addition to presenting material as text-plus-photos, offer a short video

- In addition to presenting an audio track for a video, offer a transcript or closed captions

- In addition to offering text on a screen inside an LMS, offer a downloadable file

- In addition to asking learners to provide written responses to assessment questions, offer them a game or a simulation

- In addition to presenting required content in a video, allow learners to read an article or review electronic "flashcards" on a mobile device

Tobin and Honeycutt recommend starting in content areas where learners are frequently confused. "Think of the places in the course where learners always: 1) have questions, 2) get things wrong on tests and assignments, and 3) request explanations in different terms. Apply 'plus one' design to these elements: add one choice, alternative, or means of self-regulation in each place identified," they write. "Plus-one thinking helps to focus one's design efforts to the places where they are likely to have the greatest impact for learners."

Principles of UDL

Universal Design for Learning, or UDL, is a mindset, an approach to design that is based on three principles:

1. Present information in different ways

2. Provide multiple ways for learners to engage with information and apply it

3. Offer learners multiple ways to demonstrate learning or mastery

UDL encourages instructional designers to think of at least two ways to present each new piece of information. If the primary method is text— lecture notes, a study guide—the secondary format can be audio. If the primary format is a video, the secondary can be a transcript. "UDL doesn't ask us to create materials to anticipate every possible use," Tobin and Honeycutt write. "Just to 'design for the extremes.'"

Doing this opens up the benefits of multimodal learning: people learn better when they can consume content in more than one way. (See "Capture Learners' Attention with Multimodal eLearning.") Having choices and some control over how they engage with content is also motivating for learners.

Offering multiple ways to demonstrate mastery might be the hardest of the principles to implement, according to Tobin and Honeycutt. "Look at the objectives for assignments and think of whether students must use a particular format in order to demonstrate those objectives, or if they can accomplish the same tasks in different ways," they advise.

How can UDL save development time?

Providing "accommodation" often requires making a specific change to remove or mitigate a barrier to an individual's access. If a class is held in a building whose entrances all have stairs, an accommodation for a learner who uses a wheelchair might mean holding the class in a different building. In eLearning, an accommodation might mean disabling timers on some content so that a learner can spend more time completing an exercise. But with accommodation, the emphasis is on the individual: one change, done one time, for one person.

Since learners are diverse and their needs are diverse, the potential need for accommodations can be enormous—and daunting. That's why many instructional designers have negative associations with the very concept—they see accommodation as something that takes a lot of extra time and benefits only one or a very few individuals.

UDL is a better way to improve access

It grew out of the concept of universal design, which emphasizes physical design—of buildings, environments, and objects—that is useful to as broad a variety of people as possible. For example, a design with curb cuts and ramps provides access to people who are walking, biking, using wheelchairs, pushing baby strollers, or riding skateboards. When buildings are based on universal design, fewer individuals will need accommodations; fewer barriers mean that more people can access the building—and the services it houses.

In the same vein, if eLearning is designed with multiple modalities—and thus fewer barriers to access—fewer individuals will need accommodations to access the material. Modifying eLearning when someone requests an accommodation—adding captioning or simplifying a complex text, for example—can be expensive and time-consuming; UDL helps avoid that.

UDL is about much more than providing access to learners who have disabilities, though. All learners are more engaged when they have choices and control over how, when, and where they learn, and many people who do not have disabilities benefit from features like captions and content that is available on multiple devices.

Multimodal learning supports learners' preferences and gives them flexibility. A busy person who wants to watch a video on the train or after the kids are asleep can use captioning and keep the sound off, for example.

- Offering eLearning that is not tied to a specific software tool or format and that can be consumed on a laptop, tablet, or smartphone frees learners to consume it when and where they want

- Offering material in multiple formats means more learners will understand the content, since they can review it in a couple of different ways

- Showing learners' progress or providing time estimates for each topic or section offers learners more control over their scheduling

Learners who can access eLearning on their own terms are likely to be more engaged, spend more time with the material—and learn and retain more.

WANT MORE?

Tobin, Thomas J., and Barbi Honeycutt. "Improve the Flipped Classroom with Universal Design for Learning." In *Handbook of Research on Innovative Pedagogies and Technologies for Online Learning in Higher Education*. Hershey, PA: IGI Global, 2017.

SECTION 508:
ACCESSIBILITY REFRESH

Pamela Hogle

With publication in the Federal Register on January 18, 2017, the long-awaited Section 508 Refresh became a reality. Publication started a 60-day countdown to the rule's taking effect on March 20. Compliance with the new Section 508–based standards is required starting January 18, 2018. This article provides basic information regarding what the Refresh might mean for eLearning.

What is Section 508?

Section 508 is an amendment to the US Rehabilitation Act of 1973. It requires federal agencies to ensure that all electronic and information technology (often referred to as "ICT," or information and communications technology) and content that they develop, obtain, or maintain is fully accessible to people with disabilities. The Refresh updates the requirements that equipment and content must meet to be considered accessible.

So, what does the Refresh mean for eLearning?

Federal agencies are required to comply with Section 508; therefore, any business that supplies electronic and information technology, goods, or services to a federal agency must ensure that those items meet the updated accessibility standards. This includes hardware and software, website design, apps—and educational or training programs.

In addition, many state governments have adopted Section 508, and all states receive funding under the Assistive Technology Act. Therefore, most state agencies and their suppliers, including state universities, are also required to comply.

The regulations apply to all publicly accessible content and to most official communication content, including emergency notifications, policy announcements, notices of program eligibility or employment opportunities, questionnaires, forms and templates, and educational or training materials.

This means, for example, that all eLearning that a state university offers, whether standalone courses or elements of in-person courses, must meet the new guidelines.

What does the Refresh require?

The Section 508 Refresh incorporates by reference the WCAG 2.0 standard, a global standard for accessibility of Internet content. The rule also explicitly refers to WCAG 2.0 levels A and AA success criteria and conformance requirements in several places.

Content

WCAG 2.0 is a set of guidelines and recommendations for ensuring that online content is accessible. Level A stipulates, for example, that all images have alt text, which is a description of the image that a screen reader can read to a person who has a visual impairment. Level A also stipulates that closed captions and transcripts or audio descriptions be provided for all non-live audio; Level AA adds synchronized captions for live multimedia events that include audio as well. This would cover, for example, a video conference, live-cast of a lecture, or a webinar. The Refresh also covers support documentation, which may be provided to learners with disabilities in alternate formats, such as Braille, large print, or audio files.

Authoring tools

Section 504.2 of the Refresh requires that authoring tools have the ability to create content that conforms to all criteria in Levels A and AA except when used to directly edit plain text source code. Authoring tools must preserve accessibility information, such as alt text descriptions, when content is edited or converted to multiple formats. The tools should be able to prompt users to include accessibility content and tags during content creation or saving. The requirements for authoring tools apply to any eLearning authoring platform purchased by or used in a federal or covered state agency, including a state university.

Technology

WCAG 2.0 is technology-neutral; the guidelines and success criteria apply equally to web content, PDFs, user interface components, non-web documents, and the content of platforms (including eLearning modules) and applications.

Hardware

Information and communication technology includes hardware, such as self-contained information kiosks, self-service machines, and the like. Thus eLearning delivered via an automated kiosk would need to comply if delivered to or used by a covered agency.

What else does the Refresh cover?

The published rule includes several "advisory" paragraphs, which describe best practices. Some of these list examples of accommodations or acceptable alternate formats for content, as well as suggestions for providing content and assistance in a variety of formats and via multiple delivery channels—underlining the need for flexibility and adaptability when designing eLearning to meet the needs of a broad range of potential learners.

UNDERSTANDABLE ELEARNING
USES PLAIN LANGUAGE

Pamela Hogle

Ensuring that content is clear and unambiguous is much more than an accessibility issue of concern to people with disabilities, though it has obvious benefits for learners who are deaf or have autism, dyslexia, or cognitive or other disabilities that affect their ability to access or use written language. Writing in plain English and using additional formats— such as visual media to accompany text, or captions with audio—aids all learners, including those who are English learners or have limited literacy skills. It also ensures that eLearning content is accessible to any busy employee who is trying to learn complex material about an unfamiliar topic.

This is the essence of the "U" of POUR: understandable content. Understandable content is usable content. All the captions and alt text descriptions in the world are useless if learners simply don't understand the material.

Know your audience; if you can be certain that every learner has the same basic knowledge, it's reasonable to skip basic information. But that's rarely the case. It is generally wise to include the basics while enabling advanced learners to skip introductory sections.

Build in features for people who have difficulty remembering things to make it easy for learners to search for content or review content they have already covered, and allow unlimited access to exercises that offer spaced repetition and skills practice.

Include supplemental material and additional resources, such as illustrations, infographics, videos, and animations. This serves multiple groups of learners: learners who want to explore a topic more deeply benefit from the additional materials. The non-text materials are essential for learners with some cognitive disabilities, low-literacy learners, and learners who have dyslexia.

What is "plain" English?

Writing in plain English provides learners with the information they need in a way that is easy to read and understand:

- Use simple, everyday words; avoid idioms and cultural references.

- Avoid jargon, and explain any specialized words or acronyms that you do use.

- Keep sentences short. Comprehension drops off drastically when sentence length increases beyond about 20 words.

- Be clear and specific.

- Avoid redundancy.

- Use active verbs.

- Introduce one idea per sentence and one concept per paragraph.

- Organize content logically. Use HTML5 tags to mark headers, body text, etc.

Non-native English readers, a group that includes people who have been deaf from birth, generally have a smaller vocabulary of more basic words than highly educated native English speakers. According to Wanda Blackett and Andrea Kenney of Deaf Heart Design, an accessible eLearning company in Ontario, Canada, deaf adults tend to have a vocabulary equivalent to that of a hearing child in the fourth grade, and they lack the casual understanding of idioms and cultural references that hearing children absorb from their environment. Kenney adds that up to half of adults in the developed world struggle with literacy issues; using simpler words and clear writing removes a major barrier to understanding.

