Accessibility Simulation Curriculum V2

by Rebecca Mushtare aka @cyberthread

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MODULE 1: Cognitive Impairment (Plan about 10 minutes to complete)

Every individual has their own cognitive limitations and your audience may exhibit a wide range of cognitive abilities. Cognitive ability is impacted by learning disabilities, attention disorders, developmental disabilities, brain injuries and neurological impairments. A noisy office with lots of distractions, multi-tasking or illness/medication can temporarily impact cognitive ability. Cognitive impairments often impact memory, problem solving, attention, reading/linguistic/verbal comprehension, math comprehension or visual comprehension.

This simulation is not a simulation of these impairments but rather a simulation of cognitive overload and the confusion and disorientation that accompanies it while navigating a website. Cognitive impairments can be temporary like those that might be caused by an illness or may be a complication to a medication, or could be the result of the normal aging process, or can be the result of a noisy office.

Simulation Instructions

1. Load the following website into your browser (requires Flash): http://webaim.org/simulations/distractability-sim.html
2. Follow the on-screen instructions in the browser window.
3. Refresh the window once you have completed the simulation so that it is ready for the next participant.

Questions to Consider:

- What improvements could be made to the simulated website (the one about the penguins) that would have made answering the questions easier? Focus your comments on design and organization.

ADDITIONAL RESOURCES

Simulation Tools

- WebAim Dyslexia Simulation (requires Flash): http://webaim.org/simulations/dyslexia-sim.html
  Simulates common symptoms of dyslexia.

Resources

- Misunderstood Minds (PBS): http://www.pbs.org/wgbh/misunderstoodminds/attention.html
  Includes simulations, stories and research about kids with attention, reading and math learning problems.

- WebAim: Cognitive Disabilities: http://webaim.org/articles/cognitive/
  Provides an overview of common cognitive disabilities and specific design considerations.

Accessibility Tools

- Evernote's Clearly (add-on for Chrome): http://evernote.com/clearly/
  A distraction free reading experience.

- Readability App: https://www.readability.com/apps
  A distraction free reading experience.

- OpenWeb – Dyslexia Friendly Web Browser: https://itunes.apple.com/us/app/openweb-dyslexia-friendly/id519348697?mt=8
  A browser for your iOS device specifically designed to help those with dyslexia read online.

- OpenDyslexic (open source font): http://opendyslexic.org/
  A font designed to help those with dyslexia have a better reading experience.

MODULE 2: Hearing Impairment (Plan about 10 minutes to complete)

Jay is 67 and an active member of his local community and government. Jay regularly keeps up with the news after dinner every evening by visiting various news and governmental websites, particularly those with video . His wife and grown children have been complaining that his videos are far too loud, so Jay has invested in headphones.

Simulation Instructions

1. Put on unplugged headphones (do not turn the volume up).
2. Visit the Whitehouse homepage: http://www.whitehouse.gov/briefing-room/weekly-address
3. Watch President Obama's Weekly Address and summarize the main points.
4. Refresh the window once you have completed the simulation so that it is ready for the next participant.

Questions to Consider:

- How did you cope with not being able to hear well? What features on the site helped you get the information you needed? What features do you wish the site had to help you get the information you needed?

ADDITIONAL RESOURCES

Simulation Tools

- Play it Down App: https://itunes.apple.com/US/app/id436207951?mt=8
  Simulates what it is like to listen to music with hearing loss.

Resources

- WebAim: Auditory Disabilities: http://webaim.org/articles/auditory/
  Addresses common types of auditory disabilities and provides links to how to provide captions and transcripts.

- WebAim: Captions, Transcripts and Audio Descriptions: http://webaim.org/techniques/captions/
  How to provide text equivalents for audio.

- Deafness and the User Experience *http://alistapart.com/article/deafnessandtheuserexperience*
  First person point of view with links to helpful resources.

- "Best Practices in Online Captioning" by Joe Clark http://joeclark.org/access/captioning/bpoc/
  Although somewhat "old" in web years, this is the most comprehensive overview of captioning.

- Adding Captions to a YouTube Video: https://support.google.com/youtube/answer/2734796?hl=en
  Directions for how to upload captions/transcript and links to information about each accepted format. SubRip and SubViewer formats do not requires special software, just a text editor.

Accessibility Tools

- Dragon Diction App: https://itunes.apple.com/US/app/id341446764?mt=8
  Can be used to transcribe what another person is saying into text.

MODULE 3: Restricted Mobility (Plan about 10 minutes to complete)

Sarah is a 28yr old with very little movement in her arms. She uses two foot pedals to navigate her computer. The left pedal is the equivalent of “ENTER” and the right pedal is the equivalent of “TAB”. Sarah is looking for a new mattress from IKEA and is hoping to add one to her shopping cart for less than $150.

People with limited mobility in their arms/hands often use button switches, pedals or even head/mouth pointers or controls to navigate their computers. Usually their computers will have special software installed to help them access different parts of their computer with a limited number of buttons. They may also use voice control in addition to the buttons depending on their abilities. Others might use an eye tracking controller. Most assistive technologies replicate keyboard commands in some way. This simulation is not an exact replica of that experience, but will give you a rough idea of what it might be like to navigate a website with limited controls.

