

**The eLearning Coach Podcast #28**  
**ELC 028: Make Accessibility Part of Your Design Process**  
**with Sarah Horton and Whitney Quesenbery**  
<http://theelearningcoach.com/podcasts/28>

Hello learning people, welcome to episode 28 of the eLearning Coach Podcast. When you're designing a learning experience, how much effort do you put into making it accessible to as wide an audience as possible? As an industry I think we fall short in this area. That's why in this episode I'm speaking with Sarah Horton and Whitney Quesenbery, authors of *A Web for Everyone*. Sarah is a consultant of strategic planning for websites and web applications. She also does accessibility and usability reviews. Whitney brings user research insights to designing products for People Matter. She is co-director of the non-profit Center for Civic Design working with election officials on usability and design of ballots and other election materials. Here is the interviews.

**Connie:** Hello, Sarah and Whitney, welcome to the eLearning Coach Podcast.

**Whitney:** Hi, Connie, great to be here.

**Sarah:** Hi, there. Thanks.

**Connie:** Let's start with your book *A Web for Everyone*. What was your motivation for writing it?

**Whitney:** My motivation for writing it, first of all I wanted to be able to work with Sarah, that was a great plus, we both really met over the idea of universal design. But I had a kind of secondary motive which is that I think that it has been very hard for a lot of people to get their heads around accessibility except as this sort of big legal mandate. And in my UX world I really wanted a book that would encourage people to think about it as part of the design process.

**Connie:** I think you're right about that. Whenever I hear it mentioned, it is in terms of meeting legal standards, so that's a really good point. Sarah, did you want to say anything about that?

**Sarah:** Yeah. I definitely had the same approach where I really wanted to look at accessibility from the perspective of design and think about how to design elegant

solutions that would work for everyone vs. thinking about accessibility as more of a technical compliance exercise.

**Whitney:** One of the crazy things about this world of people working in the digital and physical space, let's call it UX just for a short thing to call it, is that people come out of a specialty, so maybe you came from being a course designer or maybe you came out of being a technical writer, and what happens is someone gets this idea that we should be something about this, whatever happens in their life to make that happen. And then you start working from within that perspective. And one of the things that I think that universal design does, or a better approach for accessibility does is help us join up those perspectives and see how they all fit together. And one of the things we wanted to do in the book was make sure that all the different specialties that contribute to a really great online world saw themselves as represented there and could see how the thing that they did fit with the thing someone else did to make it a better product.

**Connie:** You mentioned a few terms, one is accessibility and another is universal design. Can you define them just to make sure everyone's on the same page?

**Sarah:** I think generally people think about accessibility as making something accessible to people with disabilities, and it's a very focused endeavor on that particular scenario, and very important to call out in terms of making sure that all of the parameters and all of the specifications that are needed for people with disabilities are met. But, again, that goes back a little bit to looking at the space as one of complying with standards.

Universal design is a way of looking at this problem domain of how do you make the world navigable and usable and enjoyable and pleasurable to all of its inhabitants, and you can look at universal design as an approach to that. So it becomes more of inclusive design, thinking about the diversity of people and how people prefer and need to work with the world. And taking that into account when designing spaces, digital and otherwise, digital and meet spaces, and thinking about it from that design perspective vs. from a standards compliance perspective. Sometimes I think about it like in the built environment you might have a booklet that says if you're making a shower stall the doorway needs to be a certain width and so you go in with a tape measure and measure that width and say, "Yep, this is accessible." But from a universal design perspective you might go into that same space and say how do I make sure that width is there but also build this space to be delightful and enjoyable for everyone.

**Whitney:** Even in the standards world there has been some real progress. ISO, the international organization on standards, has been reorganizing their standard groups, and I had no idea but it turns that standard groups actually matter, that where your list of standards is placed in this organization has to do with who gets weigh in on it. And so the group that was in charge of what's the 9241 series, from which the definition of usability that we all use came—and I started in usability, so that's sort of my home base, they have refactored this—they brought into that process standards, they brought into that accessibility standards as well as usability standards. And they ended up saying that the definition of accessibility is that something is accessible when it is usable by the people with the broadest range of capabilities. So instead of it being different people, it's simply more people.