(**Editors' note**: While we respect the knowledge of the experts cited in this paragraph, these are generalizations based on their experience, and there are certainly many deaf individuals who are exceptions—many of them notable—to those generalizations. The key point, it seems to us, is that clear writing and appropriate vocabulary helps to ensure that all readers understand your text. Know your users, and write for them. See "Personas Place Developer Focus on Learners' Needs" for suggestions on ways to ensure that you are meeting the needs of learners.)

Beyond content

Building understandable eLearning requires attention to elements other than content: navigation, the way exercises work, the structure of required learner interactions, even the "look" of the text must all be easy to understand. Following these design tips helps:

- Do not use all caps.

- Use clear fonts. Serif fonts help low-literacy readers recognize the shapes of words more easily than do sans-serif fonts.

- Keep the design simple and the navigation clear. The eLearning does not have to follow a single linear path, but menus and options should be clear and choices obvious.

- Remember to use both symbols and colors for navigation controls— say, a blue, right-pointing arrow to move forward and a yellow, left-pointing arrow to move to a previous page.

- Controls that open menus, flip quiz cards, or access additional materials should be clearly labeled.

If these guidelines sound like common sense or simply good design, that's because they are. Creating effective, clear content ensures that eLearning is accessible to a broad range of learners, regardless of their ability level, prior knowledge of the subject, or technical savvy—the central goal of universal design.

How accessible is my content?

Well-designed eLearning content likely already has many elements that make it accessible and put it on its way to meeting the R of POUR: Robust. This content will have:

- HTML5 tags for page and section headers, lists, and tables

- Meaningful hyperlinks

- ARIA (Accessible Rich Internet Applications) attributes for complex elements

- Alt text for images and video

- Transcripts and captions for audio elements

While technology is a moving target, designing eLearning content that meets WCAG 2.0 and Section 508 standards helps ensure maximum accessibility for the largest number of learners.

Not sure where your content stands on this spectrum? Several online tools are available to evaluate web pages, mobile content, and other eLearning content. W3C maintains a list of accessibility evaluation resources, and other organizations, including WebAIM, a nonprofit web accessibility consulting organization based at Utah State University, offer accessibility evaluation tools and checklists for Section 508 and WCAG 2.0 compliance on their websites. WebAIM's color contrast checker lets you enter two colors in RGB hex format to check the level of contrast.

The WAVE tool (Web Accessibility Evaluation Tool) lets you enter a URL; it then analyzes the page and produces a report with warnings, errors, and alerts that tell you what is wrong (and what is done correctly!)

Maintaining an accessibility focus throughout the design and development process results in eLearning content that is usable by a broad variety of learners. User-focused and universal design approaches, along with iterative development models that include audience testing of prototypes or early versions of a product, are

compatible with this focus. In larger companies, a group of 10 or 15 employees, including employees with disabilities, can user-test and provide feedback on features of a product. This might not be feasible for small-scale in-house eLearning projects, and it's not the only option.

Asking learners how they use a product, watching them work, or having a discussion with employees about their experiences with eLearning can help developers identify needs or issues they should address in the design and development of eLearning content. This information can identify problems that no one on the design team anticipated and lead to better design, greater usability—and improved learning.

CREATING ACCESSIBLE COURSES: 5 TIPS

Jenny Hill

How can you create online course content that is more accessible to students, even (or especially) to those with permanent or temporary physical or sensory challenges?

This article offers five techniques that will start you down the path toward creating more accessible online course content and help you create content that is more accessible to learners.

What kinds of challenges are we talking about?

Rodney, a 15-year-old high school student, decided to take an enrichment course online to learn more about parliamentary government because he hopes to major in international affairs in college. He signed up for an online course through his local community college and was excited to dive into the material. Rodney was unhappy to discover that all the lecture material for the course was in the form of podcasts—he is partially deaf and had difficulty understanding the audio. He contacted the teaching assistant, but was notified that there were no transcripts available. After receiving a poor score on the first quiz despite a strong understanding of the reading material, he chose to drop the course.

Selena, a 35-year-old nurse, was on short-term disability due to a wrist injury. She wanted to keep her skills sharp while she was away from work, so she enrolled in an online professional development course

that would allow her to hone her skills in caring for older adults. The assessment material for the course required complex use of a computer mouse for drag-and-drop quiz activities. Selena was unable to complete the activities without causing further wrist injury, and was unsuccessful in completing the course.

Barriers

Selena and Rodney each experienced a barrier—a stopping point that made their online course so difficult to use that they were unable or unwilling to continue. Stories like this are common; perhaps you can even think of a time that you had difficulty in accessing online information that you needed.

Online courses open up a wealth of possibilities for many learners because they add an element of flexibility to the learning experience not always achieved with traditional classroom courses. Ensuring course accessibility takes advantage of this flexibility and maximizes the potential of the learning experience.

Accessibility

Identifying and eliminating barriers is what accessibility is all about. Accessibility of content is not only a best practice in developing online courses, it has become a legal requirement in many situations. You may have heard of the Americans with Disabilities Act (ADA), Sections 508 or 504 in the US, or the Accessibility for Ontarians with Disabilities Act (AODA) in Canada, or other legislation that applies to education or web accessibility. All these mandate a certain level of accessibility in online content for various organizations. These requirements may apply to your work, so it is important to be aware of them.

By thinking a little differently when you're developing and designing an online course, you can help to avoid creating unnecessary barriers for your learners and help improve their success.

1. Ensure text is truly text

Course designers are sometimes tempted to use images, Flashanimations, or video to present reading material or headings or to add other visual effects to text. While this may be very visually engaging, it can create a major barrier for learners with vision difficulties, cognitive disabilities, or those on mobile devices, as these elements sometimes don't resize well.

Present your text as true text, not as images of text (for example, PNG, GIF or JPG files). Text can be styled with cascading style sheets (CSS) to be more visually engaging, but most importantly, use of true text allows for a variety of access methods, including various browsers and mobile devices. Assistive technologies such as screen readers and magnification software can bring true text to many different learners in an easily accessible way.

2. Make sure content is in an easily understandable reading order

Sometimes, when laying out content visually, a course designer neglects to ensure that the content is presented in order in the code. CSS float techniques and visual design tools can allow for highly engaging visual presentation, but the content should remain in a logical order underneath.

Use HTML headings to organize your content, and make sure those headings stay in order in your document. This helps learners to understand the order and will allow for those using screen readers, custom CSSs, or other assistive technologies to access the content in the most logical way.

3. Use HTML where possible

If your course materials are in word-processor documents, or in PDFs or PowerPoint presentations, it can be tempting to simply upload these to your online course and call your course completed.

HTML is the language of the web, and thus is accessible with many different browsers, software packages, and devices. Along with ensuring your text is true text, using HTML to present your content (rather than PDF, Word, PowerPoint, etc.) allows for the broadest access and most use of assistive technologies. Learners can customize their experience more to get the most out of HTML material, whereas a course made of PDFs or Word documents may be more difficult to access and use.

4. Ensure visual and audio elements have captions and transcripts

Video and audio materials can be a highly engaging way to present course material, and with easy access to digital cameras and recording devices, it can be tempting to quickly record video or audio of lecture material to use in your online courses. However, video or audio without captions or transcripts can exclude many potential learners. Captions and transcripts for this material not only allows more users to easily access the content, but can also improve retention of the material, thus improving the overall online learning experience. This step is critical to developing courses where required material is presented via multimedia. For courses that include synchronous virtual sessions, live captions can improve access for many and are more accessible than ever before. Consider using captioning services that are built into video conferencing software, or try using PowerPoint live captions.

5. Do user testing and solicit feedback

This is the most important step you can take toward making your online courses more accessible.

By doing simple user testing with your content and soliciting feedback you can identify less visible barriers to access and address them. You can start small. Convening small focus groups and collecting feedback from current students is a great first step; it's amazing what you can learn by asking learners how online content could be improved.

Keep the learners in mind

It is most important that learners can access the material, so understanding the learners and gathering feedback thinking about potential barriers is key. Making this your focus will change your thought processes and allow you to avoid potential accessibility issues from the start, and better navigate issues that arise saving time and improving the quality of your work. Through these five steps, you can move further toward delivering the most inclusive online course possible, improving outcomes and experiences for learners.

You may also find that you want to implement a more in-depth accessibility practice in your course development. The following resources and conferences can help you learn more about accessibility and move much more quickly toward developing those standards and practices.

WANT MORE?

Resources

✔ Web Accessibility Initiative (WAI)

✔ WebAIM—Web Accessibility in Mind

✔ Simply Accessible

Conferences

✔ Accessing Higher Ground Conference

✔ The Accessibility Conference

SPECIFICS

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The primary reasons people use captions have nothing to do with hearing loss!

- how's your day been so far?

WITH CLOSED CAPTIONS FOR ELEARNING

Pamela Hogle

One simple addition to eLearning videos can improve learner engagement with and comprehension of the material, as well as increasing learners' focus while viewing the videos. It's closed captioning.

Many eLearning developers make two critical errors in the way they think about closed captions: they see captioning only as an accessibility aid. And they assume that, since they have no deaf learners, they do not need to implement captions. Actually, make that three errors: Many developers also believe that, if they ever "needed to," they could easily add captioning later.

Research around how people use closed captioning with eLearning videos or TV-watching debunks the first two errors, showing that the primary reasons people use captions have nothing to do with hearing loss!

A 2006 UK study of television viewers found that 80 percent of the TV viewers who regularly used captioning had no hearing impairment. They told researchers that the captions helped them focus on and better understand the shows they were watching.

A national study of US college students found similar uses for captioning. Even though this study looked at higher-ed students, and

much of the research around the cost of retrofitting eLearning has been conducted at universities, the findings are relevant to eLearning developers in any environment, particularly where adult learners' responses can be separated from the larger pool of students.

Corporate eLearning developers should pay particular attention to how adult learners in the university study regarded captioning: 62 percent of adult learners said that they find captioning "very" or "extremely" helpful when they view eLearning videos; 66 percent of learners for whom English is a second language agreed. Only 1.4 percent of respondents said that captioning was not at all helpful to them; 71 percent of the students surveyed, across all ages, said they used captioning at least occasionally.

