Time- and cost-effective ways to make e-learning usable for learners with and without disabilities

E-Learning
FOR ALL

BY KEVIN GUMIENNY

There's recently been renewed attention to the need to make e-learning "accessible." That is, the need to make e-learning as usable by those who have disabilities as it is by those without. So what's the best way to ensure that your e-learning is accessible? And, given that anything that adds to course creation time also adds cost, how can it be done in a cost-effective manner?

The most effective and efficient way to make e-learning accessible is to incorporate accessibility into your overall course development process from the beginning.

Why should I care?

In January, the U.S. Access Board completed its long-awaited revision of Section 508 of the Rehabilitation Act. That revision changed how information and communication technology either developed or purchased by the federal government must be made accessible (this includes e-learning).

Institutions of higher education, in response to the effort by the U.S. Department of Justice to apply the Americans with Disabilities Act (ADA) to the Internet, are being faced with the need to make their online content, including courses, available to those with disabilities. (Recently, in a move that shocked disability advocates, the University of California, Berkeley decided to remove its public online courses rather than make them accessible.)

More broadly, the private sector is being challenged to ensure that its online presence complies with the ADA. In 2016, more than 250 lawsuits were filed against companies in the retail, hospitality, and financial services industries, alleging that their websites were inaccessible to users with disabilities.

A moment for definitions

What does it mean to make something accessible? A good starting point is the Web Content Accessibility Guidelines (WCAG) 2.0, which describes three levels of accessibility: level A, the most basic; level AA, more developed; and level AAA, highly accessible. Most organizations aim for levels A and AA.

Complying with those guidelines helps ensure that your e-learning is available to those with visual, hearing, mobility, and cognitive disabilities. (The revised Section 508 now incorporates WCAG 2.0 level AA by reference, bringing these two existing standards closer to alignment; likewise, the Department of Justice tends to hold higher education institutions and private sector companies to WCAG 2.0 level AA requirements.)

To meet those guidelines, web-based content, including online learning, needs to be:

- perceivable (presented to users in ways that they can perceive)
- operable (users must be able to operate interface components and navigation)
- understandable (content has to be designed so that users can comprehend it)
- robust (the content has to be able to be interpreted by assistive technologies such as screen readers, even as technologies advance).

The WCAG standard lays out a series of guidelines and success criteria that will enable information and communication technology to satisfy those four principles (see sidebar on page 41).

Standards? Really?

One of the questions that I'm routinely faced with is: What does it mean when I say that my e-learning is accessible? Does it mean that I do one or two things to make the course perceivable to, say, learners who use a screen reader, or does it mean that I fulfill a defined set of criteria? Most often, the latter—whether that's set by a federal agency's Section 508 office, an organization's internal policy, or the language of a formal contract.

When I can specify that the e-learning course checks those boxes, it means that I, my learners, my stakeholders, and any outside entity can be satisfied that the course meets defined criteria.

However, accessibility doesn't stop with the checkboxes. Checkboxes are good guidelines, but a course can technically meet all standards and still be unusable by someone with a disability. Human thought and judgment are needed to make sure that online training is available to all learners; guides such as WCAG 2.0 are tools to help get us there.

It's all about the process

Too often, accessibility, when it is considered, is grafted onto the end of the course development process as a part of testing or quality assurance. When you check to make sure that the "next" button works, all the resources are listed properly, all the links reach the right pages, and the quiz is scored correctly, you also might check to make sure that videos are

captioned, that the course is navigable using only the keyboard, and that color contrast is adequate (among other things).

That is, of course, the wrong time to check for accessibility. It is also the most expensive route. (One estimate suggests that fixing an accessibility issue at the testing stage is 15 times the cost of addressing the issue in the design stage, which is still far less than the 100 times the cost it takes to fix an issue if it's discovered in the wild.) Checking for accessibility at the end of your development process is like waiting until the course is finished to make sure that all the learning objectives are sufficiently explored. Sure, you can do it, but the rework required to correct an error is substantial.

The most effective way to bring accessibility into e-learning is to incorporate it throughout the creation process.

Using roles to assign responsibility

How might that be accomplished? At the recent 2017 CSUN Assistive Technology Conference in San Diego, Bill Tyler of Optum Technology suggested a role-based approach.

Roles can be a powerful tool to structure how stakeholders interact with projects. For an e-learning course, you might have a business owner who is responsible for high-level decisions, and a subject matter expert who might be responsible for content accuracy. An instructional designer might be responsible for designing learning activities, and a programmer might be responsible for ensuring that the published course is accessible to assistive technologies.