**Connie:** It's almost like a Utopian vision in a way.

**Whitney:** It is, but it doesn't have to be. I was on a panel at the election assistance commission and we were talking about usability and design and accessibility and all these things, elections, and one of the people there was a mayor of a medium-sized city and there was Ron Gardner from the Access Board. And towards the end in the more discussion section the mayor who is also in charge of elections said we're buying—I guess it was the election director, not the mayor—anyway, said we're buying a new round of accessible voting machine, and that's great, we've done the equipment part of it, but do we make our elections more accessible? And the Access Board answer was do you hire interns, do you hire extra people to work around the time of elections when you get busy? And they said of course we do. And he said do you hire people who speak the languages that are spoken in your community? And they said of course we do. And he said, well, why don't you think about hiring some people with disabilities, because then your staff will be interacting with them day in and day out. Instead of it being meeting these mysterious needs of these mysterious, invisible people, it will simply becoming something that's part of your daily life.

**Connie:** That kind of reminds me of design thinking, but we'll get into that a little bit later. I really like what you wrote about the range of accessibility strategies. Can you explain the strategies of universal design equivalent use and accommodation that range?

**Whitney:** I'll do it short because it came from the Access Board, but Sarah has some really great stuff to add probably. In the Access Board they think about the goal of making the electronic and information technology available to everybody in these three layers. And one is that the product itself simply works, we don't have to think about it, it

works for everyone, that's universal design. And then the second layer is what we call the equivalent use, which is we have a visual output but we also have an audio output. We have a touchscreen and we have a tactile keyboard, so we double up the different senses that you use to interact with it to make sure that everybody has a way of using it that is equivalent. And the third level is accommodation. It's the last area which is if we can't make it accessible how will we make it possible for someone to do it. So maybe we have stairs at the polling place but we have curbside voting. It's not as good as having a polling place that is fully accessible, but just because we can't meet that goal doesn't mean we don't still have to make it possible for people to complete the activity.

**Connie:** Did you have anything to add Sarah?

**Sarah:** I think that that's a very good explanation of those three different strategies, and from the universal design principles there is this notion of same means of use and equivalent use. And so when we're talking about design, which is always going to be where I come in on, the topic is to say as a designer it's very desirable to build something that everyone can use. So same means of use as a target is very attractive, because then you're building one thing that everyone can use, and there are some efficiencies there in terms of functionality or providing one set of functionality, it's more maintainable.

So the best example that I have to differentiate between same means of use and equivalent use is water fountains, that's the example I use a lot where in a building you have two water fountains, one is for people who are standing or tall and one for people who are sitting or small. And in order to do that it costs a lot, two systems, two points of failure, two points of maintenance, aesthetically you may think of it as clutter as opposed to just one, and so ideally that target of same means of use is the one that I love to encourage people to strive for. And you mentioned earlier that it seemed utopian and actually I believe that there are so many ways that design—and you also mentioned designed thinking, I believe that design and creative, innovative thinking can really lead to those same means of use type solutions for accessibility to build things that everyone can use.

**Whitney:** There is a really easy physical example, which is curb cuts. Curb cuts came in to allow wheelchairs to be able to cross the street. But we don't think of them as something for wheelchairs, they're for bicycles and skateboards and kids and baby carriages and people pulling suitcase. They've made the city street more usable for everybody. And so there is an example of universal design. An example of something that sounds like equivalent use but doesn't work is the remember the text-only page

way back when? The problem with text-only page was it didn't get updated so it was a possibly good thing for a moment in time and then it turned into a useless piece of garbage.

**Connie:** Explaining it in terms physicality really helps myself and listeners understand exactly what you're talking about, but can you think of a corollary in the digital world?

**Whitney:** Sure. I edit a user experience magazine for the UXPA organization, and we like to have illustrations in our article. And we've been working a lot with the editors on thinking about how the text in the article, the caption of the image, and the alt text for the image fit together so that what we create is something where everybody has essentially the same experience, even though it's equivalent use. Because the alt text is the text version compared to the visual version, but they fit together in a seamless whole so that someone who is reading the article non-visually, which might by the way be someone in Asia which is far from our server on a low bandwidth line, on a tiny phone, and the images don't work very well, do they have as good an experience as someone sitting in a high bandwidth office looking at the diagram really large. So thinking about how that fits together.