When asked **why** they used captions, the most popular reason was to help learners focus, a response chosen by nearly half of the 2,124 respondents. Helping them to retain information was a close second. Using captions to help overcome difficulty hearing was a very distant sixth place, chosen by only 288 respondents! (Respondents could indicate multiple reasons for using captions.) Other uses included compensating for poor audio quality, using the eLearning videos in an environment where using the audio would be difficult, helping learners comprehend vocabulary used in the eLearning, and aiding them in understanding a presenter with a strong accent.

Free-text comments from several students mentioned that getting information in different ways helped them learn. These learners' responses are supported by science that shows that people remember information better when it is presented in multiple modalities. [Read more about multimodal learning in "Capture Learners' Attention with Multimodal eLearning."] It's also one of the principles of universal design, which aims to make products, environments, and communication usable by everyone.

Retrofitting existing content may be unworkable—or expensive

What about that third error, the belief that it is simple to "retrofit" existing eLearning to add accessibility features if a learner requests an

accommodation? That approach got some universities into hot water; Harvard and MIT are currently being sued over eLearning that lacks captions, and several universities have settled lawsuits over inaccessible eLearning. Since many corporations do not face legal requirements to make all learning accessible, the argument for waiting until it's "needed" could seem tempting outside of the higher-education arena. But modifying eLearning in any environment is a headache—a potentially expensive headache.

The GOALS Project and the National Center on Disability and Access to Education published a case study that examined the cost of retrofitting college distance-learning content to make it accessible. They found costs ranging from a few hundred to several thousand dollars per course, depending on what needed to be done. Courses that included video that needed captioning were considered moderate to complex and cost far more to retrofit than simple, short, text-based courses that required only small changes, such as descriptive text for images.

A second GOALS case study that specifically addressed captioning looked at the cost of captioning all of a college's eLearning. The case study estimated a cost per minute ranging from $1.50 to $2. While it might be possible to find captioning services in that price range, most professional captioning vendors charge between $3 and $10 per minute of video, although those rates frequently include both captioning and full transcripts.

Besides the actual cost of captioning, additional staff time is required to identify which eLearning courses have videos, send the videos to the contractor, and integrate the videos with the captions back into the eLearning courses.

To be fair, building in captioning during eLearning development is not free. An eLearning developer or a private captioning vendor still has to create the captions. However, integrating these costs into course development spreads them out over time, as eLearning modules are created, rather than incurring a large, unexpected cost at the time a learner requests accommodation—and avoids delaying a learner's training.

But all of that sidesteps the point: not all learners who would benefit from captions have disabilities or are willing to request accommodation. Who could benefit? Any employee who:

- Is easily distracted

- Is struggling with new work-related vocabulary

- Is an English learner

- Works in a noisy environment or one where playing audio is impractical

- Happens to be an adult learner

The bottom line is: closed captioning could benefit any or all learners. And who doesn't want learners to increase their focus and engagement with eLearning? The catch is, eLearning developers can't know what difference captions will make for learners until they implement captions in their eLearning.

COMMUNICATING WITH YOUR AUDIENCE:
A CHECKLIST

Here are some guidelines from Nick Floro on ways to include and engage with your potential audience, from the Learning Guild research report, "Creating Accessible eLearning: Practitioner Perspectives."

Pre-planning
When you start a new project

- Talk to stakeholder

- Talk to actual users who need the content

- Learn what is working

- And what is not

- Think about how can you make it easier for them to access

- Think about the best format for delivery

- Consider multiple options if working with a diverse audience across many ways of delivery, i.e., PDF, email, course, LXP, email newsletter, podcast

Understanding the Audience
Learn what tools they have

- What works best for them at the time of need

- Document how they typically get information

- Analyze and remove barriers to improve results

- Use analytics to learn devices, browser versions, and frequency to content

- Google Analytics is a free resource to capture this data

Talking to the Audience
Create a feedback loop for each project, where you actually interview and listen to the audience needs

- Document

- Test ideas by creating sketches and prototypes and see what best resonates

- Use survey tools with questions that can be calculated for faster analysis

Movement
Stop relying on the LMS and remove barriers

- Look at how to best use the LMS but also look outside of it to simplify access or create launch points to access the core course

- If you cannot currently launch a course or learning object directly, investigate how to simply and implement

Feedback Loops

For each project or area, think about a team of actual users of your content and meet with them to gather pain points and test new ideas. They will become cheerleaders to spread the word.

Think about Tools

One of the best ways we have found to reach audiences is by creating a tool that can empower them to quickly find and reference information. Based on your analysis you may consider:

- PDF Resource. Can be opened on any device and can contain information and links to additional tools and resources across the organization.

- Web App. Think about a web based application where you can have audience members launch into different tools, find information quickly, and remove barriers based on legacy tools and systems.

- Plan to Update. Once you launch a resource, you need to add love to care and nourish, provide updated, be agile, and listen to feedback to improve the experience.

CONTRAST:
DO YOU SEE?

Jane Bozarth

There are simple design basics that can help to make or break a program. While a good deal of conversation about accessibility focuses on those who are blind and are perhaps using tools like screen readers, choices related to fonts, placement of content on a screen, and application of an organization's standards like number of screens matter to many more users. Design issues that may affect many learners but that can be easy enough to correct: contrast and color. (As an aside, the single biggest accessibility complaint I encountered in nearly 20 years in the eLearning design business: problems with contrast.)

I was helping with a classroom-based train-the-trainer (T3) course when one of the guest instructors, writing on the whiteboard, made an offhand comment about staying away from red markers as some people had difficulty seeing red. This touched off what I felt was a surprising amount of conversation; having been in "the biz" for so many years, I assumed this was something even novice trainers knew.

Wikipedia says: "In the United States, about 7 percent of the male population—or about 10.5 million men—and 0.4 percent of the female population either cannot distinguish red from green, or see red and green differently (Citation: Howard Hughes Medical Institute, 2006). It has been found that more than 95 percent of all variations in human color vision involve the red and green receptors in male eyes. It is very rare for males or females to be 'blind' to the blue end of the spectrum"—difficulty with green can mean difficulty with blues and yellows as well.

It's extremely rare that people see no color at all. Even then they see *something*, but it may all be gray or shades of gray. Many will see a blending of colors. For instance, blue and violet may look more like "blueviolet." Dark reds, greens, and browns may all look something like an olive green. My husband, a diehard Cincinnati Reds fan, can't differentiate shades of red, and I haven't the heart to tell him that the "red" car he's so fond of … is actually burgundy. A friend reports having a terrible time with the dark colors in video games, and can barely detect document edits done in red. So in training design, using red for emphasis, for example, may be lost, and may not have the contrast against a different-colored background that you might think it does.

Consider

Consider, for instance, the map shown in Figure 1 and again in Figure 2. To the person with complete colorblindness, the "X" still makes sense, even without the red, but the red and green lines marking different routes look the same:
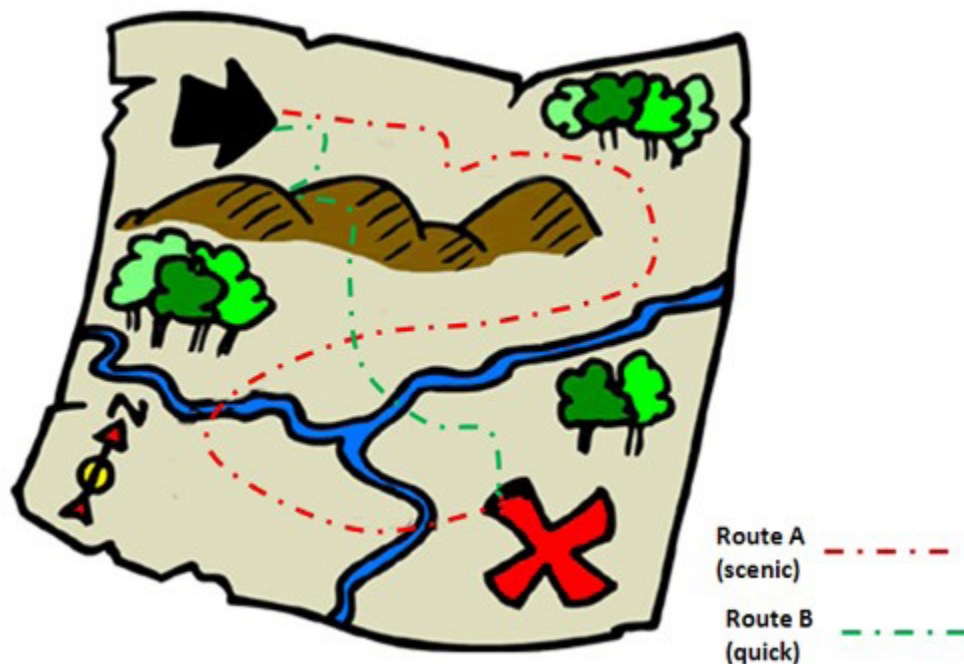
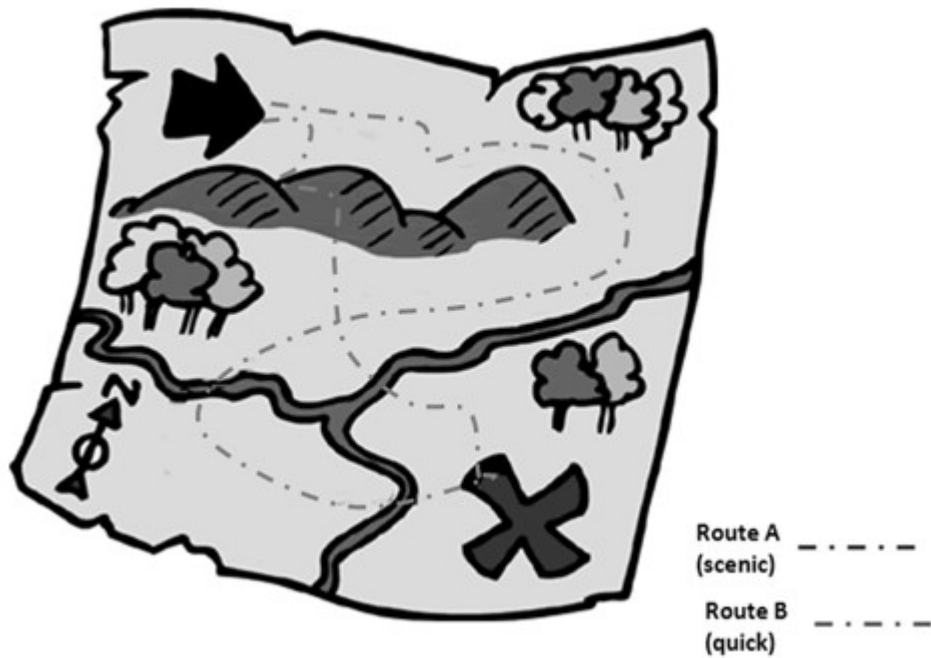

