Slide 1 - Assessment Methods and Tools

Assessment Methods
and Tools

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Welcome to the lecture on assessment methods and tools.

We'll review some of the methods and tools already discussed and introduce some new ones for you to use in future assignments and projects. There is a lot of information, but this lecture is meant to be a resource with information on each method and tool, how to use them, and the pros and cons..

Slide 2 - Methods and tools for users

Users with disabilities have methods and tools they can use to make their user experience easier and as seamless as possible. On this slide and the next, we'll discuss those.

Assistive technologies include software and hardware that people with disabilities use to improve interaction with cross-media products. These include screen readers that read aloud web pages or documents for people who cannot read the text, screen magnifiers for people with some types of low vision to more easily read digital documents, and speech recognition software and selection switches for people who cannot use a keyboard or mouse.

You'll be using at least one of these, screen readers, for an assignment in this module..

Slide 3 - Methods and tools for users

Methods and tools for users

- Adaptive strategies = **techniques** to improve interaction
  - increase text size
  - reduce mouse speed
  - turning on captions

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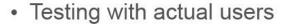
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The other method, which includes some tools, is adaptive strategies. These are techniques that people with disabilities use to improve interaction with the web and with documents such as increasing the text size, reducing the mouse speed on their computer, and turning on captions.

Adaptive strategies include techniques with standard software, normally, such as mainstream browsers, also mobile devices, and assistive technologies. Part of designing for accessibility in mind is to lessen the need for users to adopt adaptive strategies.

Slide 4 - Methods and tools for accessibility evaluators

Methods and tools for accessibility evaluators

- Manual inspection
  - Evaluator identifies barriers
  - Guidelines, assistive technologies

- Automated tools
  - Scans product, identifies barriers
  - Quickly finds common issues

- Testing with actual users
  - Observe participants with disabilities complete tasks

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Evaluators have a number of methods and tools at their disposal to assess the accessibility of products.

Manual inspection testing involves a human evaluator, such as yourself, interacting with a website or an app or a document to identify barriers that might prevent people with disabilities from using it. This method relies on a combination of guidelines and assistive technologies.

Automated accessibility testing tools scan a website or app or document or even video to identify issues based on predefined rules, typically drawn from guidelines and standards like the Web Content Accessibility Guidelines, WCAG. These tools are fast, systematic, and useful for quickly identifying many common problems.

Testing with actual or representative users employs a combination of manual inspection and automated tools. Representative users include those who don't use the product yet but are very interested in doing so. Usability

testing evaluates how well real users, including those with disabilities, can use a product. You conduct sessions where users with disabilities, such as screen reader users, keyboard only users, or users with cognitive impairments, complete tasks on the product while you observe them. By observing the challenges they face, including technical barriers and general user experience issues for all users, this allows you to get direct feedback from actual users.

Note: I am not requiring you to test with people with disabilities due to the very short timeline of this course. In addition, if you remember from the Course Introduction lecture, the assignments in this course are meant to be the preliminary research to ask the big bosses for the resources needed to launch a full-blown accessibility test with representative users. However, you are welcome to get feedback from users with disabilities at this stage.

Slide 5 - Methods & tools > manual inspection

Manual inspection means human inspection. Someone or a team of people inspect the cross-media product against accessibility principles and guidelines to check for adherence. For example, the WCAG guidelines and the POUR principles are included in this.

For Assignment 4A in this module, you'll be performing manual inspections using the overarching guidelines and sub-guidelines from the lectures. Other tools include keyboard access testing and the use of assistive technologies.

The benefits of manual inspection include being able to identify complex contextual issues that automated tools might miss.

The drawbacks are that it is time consuming and it requires skilled expertise. It's possible to hone your expertise over time on accessibility inspections. Time, however, often is the biggest detractor.

Slide 6 - Manual inspection > keyboard navigation

One manual inspection method is inspecting for keyboard navigation. Inspecting for keyboard access means evaluating how well a cross-media product can be navigated using only the keyboard.

It's also about ensuring that interactive elements are focusable and reachable. Can users navigate using just the keyboard to, for example, tab to a link? And does that link become the, quote, unquote, focus? In other words, is there a visual cue saying this link, you can click on this?

Can users get away from that link or focus without getting trapped? I discussed keyboard traps in an earlier lecture. Not only are these annoying for users just using a keyboard, they're annoying for all of us.

The tools to use are pretty easy and readily available. It's a browser or the application and a keyboard.

Obviously, making sure the product has keyboard accessibility is critical for many users. It determines that the product is navigable without needing to use a mouse or other pointing device.

One of the drawbacks with keyboard access testing is that you may not detect some of the visual and auditory barriers. In addition, doing a thorough evaluation takes time. Keyboard traps can hide, and it takes time and patience to find them.

For example, a calendar widget on a website is a popular place for traps. If it's not accessible, it could have you tabbing through every single date on the calendar, meaning there is no way out. It can also do the same thing with the time if you want to choose a time..