And one of the things we do is when there is a complicated diagram, which there often are in our articles, we have a box at the bottom of the page that describes it in next either by putting in a table or putting it in a paragraph style description or putting it in a hierarchical list, whatever makes sense to communicate the content. One of the things that we've been finding that it forces the authors and the editor to clarify that diagram, thinking about it so it's got a function that makes the article better for everyone. But also we're finding people saying, wow, it's really great that you have there, because they're using it in a dual way. So there is place where equivalent use begins to slide into being universal design.

**Connie:** That seems like a strategy that instructional designers could definitely take advantage of.

**Sarah:** I have a good example or a bad example of a combination. That end of the spectrum is certainly the least desirable on so many levels, so I was just recently looking at the Wikipedia site just to use it for some demos and the account creation page uses a CAPTCHA, and CAPTCHAs are those images that really hard to read and you're supposed to type in the text in the image and they're just a completely known accessibility barrier

**Whitney:** And usability barrier.

**Sarah:** Right. Like so many accessibility barriers it's something that we all struggle with. And so the work around there is that if you can't see the image you can click a link and follow that link to a very lengthy page that talks about all manners of things that I, to be honest, didn't have the patience to read through, but at the very end of that page is a link that allows you to request an account without needing to fill in the CAPTCHA. And so that's an accommodation, that's an example of saying here is some functionality that we're going to provide that won't work for everyone, and the work around for it is to provide this other path to getting to the same task completion. And as with most accommodations the alternate path is not a very pleasant one to go down. It's convoluted and cumbersome. And so that's why accommodation from a user experience design perspective is not a strategy that we would ever encourage when there are these other ways.

**Connie:** To backtrack a little bit in case listeners aren't aware of this, what are some of the common problems that people have with web accessibility?

**Whitney:** There are many, but I guess the most common problems are functionality that doesn't work with the keyboard, and that's crucial for a lot of different user groups. So people who can't see the screen don't use a mouse or any sort of input device if they're working on a desktop computer and on a mobile device, they're at a very different navigation paradigm. But the long and the short of it is that if controls and inputs aren't useable from the keyboard then there are going to be people cannot enter text, cannot activate controls, and cannot access functionality. So that's one of the biggest barriers there is out there, and it happens both on handheld devices and touchscreen devices and on websites and web apps.

There are two kinds of sites and apps that I see. One are sites that have what I call noisy problems. That is, it is a list of things that kind of matches up to the WAI's easy checks. There is stuff that I could fix. Now, I'm not really not technological, it's pathetic that people's aren't doing it, so it's things like if there is no alt text on the image you don't know whether that image is important or not. If the color contrast isn't sufficient you may not be able to read it in the bright sunlight or with your vision. If the semantic structure of the page doesn't make sense and when you read it through audio it jumps around in crazy ways. And all of that is stuff that is really, really easy to fix. And we just lack the will to do it, and we lack getting the framework successful from the beginning.

But then there is another kind of problem, which is that when we make new things, when we think, wow, I want to solve the problem in a new way, we tend to think too narrowly. And we think about this one way that I can do, and if 'I' is a group of 18 year olds with perfect vision and total great muscle control, then it's going to leave out Whitney in some ways because I have lousy eyes, and it will then leave out a lot of people. And those things tend to get embedded in new and innovative things that people want to work with, or they're a way of taking things into the digital world that didn't use to be. And we tend to leave people behind and then we catch up sort of, and that's a bigger problem. But they're both about how we think about design, they're about whether we take seriously getting it to work the first time or getting it to for many people, and whether we think that designing for the middle 10% is an acceptable strategy.

**Connie:** That brings me to the next question, you have a wonderful accessibility first strategy, can you explain what that is?