Accessibility can be integrated into this role-based approach by determining which roles are answerable for each aspect of accessibility. Let's take a look at three roles that might incorporate accessibility: instructional designer, course developer, and course tester.

Instructional designer. An instructional designer is primarily concerned with designing learning experiences. If e-learning is going to be accessible, then each learning experience needs to be accessible as well. Consider: Can someone who can't use

Web Content Accessibility Guidelines (WCAG) 2.0 at a Glance

Perceivable
- Provide text alternatives for non-text content.
- Provide captions and other alternatives for multimedia.
- Create content that can be presented in different ways, including by assistive technologies, without losing meaning.
- Make it easier for users to see and hear content.

Operable
- Make all functionality available from a keyboard.
- Give users enough time to read and use content.
- Do not use content that causes seizures.
- Help users navigate and find content.

Understandable
- Make text readable and understandable.
- Make content appear and operate in predictable ways.
- Help users avoid and correct mistakes.

Robust
- Maximize compatibility with browsers and user tools.

a mouse manipulate a slider? Can someone with a visual disability see a timeline? Can someone with a hearing disability listen to screen narration?

An instructional designer needs to be aware of how users with disabilities might interact with their activities and design activities that can be manipulated through a variety of interfaces, such as a mouse, keyboard, or screen reader.

Other areas also might fall within the instructional designer's purview. It might be the instructional designer who ensures that a text alternative is provided for images and conveys the right information. When links are included, the instructional designer ensures that they are properly identified so that the learner will know what the link does.

While the developer might be responsible for ensuring that activities work the way they are supposed to, it's often the instructional designer who will need to provide the content that the developer will program.

Course developer. The course developer is the link between instructional content and learner access. As such, course developers are responsible for several aspects of accessibility. Are titles and headings set using markup or styles (as opposed to being set manually, using font type and font size)? Can the video player be controlled by the keyboard? Are captions available to the learner? Can the learner tab through the course in a logical order? Can a screen reader perceive all the course content?

As the course developer builds the course in the development tool, he can set up the course so that it meets accessibility standards and requirements. With each step, the developer can ensure that activities and content are programmed in such a way that they can be manipulated by learners with varying levels of ability.

Course tester. A key point of the testing process is that this isn't the time to discover problems, but rather to confirm that no problems occur.

I've worked with informal testing processes

But It's Boring!

Making online training accessible may seem to eliminate, in one fell swoop, whole categories of interactions. No more hotspots? No more drag-and-drops? No more tabbed interactions? No more click-and-reveals?

Maybe.

One way to make e-learning accessible is to eliminate interactivity altogether. Static text on the left, image on the right, "next" button on the bottom. That is a distressingly common method of satisfying accessibility requirements. The result often is boring e-learning that fails to engage anyone.

Two methods can help meet accessibility standards and create engagement for all learners.

The first is to proactively design activities that bear in mind the limitations demanded by accessibility. In practice, that does mean avoiding certain activities.

However, it doesn't mean eliminating engagement. For example, a matching activity that requires a mouse might be

replaced with a drop-down menu activity that can be navigated by a keyboard; a branching scenario that relies on visual cues might be replaced with a series of multiple-choice questions that can be accessed via a screen reader.

A second method is the personalized learning path. If an objective requires an activity that is not accessible, consider that the Web Content Accessibility Guidelines and Section 508 allow the use of alternative means to satisfy requirements. The designer can build in alternative pages to non-accessible activities. When a learner reaches an activity that requires a mouse, for example, the learner can choose to view a page where the activity's information is available via the keyboard.