Slide 7 - Manual inspection > assistive technologies

Evaluating with assistive technology allows you to see how well an interface works with screen readers, screen magnifiers, or speech recognition software and other technologies.

The most well-known assistive tools are screen readers, such as JAWS or VoiceOver. There's also screen magnifiers such as ZoomText, which will allow the user to zoom in just on the text on a website or a document. And speech recognition software such as Dragon. Great name. Love the name Dragon.

Dragon and other speech recognition software will take spoken word and translate it to written. The major benefit of using assistive technology is that it allows direct assessment of compatibility with technologies that people with disabilities actually use.

It also gives you an idea of how easy or difficult it is to use the technology to view and interact with products.

Two drawbacks for assistive technology is that you have to know how to use the technology. Some screen readers like JAWS have a steep learning curve.The other major drawback is that if you, for example, use the technology... you haven't used it before, you get a copy of it, you're able to use it, but you're not using it on a regular basis. So you won't necessarily learn how actual users interact with that technology.

Some of the assistive technologies cross the line from manual inspection to automated tools.

For example, using built-in accessibility tools and software such as Adobe Acrobat and Microsoft Word requires the automated tool to find the issues, but it also requires you as the designer to determine if what was found really is an accessibility barrier, and then it requires you to fix the issue.

Also note that there are many other assistive technologies than the ones I mentioned. If you have access to any of the following, I highly recommend working with them: Braille software, eye-gazing or head-tracking software, and alternative keyboards. These can give you so much insight, but the price may be prohibitive.

Slide 8 - Methods & tools > automated tools

Methods & tools > automated tools

- Automated tools
  - Scan web pages, apps, documents
  - Detect errors, return results

- Tools include:
  - Comprehensive (Accessibility Insights, WAVE, axe DevTools)
  - Color checkers
  - PDF checkers
  - Captions/transcripts software

Pros
- Faster than manual
- Scan large websites or documents easily

Cons
- Miss issues in specific contexts (logical focus, alt-text relevance, readability)
- Most geared toward web

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The second major method is using automated tools.

Automated tools can scan webpages, applications, and documents to find common accessibility errors. These tools will find errors and show you what they are, where they are, and sometimes even give you suggestions for how to fix them.

Tools can be broken down by comprehensive and specific. WAVE, which is part of WebAIM, Axe DevTools, Siteimprove, Microsoft's Accessibility Insights, and others are comprehensive tools in that they can review more than one area. WAVE will uncover website issues in color contrast, evidence of alt text, logical structure, and broken or empty links. Specific tools focus on one area of accessibility, such as the color contrast checkers.

One of the biggest pros for automated tools is that they are faster than a manual review. The tools can scan large websites, videos, or documents easily and quickly.

Some of the cons for automated tools include missing issues in specific contexts. A good example of this is that WAVE can detect if an image has an alt tag and that it isn't empty, but it can't analyze whether the text is appropriate, such as just being the word 'logo'. Since these tools don't check content readability, that means a manual inspection for plain language use is required.

Another downside is that most of the automated tools are geared toward websites. However, there are some specific to cross-media products that aren't websites.

Slide 9 - Methods & tools > manual inspection

Automated tools > color contrast testing

- Color contrast
  - Sufficient contrast between foreground and background
  - Minimum, optimal color contrast ratios

- Software/tools include:
  - WebAIM Contrast Checker
  - AudioEye Contrast Checker
  - Color blindness simulators (Coblis)

Pros
- Checks for issues for colorblindness
- Ensures adherence with WCAG

Cons
- Does not address other visual accessibility issues (text size, appropriate font family)

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As mentioned in several lectures, color contrast is one of the most frequent barriers users find, whether or not they are colorblind. There needs to be sufficient contrast between text and the background to ensure readability.

A number of color contrast checkers exist, including those from WebAIM and AudioEye. In addition, there are color blindness simulators available, such as Coblis. Realize that the simulators are just that. They simulate the experience. They don't necessarily hit it right on the nose every time. The only way to do that is to actually test with users who are colorblind.

Color contrast checkers will give you the ratio to ensure it's not only meeting what is considered to be good contrast, but also adheres to color guidelines such as those in WCAG. And remember, color contrast checkers can be used for many electronic deliverables, such as PDFs and videos. You can choose the colors being used, and the checker will let you know if the ratio is passable.

One drawback is that it tests only color. It doesn't address all aspects of visual accessibility, such as a readable text size or appropriate font family..

Slide 10 - Methods & tools > automated tools

Some automated tools exist to evaluate the accessibility of PDFs, though not nearly as many as for color. Using a PDF checker saves time as compared to a manual inspection, and it can catch issues that you might miss.

Adobe Acrobat is my go-to for PDF accessibility. Not only does it find the issues, it often provides information on how to fix them. It's not foolproof, though. Your best tool to evaluate an inaccessible PDF is to get a hold of the document in its native software and make the changes there. If that's not possible, you could try OCR software.