**Whitney:** A few years ago Luke Wroblewski gave a talk that became a big sort of movement called Mobile First. And the idea was that instead of designing for a big screen and then figuring out how to cut it down for little screen, but if you design it for the little screen it forced you into our first stage, which is understanding the goal, a clear purpose, and with that clear purpose you say what's really important. So corollary to the most minimum viable product that you see in the agile world and in the lean startup world. And similarly we started thinking if you think about designing for the 1% and then trying to expand it to the 80% and then expanding it to the 99%, it's a tough road, but if you think about designing for accessibility first, you are building in thinking about alternatives, about universal access, about how many different people might think about a problem or need to interact with the tool.

Shawn Henry who works for the WAI said something quite provocative. I am not sure it's perfectly true but it's worth thinking about. And she suggested that since so many accessibility problems are really usability problems writ large, things that are little stumbling blocks, little annoyances to a lot of people are often barriers to a few people. If you did your usability testing with a wider range of people, with people with disabilities, you might actually learn more about the usability of the product, and that's part of the Accessibility First concept. The danger is that you don't want to pick a very unusual configuration of needs and design just for that, because you're not going to spread broadly enough. But if you can't make-- a person who is blind, who is very technological, who uses their digital tools well, if they can't use it then people who don't use those tools well are going to hopelessly lost.

**Connie:** So how can we use usability testing to improve designing for accessibility?

**Whitney:** Do it. Well, first of all do usability testing, and second of all do usability testing with people with disabilities, and, third, do usability testing with people with disabilities who are not the usual suspects and great experts. Just like we say in usability don't test only with experts, don't test only with people who are expert in using assistive technology.

**Connie:** There might be some listeners who aren't familiar with the whole concept of usability testing. Can you just give us a quick definition of it?

**Whitney:** It's a group of methods for testing a product or an interaction or a service in which you ask people to engage in using it and watch what happens. I worked with Hewlett Packard years ago and they said every product gets usability tested because eventually you're going to launch it and people are going to use it. The question is, can you do some of that early. It's a little like beta testing expect that it's focused on exploring the design. You might be measuring how many people can use it, you might be using it to explore. Sarah is designer so early in here design work, she'll want to try things out and see whether it works as well in real life for other people as it does in her head. And the earlier you do that the more you incorporate that process of checking out in the world on your ideas the stronger they are.

**Connie:** We so need to do that more in my field. Sarah, when you do your usability testing from a design perspective are you asking people to complete a task?

**Sarah:** Yeah. With usability testing we do follow the methodology that Whitney just described and observe people accomplishing tasks, and we're doing a lot of usability testing with people with disabilities. And as a designer I have to say my favorite activity in accessibility is observing people working through tasks. We've been doing a lot of just user research studies where we're just asking questions and trying to understand how people who have low vision or people who are blind, or observing someone who doesn't have a lot of strength in their hand trying to activate a button on a touchscreen and not getting visual feedback that says that the button is activated.

So Whitney's point earlier, I think that usability testing and user contextual inquiry interviews with people with disabilities helps you learn so much about design in general. And what we've learned in these sessions are things that I would have never stumbled upon doing like a compliance audit against the web content accessibility guidelines. Some of things that I've discovered, one is the one that I just explained, watching



someone who had really very limited mobility working with an Android touchscreen device and the buttons on the screen wouldn't highlight when they were activated. A very simple thing to do, it's a very simple little bit of code to add into a website that says when somebody hovers over this or selects this or activates this, change the color and give that visual feedback. And without that feedback this particular person ended up tapping that button multiple times because there was no visual feedback. Something like that wouldn't come up as part of an accessibility audit, as a failure against any kind of compliance standard.

Other things like how very difficult it is to track visually across a row of data with multiple columns. So this was a study that we did where we were looking at transportation systems and looking at things like bus schedules where you have every 15 minutes there is a column for each bus, you enlarge that to 200% even on a very large monitor for someone who has low vision. The difficulties that we all experience tracking across multiple rows are exacerbated when you're looking at a magnified view. Again, that's something that you wouldn't understand from reading about accessibility in any kind of book, even like *A Web for Everyone*. It's something you're going to realize by watching people and talking to people, even just talking to people about their preferences and what works and what doesn't.

Another thing that I discovered recently was that many, many people with vision impairments are using mobile devices almost exclusively over desktop and laptop computers. So there is this trend towards mobile use that you might not think of as intuitive to think okay a lot of people who are blind and people who have low vision are relying completely on touch screen devices, how does that even work. So I can't begin to emphasize strongly enough how important it is to engage people with disabilities in your user research and your usability studies if you want to learn about what design can do to improve the experience for everyone.