Figure 1: The normal vision view

Figure 2: The complete color blindness view of Figure 1

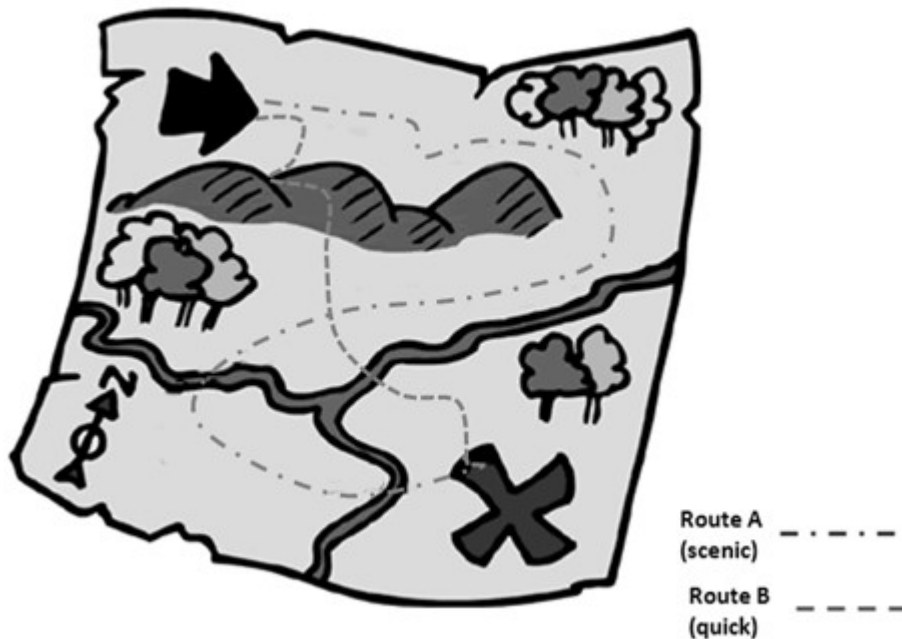This is easy enough to fix: just change the types of dashes on one of the lines, as shown in Figure 3:

Figure 3: Figure 2 made intelligible by changing the route symbols

The lack of contrast is still a concern, though. The change in line types makes the information clearer, but because of the map's color background the lines are not necessarily that much easier to see. Try going with a lighter background, or darker lines:
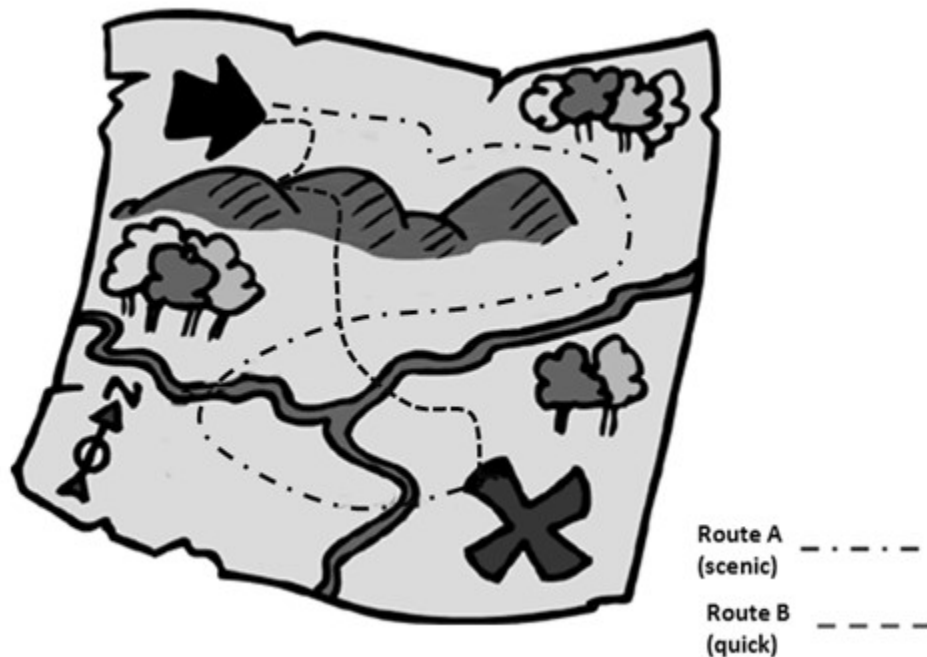
Figure 4: The map gets further improvement by improving the contrast between route lines and background

Use icons

As with the arrow and X on the map, an icon can convey information. Compare the use of the dots representing correct/incorrect feedback in Figure 5, which might appear all gray to some learners, to the use of icons in Figure 6. The icons will make sense even to learners who have challenges in differentiating colors.

Figure 5: These dots will all appear gray to some learners

Figure 6: Using easily distinguished icons eliminates the problem in Figure 5

If you're using color for emphasis, as with the X on the map, or to provide information, as with the lines in Figure 1 and the dots in Figure 4, be sure what you're doing will be clear to all your learners. **Trick**: Check your images before launching your program. Depending on your graphics program, check your images by setting them to grayscale or by desaturating them to see how they look without color. (In PowerPoint, select the image and choose Picture Tools-Recolor-Grayscale.)

So when designing, be careful of using color as a cue—remember that there are those who may miss it. Boldness, contrast, and pattern differentiation can go a long way toward preventing problems. Also, always, always look at programs on a variety of other monitors and devices—the variations in color display might surprise you.

WANT MORE?

✔ [Color blindness](#)

✔ Duarte, Nancy. *slide:ology*. O'Reilly Press.

✔ Reynolds, Garr. *Presentation Zen Design*. New Riders Press.

CONTRAST AND COLOR BLINDNESS:
FIRST PERSON

Jane Bozarth

In writing our 2019 research report on accessibility I asked John Pagano, a fifth-grade robotics teacher who has colorblindness, to talk a bit about challenges he's faced with eLearning. I was really looking for a quick quote or two. He had a lot to say. Here are his complete comments.

"Colors are looked as ways to enhance experiences. Designers think it's cool, for instance, if when a word is spelled wrong, they change the font from black to red. I don't notice any difference. I used to use a Chrome extension that would change HTML text to different fonts based on their color. I could apply this extension and the word would appear in, say, Comic Sans instead of Times New Roman. What color-seeing people see as enhancements and cool features are totally lost on me.

"I did a weeklong robotics session at [big American university]. There's an online cert course that goes along with the face to face class—you earn badges, reach levels of completion, that sort of thing. The status indicator on whether you've completed certain lessons or checkpoints displays your status using only color as an indicator. Blue meant you'd made no attempt at all. Yellow meant you'd started but not completed. Green meant you'd completed and passed, and red meant you'd completed but not passed. I didn't see any of those colors. I just saw a list. And when I got tired of asking the person next to me whether I was complete or not I'd do the module again just to make sure. You know, as an adult it gets to be embarrassing to have to ask another person for that kind of help all the time."

John went on to describe some other daily challenges

"Well, batteries often have just one LED indicator light. You know, blue for charging, flashing red for low, green for charged, that kind of thing. I have to ask my fifth graders what color the light is so I'll know whether something is charged for the robotics program, like the electric drill or the rocket altimeter. I can't shoot off a rocket and get measurements if the altimeter isn't charged.

"I also have trouble with games. I can't tell what Pokestops I've visited because while they change color when you can hit them again, it's gradual. I could see if it went from, say, black to light gray suddenly. But since it's a gradual change it looks the same to me. This is why I can't play games like Candy Crush or Bejeweled. I start out ok because the games are based on shapes, but it gets to a certain point where you need to see the colors in order to be successful with the game. When you look in the app stores some reviewers will mention whether a game is 'colorblind-friendly' by using words or shapes, something other than color. Games like Call of Duty are hard for me, too, because I can't tell the teams apart because of the color. And I can't read the user tags over every player while I'm playing and trying to shoot people." By the way, sometimes app store reviews will say 'colorblind friendly'. Shapes, words, some difference other than color. Would be nice to see more of that."

LITERACY IS ALSO PART OF ACCESSIBILITY:
THE READING CHALLENGE

Jane Bozarth

Conversations around accessibility in eLearning are shifting from a focus on accommodating specific disabilities to a broader discussion of universal design: minimizing barriers for all learners. It has always nagged me that so many in my line of work talk about workplace learning as if it is the provenance of knowledge workers. While there's some attention aimed at technical staff—assembly line technicians, retail, or warehouse workers—I don't hear much about janitorial staff, food service workers, or groundskeepers.

Apart from not sitting at a desk in front of a computer all day, or having discretion in scheduling things like taking this year's online unlawful harassment update, staff at this level may face additional challenges due to low literacy or with working in a language not their own. In other words, a reading challenge. And this is not an occasional worker here and there: some 30 million people in the United States—14 percent of the employed population—have limited literacy skills.