OCR stands for optical character recognition, and the software can scan for characters within a PDF that is an image. So it's not a PDF that was created directly from Google Docs or Microsoft Word. It's a... it's an actual scan. So somebody printed it out, scanned it, and made it into a PDF. The OCR can scan... scan and pick up characters. That's the positive. The negative is the price. Almost all OCR software is by subscription or purchase. Note that Acrobat has some OCR capabilities, but they are limited.

There are a few free options for checking PDFs. PAVE, p a v e, is an online accessibility validation engine. It works similarly as Acrobat by finding issues, but it also fixes them for you. I tried it out with a few PDFs, and it's a bit buggy. But it's quick, and it does point out the issues in case you want to make the fixes yourself.

PAC 2024 is a free PDF accessibility checker that tests PDFs against the PDF/UA standard. The UA stands for Universal Accessibility. The downside is that this checker is only for the Windows operating system. I didn't get a chance to play around with it. If you do, please let me know what you think.

Slide 11 - Methods & tools > automated tools

Automated tools > captions/transcripts

- Video and multimedia
  - Automatic captioning for videos
  - Automatically generated transcripts

- Software/tools include:
  - Auto-captioning/ auto-transcripting software (Wistia, YouTube, other video hosting platforms)

Pros
- Saves time
- Automatically aligns captions or transcripts with video timeline

Cons
- Auto-captioning and auto-transcription can (and will) misinterpret words

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Auto-captioning and auto-transcripting saves so much time when it comes to videos and multimedia. Having to listen to a video and type out the captions or transcripts is tedious and time consuming. I know this from personal experience. And trying to line up captions with the video's timeline is even more of a time suck. The Wistia auto generating feature has saved me hours and hours of work.

The downside of this, though, is that you still have to go in and fix some misinterpreted words. I've even had cuss words show up! As mentioned in a past lecture, always, always double check auto-generated materials. None of these services are a hundred percent unless it's a human translating the words.

Many video posting platforms will automatically generate captions for videos. In addition to Wistia, there is YouTube, Vimeo, and even Dropbox will generate captions. Just be aware that most of these platforms are not free.

Slide 12 - Testing with real users!

And now to our third method, which is a combination of manual and automated: testing with actual users by conducting usability studies. Performing expert evaluations or using assistive technologies are good for checking for accessibility, but nothing compares to testing with users and, in this case, users with disabilities.

Usability testing is a method of creating materials, such as questionnaires and tasks, for users to answer and complete.

One type of testing is task-based observation testing, which has three main elements. The first is a pre-test questionnaire, where you're going to gather demographic information and the user's goals and expectations, what they expect when they use the product, what are they going to use the product to accomplish. You also write tasks where you believe there are issues from preliminary research, and participants go through those tasks while you observe them. Were they able to find the information? Was the information where they thought it would be?

Following the tasks is asking post-test questions, which gives you a chance to get the users' opinions of the tasks and how well they think the product performed. Analyzing several data points can lead to accessibility barriers being uncovered by actual users.

The tools involved are a combination of manual and automated. Writing surveys and interview questions and creating tasks for participants to complete are considered to be manual because you, as the researcher, will create them. Automated tools include the chart-creation abilities in survey software. And there is data-analysis software that can assist in pulling out the most important data points. In addition, you'll need video-conferencing software if conducting remote testing. And most of that software allows for recording sessions for later playback.

One of the major pros for testing with actual users is that they are actual users! It provides real-world valuable feedback and insights into usability issues. You can use a free screen reader such as VoiceOver to review, for example, a website, but it's not the same as watching someone who is blind use JAWS to navigate. Because of this, users who use the assistive technology natively can uncover more issues than you as the evaluator using VoiceOver.

Conducting a test with participants is very time-intensive, not just in creating the materials, but also coordinating and facilitating the test itself and analyzing the data. Also, with all types of usability testing, finding participants that are representative users is challenging. Another downside is that usability tests usually include a small number of participants, between five and twelve. Obviously, having more participants would be ideal. This is why usability testing is done at several stages during the design process.

Slide 13 - Best method(s) and tool(s) for evaluation?

So the big question is what is the best method or tool for evaluation? All three combined!

Automated tools are a good first step for detecting obvious technical issues and can be part of ongoing monitoring.

Manual inspections are crucial for identifying problems that will require a human, you as the designer. It requires your judgment and interpretation, especially for visual- and content-related issues.

Usability testing offers the most insight into real-world usage, and it ensures that your product is truly accessible, not just technically compliant.

Using a combination of these three methods gives you the most comprehensive coverage in accessibility evaluation.

Slide 14 - Check module for assessment assignment

That's it for the methods and tools lecture.

On the module's reading page, all of the tools discussed in this video are listed with links to them. The only required tools for the assignment are listed in the assignment instructions, but you are welcome to use any of these tools or others to get some practice.