**Whitney:** Sarah said something really important, which is about context and learning, how do they get through the task, or how do they engage in the activity. When I do usability testing with actually a lot of people these days I invite them to bring their own device in. It's harder, it adds a lot of variation and complexity to the test in some ways, but it makes what I learn so much richer because you start to see someone say, well, I could do it on my laptop and I've got my laptop here. One guy showed up and he had his crossbody backpack, he said I can use your Windows machine because you've got the right JAWS and I'll be fine with that. But then he wanted to show us how he would do it on his Mac and he reaches over his shoulder and he pulled it out like he was

throwing an arrow and devices just started coming out of this thing, and here's a guy who is totally technological and how he thought about it.

And then in the same test we had one who had lost her vision rather late in life and she said I know that I could learn JAWS better and I could learn to do much more with things, but I'm old enough to be a little patient, and sometimes I just let it read through that horrible introduction over and over again rather than learn how to skip. So learning where people satisfies, what makes it really annoying, what doesn't make it annoying, that's something that's not just about can they succeed in the task, it's about is this something that they look forward to using or dread using, is it kind of delightful. When you're doing learning tools you don't want the tool itself to be something that people dread. Maybe you dread algebra but you shouldn't dread the algebra program.

**Connie:** Well, we want the technology to be transparent. One accessibility standards that we come upon a lot as learning designers is section 508, we often hear about that with the government and large institutions, can you tell us where that came from and what some of the key standards are?

**Whitney:** These days it's all WCAG, Web Content Accessibility Guidelines. Section 508 is in the process of being refreshed, and if it passes, as we expect it to, what it says is that you if meet Web Content Accessibility Guidelines level double A you will meet 508. We hear about 508 in the United States because it's out national law, but there are other national laws and they harmonize around WCAG. And that's really important to people who are working in global settings. If you're doing a MOOC, for example, that may be used by people in many different countries, so we're beginning to bring it all together to WCAG for the digital experience, so that includes things on the web but also apps that might run off the web but are still-- call it WCAG for IT.

**Connie:** What's the double A that you were talking about?

**Whitney:** There are three levels. The easy standards to meet are level A, then there's another level up which is Double A, and Triple A. There are some people who say you shouldn't even try to meet Triple A entirely, what you should do is think about which elements of Triple A really make sense for the kinds of interactions in your product and the kind of people who use your product. But there are people who do go for it as a gold standard.

**Sarah:** Another important standard in the online learning context, not maybe as much for content authors as for authoring tool vendors, is the Authoring Tool Accessibility

Guidelines, and those are ATAG, and those are focused on making sure that the platform that you're using to build those courses encourages best practice for authoring accessible content. And that's often an under-considered standard, and it's so crucial.

**Whitney:** Didn't that just move up to being a recommendation?

**Sarah:** Yeah.

**Whitney:** Sarah really was the one that made me think hard about the problem of authoring tools. Because if you think about either a learning environment or even a big corporation, you have a big website, you might do it with the section of the website for your department or for your functional group, you don't control the framework, you don't control the templates that you get to work in, and if those templates aren't accessible and if they make it hard to be accessible then you're not as likely to do it. But if they make it easy, one of my favorite examples, and again it's a trivial technical thing but important for users, is alternative text. There is virtually no authoring environment from PowerPoint up to fancy HTML tools that shows you the alternative text in a way that makes sense to a content author. It's hidden in code, you have to right click and go to the (?) thing and open up this-- it's a code property, and yet it's really content. Why can't I hover over that picture in my tool and then have that alt text experience in an editable box, why can't it be visible, why I can't see if I've remembered to put alt text in or not without having to look at each and every one. It makes a tedious process and a process thereby that's much less likely to be met.

**Connie:** That's a good point. And the alt text is read by screen readers and what other types of assistive technology read alt text?