Our March 2019 Learning Guild research report includes perspectives from several practitioners with special interests in making material accessible. Jean Marrapodi's particular focus is on those with low literacy and those working in a language not their own. She's worked for some years with particular students, and tells the story of one, an adult who especially wanted to get his drivers' license. He was a capable driver and had learned to navigate around town using landmarks rather

than street signs. But state law requires passing a written test in order to get a license. Jean called the local Department of Motor Vehicles and discovered there was an option to take an audio version of the test. Her student scored a 100 and, leaving the testing room, informed staff that an answer choice had items out of order.

It's an important lesson for L&D: we're supposed to be enabling performance. Is the point to pass a written test, or to demonstrate knowledge of traffic laws? If it's the latter, is there another way for the worker to demonstrate that? Is there some reason the test must be taken in written format?

Advice for working with low-literacy workers

- Offer audio options for written text.

- Pay attention to voice command and speech-to-text tools. These are game changers for those with literacy challenges. One memorable remark from a coworker at my previous job: "I can use my voice to send texts to my kids. They don't know I can't write."

- Having low literacy doesn't mean a person can't read anything at all. Keep words short, text simple and concise, and use relevant images as much as possible.

- Workers with low literacy may prefer to watch and learn rather than read about performing a task. Provide illustrations or a video when possible.

- Think about their reality: if they are struggling to read what's on the screen, they are likely then going to have challenges with tasks like answering written quiz questions, or evaluating ideas offered. They may be repeating ideas aloud rather than making any kind of written notes.

- Use a readability checker. There are many tools for this online, and Word's "proofing" options offer it, as well. This article reads at about the 9th grade level, although phrases like "perspectives of practitioners" can push it up to 12th.

That's not all…

This article mostly discussed workers who have difficulty reading in their own first language. Those coming from another country with another language and perhaps another alphabet encounter difficulties of another magnitude—particularly if they have low literacy skills in that first language. The resource cited from Jean Marrapodi is a good place to start learning more about working with that audience, too.

WANT MORE?

✔ Check out Jean Marripodi's presentation at the 2017 eLearning Guild Summit on accessibility. Her slides, as well as the full recording, are [available here](#).

DESCRIPTIONS

Pamela Hogle

You're streaming a video. Bright yellow text flows across a dark screen: a movie title followed by a long-ish narrative. A spaceship flies across the screen, chased by a much larger one; colored laser lines streak across the screen, missiles fired by the larger craft at the fleeing spaceship. The scene then moves inside the first ship, where three robots hurry along a hallway; armed soldiers rush past them.

Finally, more than two minutes in, one of the robots speaks the first line of dialogue.

It's the opening of Star Wars, of course. But if you couldn't see what was on the screen, you'd be completely confused. Obviously, something needs to be done to make the movie accessible to people with low or no vision. But what?

When using a medium like video, learners need to know both what is being said and what is showing on the screen. Most people are familiar with captions and transcripts, which provide access for learners who are hearing impaired or deaf. But what about learners with impaired vision? Can visual media, including video-based eLearning, be accessible to learners with low or no vision?

Though less familiar, the solution is equally essential: audio description. "It's not like captioning, where everybody sees it on the television in

the bar or in the gym," said Joel Snyder, president of Audio Description Associates and director of the American Council of the Blind's Audio Description Project. "With description, you're not aware that it's there unless you're using it."

What is audio description?

Audio description fills the visual void with a narrated description of the scene, the characters, and the action, providing access to visual elements that are not described in the default audio. The description is provided between lines of dialogue and other sounds on the soundtrack; it might be detailed or quite brief, depending on the content and space available.

Audio description can be provided for live or recorded content; some theaters and concert halls offer the service, as do many museums and galleries. Some television and movie content is available with audio description—including all seven Star Wars movies. Audio description of recorded content generally omits decorative elements, such as clip art or icons that do not add new information.

The audio track with description is often a separate audio track that users can select in the same way as an alternate language track or via an accessibility menu. Viewers who activate the audio description option on a video player or streaming service will hear the augmented track; other viewers will hear the default audio, sans description.

Description is not the only option

For some types of content, another approach is possible: designing content, particularly eLearning, to be accessible from the ground up.

"Universal design is all about one-size-fits-all; basically, none of this separate-but-equal," Snyder said. For example, an audio tour at a museum can be accessible using either approach.

"A regular audio tour, if you will, provides a lot of information— background, facts, and such," Snyder said. "That same tour can be

written so that it provides descriptive material." When done well, the added description will not seem "odd" to sighted museumgoers, Snyder said, but the tour is more accessible—to all hearing museum visitors. "Some museums end up having two separate tours, which seems a little silly to me. It's unnecessary, especially when people talk about universal design," he said.

eLearning and audio description

Likewise, some types of eLearning, such as short slide-based presentations, offer two paths to accessibility.

The presenter speaks aloud all the text that appears on the screen, along with detailed explanations; she also describes aloud all charts, graphs, or photos. The resulting short video is accessible, as-is, to learners who have visual impairments. All the relevant information is in the default audio.

The presenter, as is all too common, does not describe the images or even read all the text that appears on screen. This video would need audio description to be accessible to learners with visual impairments.

"I encourage people to do self-description, which is not 'I'm six-foot-five and I have black hair.' Self-description is providing the description yourself, during your presentation," Snyder said. "Similarly, if you're going to present a video, it should be audio described, and it should be captioned."

Other types of eLearning content present a greater challenge. For instance, consider an interactive activity that presents interactions among several characters. The learners' task is to resolve communication problems. In one scenario, a character strides out of the room. Another puts on a headset and deliberately—and silently—turns away from the group. Here, the characters' actions, facial expressions, and body language are all relevant to learners' understanding of the group dynamics. Without an audio description, learners with visual impairments would miss critical elements of the content.

What about a five-minute training video that walks learners through the steps of a process? Ideally, the default audio would include an audible explanation of each step, rather than assuming that all learners will understand what they are watching the actor do. If thorough explanation is part of the default audio, audio description is not needed.

Description aids understanding

Federal law requires that some web content and eLearning be accessible, including captioning, descriptive "alt" tags on images—and audio description. (See "Section 508 Refresh" for information on these requirements.)

But beyond legal requirements, description of the visuals in eLearning content is simply good design. "Any image that you project, any image that's up there, whether there's an alt tag or not, should be described in text somewhere," Snyder said. "Going back to the question of universality—people seem to learn in different ways; that makes it more accessible to anyone. They hear as well as see the particular image. That's a lot of what eLearning involves, I think."

Research indicates that the majority of people who use captions are not deaf or hard of hearing. They use captions to help them focus, for example, or to better understand the material. (See "Improve Engagement, Focus, and Comprehension with Closed Captions for eLearning Videos.")

Snyder says that's true of audio description as well. "Sighted people find that they notice things that are pointed out to them. You might go to a film, you like it, and you go to see it again. And, 'Oh, whoa, I didn't see that the first time.' Well, you probably would have seen it the first time, had the audio description been on."

Description might also aid learners in ways that go beyond the specific content: "There's increasing evidence that description aids literacy, in the same way that captioning helps kids or speakers of other languages to learn English. Hearing varied word choice, hearing synonyms, hearing similes and metaphors helps you develop a sense of literacy. In that way, it's helpful for everybody," Snyder said.

Blind Spot blogger Hannah Thompson's eloquent post, "Audio Description," makes it clear that all video-watchers could benefit from the additional narration: "Last night I watched a film for the first time in my life. I have been to the cinema hundreds of times and watched thousands of videos and DVDs, but yesterday I realized what watching a film really means. … Hearing a little bit of extra detail as I was watching the film was a hugely enriching experience. It was unobtrusive, informative, and engaging. And it made me realize that there are … elements of film that I have been missing."

A three-step process

The three steps in creating audio description use different skill sets and are not necessarily performed by a single developer.

1. Writing a script

The script is a description of the scene, the characters, the action—everything except the dialogue and other sounds. The describer should include details that enhance understanding: mentioning what a character is wearing or eating; describing the flash of anger that crosses an actor's face or the care he's taking to hang a photo just so. Description of items for a site tour or art gallery tour should mention what a sculpture is made of, the colors that dominate in a painting, the mood a photo creates. Other salient details could include placement of items relative to the listener or to walls, doors, or other objects; items' size; and description of the lighting and environment. The describer has to strike a balance between providing relevant information and overwhelming the listener.

2. Voicing the description

This requires recording each line of the script, with pauses between lines. Depending on the project, professional voice talent might be used—or an audio describer can both write and voice the script.

3. Editing the audio

Any video editing tool that allows the editor to add and edit audio tracks, or a multiplexing/demultiplexing tool, such as Subler for Mac, can be used to integrate the audio description with the default audio.

The soundtrack takes precedence over the audio description, which is integrated into pauses in the default audio. "Hopefully, the description fades into the background; it doesn't dominate the experience," Snyder said. Description does not have to sync perfectly with the action in the video, but the description must be close enough that it remains relevant.

Adding audio description is "really not complicated at all if you're talking about just slides or images. It depends on the eLearning course, what the structure is," Snyder said, and many developers do it themselves. For content that is heavy on videos, "You generally want to have a professional look at the video, listen to the video, and create description that fits within the pauses between bits and pieces of dialogue or critical sound elements."

For companies that produce large amounts of eLearning content, Snyder suggests a training session for developers. "There are fundamentals to it; it's not just labeling. There's a way to do description that represents best practices," he said.

Audio Description Associates and other audio description companies offer training that ranges from a few hours to several days. Snyder's book, *The Visual Made Verbal: A Comprehensive Training Manual and Guide to the History and Applications of Audio Description*, also provides guidance.

WANT MORE?

✔ Snyder, Joel. *The Visual Made Verbal: A Comprehensive Training Manual and Guide to the History and Applications of Audio Description*. Indianapolis, IN: Dog Ear Publishing, 2014.

GAMES

Pamela Hogle

Those principles for creating accessible content apply equally to games, but they're only a starting point. Games have a number of characteristics that require additional design and development attention if they are to be accessible. This article presents five of the more significant—and addressable—issues.

What makes games different?