If the learning objectives can be met with an accessible activity, you can privilege an accessibility-only approach; if the objectives require a non-accessible activity, you can branch the learning path and provide an accessibility-optimized alternative experience.
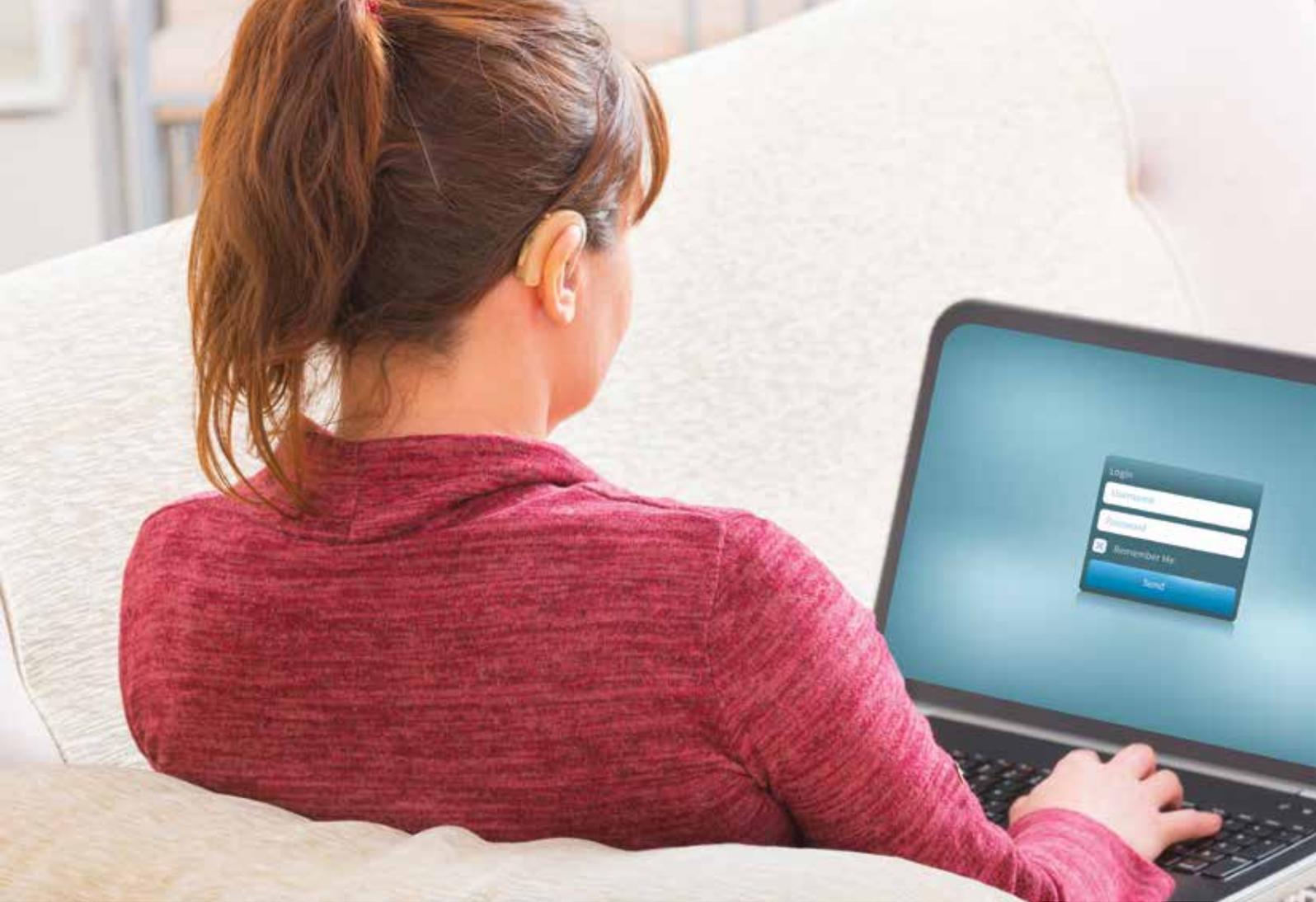
(where the test consisted of sending the course to a limited number of people with a request to tell me what they found wrong) and with formal processes (where checklists, approvals, and documentation were required). In all, I've found the formal process to be much more effective.

Why? People are human. They get rushed. They forget. They bring to informal testing processes their own opinions, perspectives, and interpretation.

Making something accessible means meeting several criteria. Checklists ensure that people don't have to remember everything every time. They bring consistency when different reviewers examine the same course.

Procedures do take time to write, but they don't have to be complex. In fact, the more direct and targeted they are, the easier to use and more effective they will be.

And checklists aren't just for testing staff. Role-specific checklists can be given to instructional designers and course developers. That helps ensure that designers and developers are aware of what will be tested, and empowers them to meet accessibility needs at the most effective stage of the process.

Accessibility and the e-learning process

Analyzing WCAG, breaking out the requirements, and then figuring out the role that should have responsibility for each can be a time-consuming process.

When done, implemented, and maintained, however, accessibility becomes as integral a part of the e-learning creation process as any other aspect of course design and development. To reach all learners, e-learning needs to be as available to those with disabilities as to those without.

Incorporating accessibility in your process ensures that your efforts to create accessible e-learning is not only successful, but efficient—in terms of both time and money.

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