**Sarah:** It's primarily for screen reader software and the purpose is to provide an equivalent to what is shown visually for people who can't see the image. That could be someone who is on a browser and has decided to suppress images displaying and instead the alt text displays in its place. That used to be more the case back in the day when we were dialing in over the--

**Connie:** The low bandwidth days, yeah.

**Whitney:** I live 50 miles from New York City and I have friends who can't get high speed internet at their houses, and they're using their cellphones as their internet connection. And if you think about someone in Southeast Asia or South Asia, you have many of the same things. The minute you start to think globally and think out of the

metropolitan centers, there are all sorts of reasons why you might not want to load big graphics. And, interestingly, we're seeing that comeback around, because we've now assumed that everybody is happy to have huge graphics thrown at them and so we're beginning to see people go, wait a minute, I don't want to have to wait for that big graphic to load to get to the text, I just want to get to it on my phone fast.

**Sarah:** And I also don't want to burn up my data on images that I don't really care to see anyway.

**Connie:** Can you talk a little about how to visually present content so it's accessible to the widest audience?

**Whitney:** Let's talk about plain language. The plain language people say that plain language, like accessibility, is not a whole bunch of rules about text, it's about communicating information clearly. And I wish that there was more crossover between the accessibility world and plain language world. Because it's about understanding what you're trying to communicate and making the structure of the information, the words of the information, and the visual presentation of the information, and therefore the underlying semantic structures work together to communicate in a really clear way.

**Connie:** What are some other guideline?

**Whitney:** We tend to make the text small because we sit in our design studios and we think I want to fit more on the page so I will make it tinier. But we find in testing with all sorts of people that they would actually like bigger text, they would like not to have to strain to read things, and this is especially important that it adapts to a mobile screen well. It would be nice if it was colors that have good contrast, it would be nice if the line lengths wrapped. An accessibility piece of the visual presentation of content is making sure that it wraps well and that it still presents well even at 200%.

**Sarah:** That's one of the nice sort of byproducts, although some people would disagree about it that it's nice, but responsive design has been really interesting to look at from the perspective of people who need enlarged text in order to read it. So the way that you can code a responsive website and just for a context a responsive design approach is one that you have a common code base, you have one document that will adjust to display at different view ports. So a wide screen on a big old Thunderbolt monitor all the way down to a small screen on an iPhone, and it's the same content and different visual presentations of it. And one nice thing that has come out of that is if you scale a page that is designed to be responsive to have larger text, the layout will reflow to one of

those breakpoints. For example, you might be looking on a desktop computer at a screen with enlarged text and you get the tablet layout just because of the size of the text that you've set. It's a different design, but what's nice about it is that it reflows and it doesn't require a horizontal scrolling in order to see all of the content, it's just a little bit more elegant.

The reason I gave a little bit of an asterisk there is that some people find the fact that the design reflow is a little bit disorienting because you're looking at a larger view, the desktop view, and suddenly the layout changes in its nature to be more conducive to a tablet layout. For example, the menu might squash down into a little hamburger icon or something like that. There is that one bit of cognitive dissonance there that happens, but then from there I think it's one of those things as we adjust to it and come to expect it, it will be like thank goodness I don't have to scroll horizontally to read the text on this page.

**Whitney:** It's beginning to answer the question, we started out in 1980s calling these personal computers, to distinguish them from big industrial computers, but then somewhere along the line that personal got hijacked and all of a sudden we began thinking that it was our job as designers to control the experience. But I think that one of the things that is happening with mobile strategies, with responsive strategies, with design thinking strategies is that we're beginning to say the personal computer or the personal device means that you get to experience the information in the way you choose, or experience the interaction in the way you choose rather than it being dictated to you. Because there is no one single solution that works for everybody in every situation and every context. So flexibility as to personal needs, flexibility as to device needs, flexibility as to contextual needs, all support accessibility.

**Connie:** Maybe that is the place that we should wrap up. I want to thank you so much for giving us your time. This is a topic that we really need to learn more about in my field. Thank you so much Sarah and Whitney.

**Whitney:** Thanks, Connie.

That was an enlightening conversation. I hope it will serve to make us more aware of how important universal design is. You can find a discount code for the book *A Web for Everyone*, as well as lots of relevant resources at [thelearningcoach.com/podcasts/28](http://thelearningcoach.com/podcasts/28). Talk to you next time.