Designers of eLearning content generally make assumptions about learners, such as what type of input device the learner will use, typically a mouse, keyboard, or trackpad, and that learners will use a computer, tablet, or smartphone to access the content. Inclusive eLearning provides keyboard equivalents for all touch or mouse-controlled actions, closed captioning for audio content, and audio description of video. But most eLearning content has an advantage over game or immersive content: the designer knows where the learner's attention will be focused. Games often plunge players into an environment where multiple things occur simultaneously. Immersive experiences share this problem with games, adding a 360-degree environment to the mix.

When a player can be looking anywhere, focusing on any of a number of items, characters, sounds, and sights, where do developers put the captions? When do they add visual cues? What do they describe? An additional question is how players "input" actions. Many games use

controllers other than a mouse or keyboard. While game platforms and controllers might be less of an issue in eLearning games than in commercial games, the question of input is still relevant.

A third key difference is player behavior. In much eLearning content, the learner's response is predictable, likely limited to a few defined options or branching scenarios. In many challenging games, though, players have multiple—perhaps infinite—options for how to respond to rapidly unfolding situations. A player's response often has a bearing on their character's "survival" or success in the game.

Some changes to game design that can increase accessibility despite these challenges are simple and add little or nothing to development costs, while others might incur a larger cost in time and resources. Among the most common accessibility features requested, according to developers at #GAConf, are mappable input controls and high-contrast color schemes. Following close behind are subtitling, audio enhancements, and control over timed events. This article addresses each of these issues, offering suggestions for how developers can improve accessibility.

1. Input controls

Games and immersive experiences are often controlled by devices other than keyboards or mice. Basic accessibility mandates keyboard shortcuts for all mouse-driven activities and compatibility with screen readers, but learning games might need additional tweaking so that players with limited mobility can navigate and move game pieces or characters.

Providing players the ability to map controls onto different devices and decide which or how many buttons or keys to use greatly expands accessibility. Developers should not assume that everyone will play the game using the same sort of control. Some players can use only a single button; others might use four arrow keys; some might use a modified controller or joystick or require a voice input.

While the specifics depend on the game and type of control needed, it's important to offer more than one way for players to control game characters or input information. User tests at all stages of development should include lots of different control devices, as well as players who have various mobility impairments.

And remember: Input control goes beyond actual play and controllers and includes access to the user interface menus, intro screens, trailers, and tutorials. If gameplay is accessible but a player can't actually get to the game screens, all that careful, inclusive design is for naught.

2. Color schemes

Specific combinations of colors can cause problems for people who are color-blind or have low vision. Remedies include choosing or offering high-contrast color palettes; avoiding problematic color schemes, such as those using a lot of red and green; and making it easy for players to change the color scheme. Those basic steps are the same for game content and other eLearning content.

One area of design that is especially relevant in games and interactive content is the use of colors to identify items or provide directional or navigational cues—for example, using red and green circles for "right" and "wrong" buttons or red and green arrows. Using different shapes or adding icons gets around the color issue by providing additional visual cues. These fixes aid many players, not only those who have impaired vision (Figure 1).
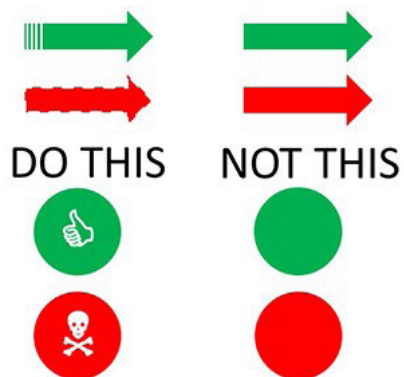

Figure 1: Different shapes and icons can provide additional visual cues besides color

Other configurable options that enhance inclusivity are letting players choose the size and color of text, selecting clear fonts (or offering a choice of fonts), designing large, well-spaced hotspots and buttons, and adding clear visual cues that something is a button, link, or interactive element.

3. Subtitling and captioning

Subtitles and captions are generally added with hard-of-hearing or deaf learners in mind. The truth is, though, that lots of learners and gamers will use them, even if they do not have impaired hearing. For that reason, a best practice is to make captions and subtitles highly configurable—allow players to choose size, color, font, and features like drop caps and letterboxing (which can make subtitles easier to see for some people), and position.

"Advanced" options include adding the speaker's name or a symbol to indicate who is speaking, or varying the color or placement of the subtitle according to who is speaking. Note that these features should be individually configurable, since some players will find them distracting.

A key difference with captioning or subtitling games versus instructional eLearning content is placement of the captions. On instructional content, ordinary videos, and most simulations, the developer knows where learners are looking, making placement of captions relatively straightforward. But with games where players move a character at will, there is no way to know where the character will be and what direction the player will be looking. In addition, many games use sounds as cues to the location of characters or items or even to indicate danger, potential bonuses, and more. Placing captions where the player will see them is a unique challenge of games and immersive environments. Presenting an equivalent experience to players who cannot hear ambient or locational sounds that provide crucial information is a second challenge.

Solutions suggested by Kari Hattner, a producer at Hangar 13 Games and a conference presenter, include:

- Add visual cues, such as lighting or color changes, to location-specific sound cues. It's even possible to use visual cues for footsteps.

- Place dialogue subtitles and caption information in bubbles over characters' heads so that a player will see who is speaking or where the sound originates.

- Represent all essential sounds with visual cues, including cues as to which direction a shot or thrown item is coming from, the splash of something or someone falling into water, etc.

An additional consideration for players with impaired or no hearing in multiplayer games is communication between players. Enabling communication via text chat in addition to voice, and including visual ways to ping or signal other players, enhances inclusivity. These also aid players in groups where there are language barriers or when play is in a noisy environment.

4. Audio enhancement

An opposite challenge arises when considering players with low or no vision. Audio enhancement of visual cues is one answer. This generally includes audio description of an environment as well as of characters and objects, and might include voice-overs of instructions and menu items as well, particularly on platforms that are not compatible with screen readers. Distinct sounds can be paired with locations, characters, objects, or events so that blind players can track their location and know who and what is around them.

Developers can offer additional orientation in the form of "pingable" maps or a spoken "GPS" that players can activate to figure out their location. Players should be able to configure all sounds separately, adjusting the volume of dialogue separately from the volume of ambient sounds or turning on and off sound cues separately from audio description and dialogue.

Like captioning, audio enhancement improves the experience of players outside the target group, aiding players who have low literacy or language barriers in addition to those with visual impairments.

5. Timed events

In gaming, a "quick-time event" is an opportunity to manipulate or control a character or item, often to gain a benefit or simply to stay "alive." The opportunity is limited and usually requires a quick response from the player, hence the name. These pose challenges to many players—particularly those with limited mobility or vision and anyone with a slow reflex or reaction time. Eliminating quick-time events completely is one option for inclusive play, but in some games, that would impair the experience of all players. An alternative is to make quick-time events configurable or optional. Some game developers limit access to scoring or leaderboards when some features, such as quick-time events, are adjusted or turned off.

Some players find any timed events, actions that require fast or repeated button presses, or interactive elements that require dragging and dropping or other manipulation tasks, inaccessible, particularly if speed factors into a player's score. Again, building in configurable options—allowing players to have additional time or eliminating time constraints on these elements, for example—enhances inclusivity. The amount of configurability to provide depends on the target audience, the nature of the game, and the amount of development time and resources available.

Design with inclusivity in mind

The developers who attended #GAConf are highly motivated to create inclusive games that are accessible to a broad population of gamers—and even they acknowledge that not every game can be made accessible to every gamer. Even so, attention to inclusivity early in the design process can lead to small changes that improve the experience of all players.

Joshua Straub, editor-in-chief of DAGERSystem, a game journalism site for disabled gamers, said, "Not every game can be or has to be accessible to every single person," but he encouraged developers to make sure that "when you choose to put a barrier in front of any player, you know why you are doing it."

Some features, such as mappable controls, high-contrast color schemes, and configurable audio and text options, make an enormous difference for many players. "Accessibility equals flexibility, and flexibility sells games," Straub said. "Meeting the needs of people with disabilities also meets the preferences of other gamers."

Designing with inclusivity in mind is essential; things that are simple to build in, like alternative color schemes for low-vision or color-blind players, are complicated to retrofit. Developers who are looking for a place to start can take a look at the Game Accessibility Guidelines or APX—Accessible Player Experiences—from the AbleGamers organization. The Accessibility Guidelines group accessibility features into levels—basic, intermediate, and advanced or good, better, best—and explain who benefits from each adaptation.

"The biggest issues for the low-vision and blind communities are color, keyboarding, and video. A lot of eLearning content is still Flash-based, and once a video is embedded inside Flash, I have no keyboard access at all. I hover over a play button and nothing happens. Or they've embedded a proprietary app. Or they've overlaid security features. Those also prevent keyboard access. Or there are checklists, drag and drops, or buttons. So many times controls have just been written in a Word file and copied over. If the buttons created in Word aren't correct, the keyboard user who is blind has no access to those features."

—Christopher McMillan, CEEK Technology, Disabled Access Specialist. Chris is blind.

INCLUSIVE INSTRUCTIONAL DESIGN

Pamela Hogle

Designing and creating inclusive eLearning for diverse learner populations entails creating accessible content, of course—but that is only one small part of the solution. Technological or infrastructure barriers can make even the most UDL-friendly content inaccessible to huge populations of learners.

Barriers to inclusion that instructional designers should consider are:

- **Infrastructure**—Even in the United States, not everyone can connect easily and affordably to reliable high-speed internet service. In many parts of the world, even where internet connections are available, they are slow and cannot handle streaming video or downloads of large files. Highly visual pages may be very slow to load.

- **Technology**—Instructional designers cannot assume that all learners around the world will have access to the latest technology. Hardware might be older; learners might not have tablets, laptops, or recent-model smartphones. Their operating systems might not support apps or plug-ins needed to access some content.

- **Content**—Is the content accessible on older technology or to learners with slow internet connections? Does it adhere to UDL (Universal Design for Learning) principles and avoid cultural biases and assumptions that could hinder some learners? Does it comply with WCAG 2.0 guidelines for accessibility?

Design to overcome technology and infrastructure barriers

The good news is that thoughtful instructional design can overcome many of these barriers.

In their book *Culturally Inclusive Instructional Design*, authors Charlotte Nirmalani Gunawardena, Casey Frechette, and Ludmila Layne describe "low-bandwidth" options for creating eLearning content that can overcome infrastructure, technology, and even some cultural barriers.

A low-bandwidth course design would include:

- Plain text versions of all content—This means creating text files with graphics removed and writing text that can replace complex tables and videos. These files should use simple formatting and include an outline of the eLearning course. To further enhance inclusivity, the text should be written with non-native speakers of the language in mind, using clear language and avoiding idioms and cultural references.

- Transcripts—Any eLearning that includes video should also include closed captioning and accurate transcripts of the video material for learners who cannot see the video, and for learners whose technology limitations prevent streaming or downloading video files. Ideally, transcripts would include descriptions of any essential visual information.

- Audio—Creating podcasts and other audio content is a way to offer low-bandwidth learners a choice of learning modalities. Again, transcripts should be offered for any audio content.

- Microlearning—Break content into small chunks and make these available to low-bandwidth learners as separate, small, downloadable files.

Finally, to ensure that learners can access and use the content, don't require an always-on internet connection. Create content that learners can download over a slow connection and consume offline. Offer them easy ways to submit projects and assessments, such as emailing a file they've created offline, rather than relying on online forms and quizzes. A little creative thinking can go a long way. If learners lack reliable high-speed internet access but have smartphones, consider moving chats and discussions to an app like WhatsApp, used by 1.5 billion people each month in 60 languages.

Addressing barriers created by cultural assumptions

Surmounting technology challenges is an essential element of inclusive instructional design, but if learners are then held back by cultural assumptions baked into the eLearning, that low-bandwidth, accessible content may still be problematic. These assumptions can reflect cultural beliefs about how people process information, or think about and apply learning.

Instructional approaches that guide learners toward a single correct answer can clash with cultures that favor broader thinking that generates many possibilities, for example. And instructional design can inadvertently favor or promote certain perspectives or reference points, usually reflecting the cultural values of the course creators.

"In the old days, models didn't account for culture at all, so they just took on whatever cultural values the model creators had and unconsciously put into the models," said author Casey Frechette. Though some instructional design models strive for culture-neutral content, Frechette said that newer approaches favor inclusivity—actively accounting for culture.

While following the principles of UDL gives learners choices that can accommodate some cultural differences, Frechette urges instructional designers to design for inclusivity by also:

• Reflecting on their own biases and perspectives and encouraging learners to do so as well;

- Favoring approaches that result in multiple solutions or outcomes;

- Letting differences stand rather than attempting to reconcile them; and

- Encouraging learners to push themselves outside of their comfort zones.

"It's not just about accommodating to somebody's culture or trying to deliver something that meets their cultural ideas or ideals. Sometimes that's useful. Sometimes it's helpful to push people beyond their comfort zones and to purposely give them something that they may be unfamiliar with," he said.

Inclusive instructional design reduces barriers to learning

Inclusive instructional design addresses both cultural differences and access issues. Offering learners choices and control over their learning and cultivating an awareness of cultural differences among learners can lead instructional designers to create inclusive eLearning appropriate for their diverse learner populations.

"Put simply, our cultural imprints lead to particular ways of seeing the world and learning within it. Some cultures prioritize hard data—black and white facts—while others focus on relationships between concepts. Some celebrate finding the right answer among many; some prioritize generating as many ideas as quickly as possible," *Culturally Inclusive Instructional Design* states. Truly global eLearning enables members of all of these cultures to successfully learn and work together.

"I'm not using mobility aids yet, although I do use a standing desk that gives me a choice of sitting or standing. My biggest issue with regard to work is cognition and fatigue. Access to material like glossaries and FAQs pages is very helpful."

—Lisa Hall, Attorney, has multiple sclerosis

INTERACTIVE TRANSCRIPTS

Pamela Hogle

Intrigued by studies showing that most people who use closed captions and transcripts when viewing video content are not hard of hearing, researchers at University of South Florida St. Petersburg (USFSP) decided to investigate the benefits of using these aids. Moving beyond self-reported data on improved focus or engagement, the study zeroed in on key metrics at the heart of learning: whether adding interactive transcripts would improve learning comprehension, retention, and ability to apply the content in novel scenarios.

Students who had access to both captions and interactive transcripts of eLearning videos showed significant improvement in these essential areas.

Tools improve video usability

Closed captions present all dialogue in the video and also describe ambient sounds. They are designed to appear on screen as learners watch a video.

An interactive transcript presents a written record of the sound—in this study, this was primarily an instructor's lecture—that also serves as a navigation tool. The transcript appears at the bottom of the screen, and words are highlighted as the video proceeds and a word or phrase is spoken in the audio. Clicking on a word in the transcript jumps the learner to that spot in the video.

Previous research has demonstrated that many hearing people use captioning and transcripts to improve their ability to use video in very noisy locations, in places where they cannot play audio, or to help them follow along, especially when the audio language is not their native language or the video introduces unfamiliar vocabulary. Many indicate that the captions improve their ability to focus on the video content. And some users say it helps them understand the speaker, particularly if the speaker has an accent or the audio is of poor quality.

Beyond accessibility

In a webinar presenting preliminary data collected in the spring and summer terms of 2019, researchers Karla Morris, Casey Frechette, and Lyman Dukes said that, in some courses, learners with access to transcripts improved by as much as 16 percent. They suggest that instructors reframe captioning and transcripts by encouraging students to use them as study aids, aiming to dilute the association with accessibility and learners with disabilities.

Many managers, instructors, and university administrators see closed captions and transcripts only as accessibility aids and are reluctant to include them in materials unless and until they receive a request for accommodation. This approach is flawed for several reasons, Frechette said in the webinar. These include:

- Many students with disabilities, and, likewise, many employees, do not request accommodation and do not "go public" with their disability. They would undoubtedly benefit from more accessible content.
- The majority of people who use these and other accessibility tools when they are available do not have disabilities; they simply find using and understanding content easier when the content is presented in two modalities.
- Creating captions at the same time video is produced is easier and less expensive than "retrofitting" the content later.
- Designing to maximize usability is a key tenet of UDL or universal design for learning.

Strategies for IDs

In addition to encouraging all learners to use captions and transcripts as study aids and to improve focus while watching videos and retention of the material, Frechette and Morris suggested additional strategies that instructional designers could adopt:

- Create a short tutorial or orientation video to teach learners how to use the interactive transcripts and mention the potential benefits.
- Find a "champion" among institutional leaders who will encourage the inclusion and use of these tools.
- Consider a pilot study to demonstrate the benefits.

USFSP conducted the study with students who had access to captions only and students who had captions plus transcripts, because the researchers could not deny any students in the studied courses access to captioning. However, a workplace pilot study could compare results for learners using existing materials without captions or interactive transcripts and "upgraded" materials featuring either or both of these tools.

In terms of getting management buy-in once the results of the study are widely available, Dukes was optimistic. "Accountability metrics are very much in play in our state," he said. "Student success is really job one here at this time, so my expectation is that the institution will be very interested in the findings."

Likewise, in corporate training settings, the ability to demonstrate the value of training is highly prized, and a tool that can bring a measurable ROI is likely to be well received. A pilot showing a boost in retention and application of eLearning content simply by adding captioning and interactive transcripts to video could be an excellent way to get the attention of C-suite executives.

TESTING FOR
ACCESSIBITY AND USABILITY

Joanne Astorga

It's an increasingly common dilemma: an organization has elected to use one or more leading authoring tools that promise accessible and responsive eLearning products published in HTML, but complaints from participants about inaccessible content and poor scalability on mobile phones continue to pour in.

Unfortunately, publishing a course with the right settings in an authoring tool doesn't necessarily mean that it's automatically and fully accessible. For instance, a screen reader might read all the information (which meets accessibility requirements), but not in the correct order (which is not a meaningful learning experience for people using a screen reader, since the information isn't accessible in the same way it is to others).

How can you ensure that the eLearning courses you design, develop, or purchase are indeed accessible and responsive? Don't assume: test them, and test them well.

What is accessible and responsive eLearning?

The globally recognized Web Content Accessibility Guidelines (WCAG) outline four principles for accessible and responsive online content, which includes eLearning: information should be Perceivable (everyone can "see" it); Operable (everyone can navigate through it); Understandable (everyone can, well, understand it); and Robust

(everyone can access information from the web, tablets, laptops, desktops, mobile devices, and wearables, and different assistive technologies can interpret the information correctly).

Of course, the best way to ensure that your eLearning courses meet these POUR criteria is to start writing, designing, and developing with accessibility in mind. There are many excellent resources on how to create accessible courses available for designers and developers, including "Creating Accessible eLearning: Practitioner Perspectives" and tips on how to "Improve UX with Accessible, Inclusive eLearning Design."

Test with screen readers, magnification, and alternative navigation on multiple devices

Testing for accessibility involves using common assistive technologies (i.e., screen readers, magnification, and alternative navigation) and different devices (i.e., mobile, tablets, and desktops) to review every component of an eLearning course to ensure that all content is accessible and meaningful.

According to *Include Everyone, Keep Everyone*, a most excellent guide to web accessibility:

- The most popular screen readers are JAWS, NVDA, VoiceOver, TalkBack, and Narrator

- The easiest ways to magnify content are with high contrast tools, ZoomText Magnifier/Reader, iOS Zoom, Android Zoom, and browser Zoom

- The most prevalent alt navigation aids are voice recognition software like Dragon NaturallySpeaking, Apple Switch Control and Android Switch Access mode, Braille displays, keyboard tabs, on-screen keyboards, or a head mouse

A 5-step process

Testing eLearning courses to ensure they are accessible and responsive is not difficult, and can be completed in these five steps.

- Designate someone on your team to put themselves in the shoes (or chair) of learners who need or choose to access online information in different ways

- Navigate through all elements of the eLearning, including on-screen content, images, interactions, videos, and PDFs at least three times: once with a screen reader; once with a high-contrast tool and zoom magnifier; and once with a keyboard only

- Use both an accessibility checker like the SiteImprove Accessibility Checker Chrome extension and a color-contrast checker like Color Oracle to identify any inaccessible content

- Review the eLearning on as many devices as you have available to you, including mobile, tablet, and laptop at a minimum

- Most importantly, resolve all issues identified before making the eLearning available to participants

Remove common barriers to accessible and responsive eLearning

Accessibility "fails" (to use accessibility checker terminology) result in frustration for people who may have a temporary or permanent hearing, vision, physical or cognitive impairment, and include:

Un-Perceivable Content

- Missing or unhelpful alt tags that don't provide accurate or meaningful descriptions

- Images with text in them, like screenshots of interfaces for software training that cannot be read by screen readers

- Content that only appears in audio format, with no closed captions or text transcript

- Insufficient color contrast and font size, including in graphics and buttons

In-Operable Information

- No meaningful page titles or headings

- Inconsistent information placement (screen readers then do not pick up all of the content)

- Content that cannot be navigated by keyboard tabbing, including drag-and-drops

- Links that say "Click here" or include a web address (which might seem odd if you're using a screen reader)

- An almost universal tendency to design complicated, nebulous interactions (tabs within a carousel, drag and drops within those carousels, or carousels in the drag and drops)

- Autoplay on videos and audio, which drowns out screen readers

Content that is not Understandable

- Repeated content like headers and footers or missing skip-to links (screen readers then read each header and footer each time it appears)

- Too many acronyms

- Missing labels and instructions for buttons or controls

- Text that does not make sense to a screen reader, e.g., "Select the best option(s)", which is read as "option–parenthesis–s–parenthesis" rather than "Select the best option or options"

- Tables that aren't labelled properly, or no well-defined header row (screen readers rattle off table cells if they are not labelled well)

Information that is not Robust

- Content cannot be displayed on mobile devices (information that appears together on a computer won't necessarily appear together on a phone, which makes it frustrating if participants need to see information together, e.g., to make comparisons or read about an image)

- Decorative images that result in too much clicking or scrolling to get to key content on a mobile device

- Content does not scale properly on mobile devices (if participants need knitting needles for fingers to be able to hit the Next button, they will become frustrated very quickly indeed)

Commit to creating and providing eLearning for all, not just some participants

Yes, testing for accessibility takes a bit of extra time, but participants will abandon your eLearning if they cannot see, hear, understand, or use all of the information you've spent so much time curating, designing—and paying for.

The A11Y Project, an open-source community of developers, has created a most useful checklist for meeting WCAG criteria for testing accessible online content. I encourage you to check it out and make it, along with *Include Everyone, Keep Everyone*, required job aids for all eLearning managers, designers, and developers in your organization.

In the words of Billy Gregory, a Canadian accessibility expert, "When user experience doesn't consider all users' experience, it should be called Some Users' Experience. Yes, SUX."

VISUAL DESIGN TACTICS THAT
IMPROVE UX AND BOOST USABILITY

Dawn Mahoney

A few years ago, I wrote "[10 Easy Ways to Improve the Visual Design of Your eLearning](#)." Here are three more visual design strategies to help to improve the overall learner (user) experience.

Use white space well

The Interaction Design Foundation states it this way: "White space is the area between design elements. It is also the space within individual design elements, including the space between typography glyphs (readable characters)."

To be able to effectively process and retain the learning content, our eyes and brains need to rest. Note: White space doesn't have to be white, although it often is. The idea is to open the visual design up to allow the eyes to easily focus on what it intended (key learning) and the brain to encode it into short-term memory. Our eyes and brains work hard all day, every day. Let's give them a break!

Keys to success include, but aren't limited to:

- Frame the key learning item(s) by adding space all the way around

- Eliminate heavy and/or thick borders from your slides

- Zoom in, creatively crop, and place images where they keep the eye moving forward through the learning content

- Use images only when they help to reinforce the content

- Reduce line lengths because the content is easier to scan

- Use fewer words and more explanatory visuals

- Fit text into fixed-size text boxes

- Use bold and italics sparingly

- Set line spacing at 1.5 or 2.0, where possible

- With elearning courses, allow learners to control the seek bar, volume controls, and navigation menus

Adding white space helps to improve the retention of learning. Like our eyes, our brains need opportunities to focus. And white space and periodic reflection activities help.

Don't just take my word for it. Read more about white space at these resources:

- [The Power of White Space](#)

- [A guide to effective use of white space in web design](#)

- [Importance of white space in design](#)

Plan to be accessible

Plan the visual design of your learning content to be as accessible as possible, from the beginning. Improved accessibility means improved usability—and UX—for all learners.

It is a myth that if a learner doesn't identify their need for an accommodation, then you don't need to strive to produce accessible learning content. Let's debunk this myth, right here, right now. No one is required to self-identify. Many of us wear corrective lenses. Some of us put off getting tested and purchasing corrective lenses for far too long. Hearing deficits may go untested and/or unverified, but they exist. Decreased manual dexterity exists in many forms and most of us just choose to adjust and live with limitation(s). Sight deficit that manifests as "color blindness" is common, as well. Need more myth busters? Let's add:

- Undiagnosed illness

- Aging

- Noisy work environment

- Cognitive decline or memory issues

- Computer equipment issues

- Dyslexia, and other forms of what are often referred to as "learning disabilities"

To get your learning content moving in the right direction:

- Use high-contrast color schemes, meaning dark background with white text OR light backgrounds with dark text.

- Update/correct Alt+Text to ensure that images are tagged appropriately.

- Ensure that text is readable for as many learners as possible by selecting a font(s), text styles, and format with intention. Meaning, reading order for screen reading devices, too.

Additional reading on accessibility standards:

- Creating Accessible eLearning: Practitioner Perspectives

- ADA Standards for Accessible Design

- [W3C Web standards for accessibility](#)

- [Web Content Accessibility Guidelines (WCAG)](#)

Design for inclusiveness

Designing eLearning to be inclusive can be tricky, as the word means different things to different people. How do you define "inclusive"? How might your coworkers define it? According to Vocabulary.com, "Inclusive is an adjective with several meanings: It can be used to describe something that's broad or extensive, such as [a] thorough, inclusive research project. Or it describes a group that's particularly welcoming to all kinds of people."

It would be difficult to craft inclusive elearning content without aligning to a set of standards and guidance established for use in your organization. This begins with knowing your audience. (Bet you've heard or read this one before!) And by audience, we mean your learner population.

If it has been a while since intentional work was done to know who your learners are, then it is time to get on that. Consider completing a set of learner persona or empathy maps. Craft at least one map for each segment or group, as they represent the learners in your organization. Craft to address who they are as consumers of the learning content— and why. Be sure to distribute this information to the learning development team.

To be more inclusive with your visual design, apply what you learn about your learning population to the learning content you craft. For example:

- Use images that represent your learning population.
- Consider age, organizational culture, ethnic diversity, style of dress, cognitive deficits, accessibility challenge, level of education achieved, religious practice, etc.

Further, while not visual design per se, to increase the level of inclusivity in your learning content:

- Check your pronouns. It makes sense to personalize the learning by using "you", "they", and "them".

- Use first names, too. Maybe the names selected for the learner persona maps? Do this to avoid having to use the more limiting gender-specific pronouns (he, she).

- Avoid obviously binary language and images; opt for a gender-neutral solution whenever possible (e.g., Icons, silhouettes, decorative type, dynamic text, illustrations—many options).

- Reduce the reading level and readability. Doing this raises the level of retention because the learners are more easily able to scan the text for comprehension and assimilate the key learning more quickly.

Put simply: Intention with the visual design drives the effectiveness of your learning content.

"Third-party accessibility checkers will report—really— about 20% of problems. Unless someone sits with the designer and some real end users, the designers will never know what the problems really are."

—Christopher McMillan CEEK Technology, Disabled Access Specialist. Chris is blind.

WANT MORE?

✓ "Improve UX with Accessible, Inclusive eLearning Design"

✓ "The Lack of Diversity in Stock Images Hurts Your eLearning—and What to Do About It"

CONCLUSION

While some specifics may change, and new and better tools—and functionality in existing tools appear all the time—a few things hold steady: Accessibility means making it better for everyone. Accessibility means thinking beyond disability. And accessibility is not just about "compliance".

As Nick Floro has said, "Our role, ultimately, is to develop engaging experiences, and part of that is to ensure that our audience can actually reach the content when and where they need it." Please keep an eye on emerging information about accessibility and usability, as it often appears in *Learning Solutions* and is a topic of discussion at many Learning Guild conferences and online events.
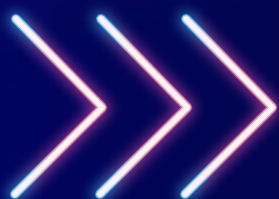
THINK BUFFET:
NOT PLATED MEAL

Jane Bozarth

From our research report, Creating Accessible eLearning: Practitioner Perspectives:

I worked on a project with Allison Posey from the Center for Applied Special Technology (CAST), who used a dinner party analogy. She showed a photo of a lasagna, with layers of pasta, cheese, and meat. She said, "Let's say I'm having a dinner party. I make this beautiful lasagna and I serve it. That's what's for dinner. Would anyone have a problem with that?" And everybody started saying, "Well, people who are vegan, or gluten-free, or lactose-free couldn't eat it. You'd have all these dietary restrictions." Allison responded, "Right—that's often what we do. We design these learning experiences—we put it together in a way we think will be delicious—and then someone says, 'I can't have cheese, or whatever.'"

She went on to say, "What if it's more like a buffet?", and showed a buffet with lots of different things on it. Instead of the lasagna, she suggested offering something more like a taco bar, so people can choose the things they need. It's creating a situation where they can advocate for themselves. She also said, "Well you obviously can't put everything in the world on that buffet, so you have to decide what your goal is. You start with your learning goals, and that determines the ingredients you're providing. You can't provide grandma's version of everything." So it's balancing that we want them to be able to advocate for themselves, and we also need to reach these learning goals, and these are the limits around our resources."

—Sonya Woods , Accessibility Consultant, Penn State World Campus