Simulation Instructions

1. Position yourself so that you can reach both the left and right pedal.
2. Have your assistant load the webpage for you: http://ikea.com
3. Attempt to find a mattress for less than $150 and add it to your shopping cart.
4. Refresh the window once you have completed the simulation so that it is ready for the next participant.

Questions to Consider:

- How far did you get in accomplishing your goals? What worked and what did not work for you? What was frustrating about the experience? How could the site be designed differently that might help you goals more effectively?

ADDITIONAL RESOURCES

Resources

- WebAim: Motor Disabilities: http://webaim.org/articles/motor/
  Overview of common motor disabilities and assistive devices.

- WebAim: Keyboard Access: http://webaim.org/techniques/keyboard/
  How to test your site for keyboard access, as most assistive devices mimic keyboard commands.

Accessibility Tools

- Griffin Mouth Stick Stylus: http://store.griffintechnology.com/ipad/mouthstick-stylus
  Can be used to interact with a tablet using only your head/mouth.

- Mac OSX and iOS come with both voice controls and the ability to add switches
  http://www.apple.com/accessibility/osx/
  Mac OS has extensive accessibility features built into the operating system that people of all abilities take advantage of. Microsoft also has some accessibility features built in:
  http://www.microsoft.com/enable/products/windows8/default.aspx

- CameraMouse: http://www.cameramouse.org/index.html
  An open source (and free) eye-tracking “mouse” available for Windows.

- Specialized Adaptive Technologies: http://www.enablemart.com/ and http://www.ablenetinc.com/
  Two sites that specialize in adaptive technology. Browsing these sites will give you an idea of the breadth of products available.

MODULE 4: Color Blindness (Plan about 10 minutes to complete)

Josh is a 30 year old computer programmer. Every year around Valentine's day his company participates in the Go Red! campaign of the American Heart Association. He really wants to participate, so he needs to purchase a red t-shirt, the problem is he has deuteranopia, a common form of color blindness that impacts his ability to differentiate between mid greens and mid reds.

Simulation Instructions

1. Use the NoCoffee extension in Google Chrome and set the Color Deficiency to "Deuteranopia".
2. Visit the Gap online: http://gap.com
3. Attempt to find a t-shirt in your size that is red.
4. Reset the values in the NoCoffee extension to see if you were correct.
5. Look at your previous web designs from this class and explore them with the various Color Deficiency settings available in the NoCoffee extension.

Questions to Consider:

- How easy/hard was it to find the shirt that you needed? What strategies did the company use to aid you in your search? What would have made your search easier?
- Were your websites accessible to people with color blindness? What did you discover?

ADDITIONAL RESOURCES

Simulation Tools

- NoCoffee Chrome Add-On:
  https://chrome.google.com/webstore/detail/nocoffee/jjeeggmbnhckmgdhmgdckeigabjfbddl/related
  Simulates various visual impairments including color blindness, glaucoma, mascular degeneration, etc.

- VisCheck: http://www.vischeck.com/vischeck
  Allows you to simulate color blindness on still images (works in browser).

- Chromatic Vision Simulator
  https://itunes.apple.com/us/app/chromatic-vision-simulator/id389310222?mt=8
  Ipad App to simulate different types of color blindness. Useful for print materials.

Resources

- WebAim: Visual Disabilities:http://webaim.org/articles/visual/
  Overview of common visual disabilities including color blindness.

- Color Contrast Checker (WebAim):http://webaim.org/resources/contrastchecker/
  Use this tool to check if your color scheme provides enough contrast to be accessible to an individual who is color blind.

- Color Scheme Designer: http://colorschemedesigner.com/#
  A tool similar to Kuler but that also checks for appropriate levels of contrast to accommodate color blindness.

Accessibility Tools

- Color ID https://itunes.apple.com/us/app/color-id-free/id402233600?mt=8
  Ipad app that helps the user identify colors in the real world.

MODULE 5: Low Vision (Plan about 10 minutes to complete)

Jordan is a student in Miss Livia's sixth grade class with 25 of his closest friends. The students are researching primary documents using a virtual museum. Jordan wears glasses to aid his vision, but even with the corrective lenses his vision is far from 20/20. Jordan has the ability to use accessibility tools on his classroom computer so that he can work with all of the other students in class without any special equipment.

Simulation Instructions

1. Turn Zoom (built into OSX) on using OPTION + COMMAND + 8 (this command toggles the feature on and off) or going to System Preferences > Universal Access. You may also choose to turn on the zoom window which will make the zoom work more like a magnifying glass rather than zooming the whole screen. Use OPTION + COMMAND + EQUALS SIGN to zoom in and OPTION + COMMAND + MINUS SIGN to zoom out. You can also use the COMMAND + PLUS and COMMAND + MINUS to zoom in and out using the Browser functionality. Also note that if you select text with your cursor and then right-click you can choose SPEECH > Start Speaking to have the text read to you.
2. The NoCoffee Visual Simulator should have the Blur (Low Acuity) set to 3.
3. Visit http://www.surveyhistory.org/images/ellicottdoc1.JPG. Determine the date in the document.
4. Refresh the window and turn off zoom once you have completed the simulation so that it is ready for the next participant.

Questions to Consider:

- Were you able to complete the task? What was most helpful about the site design? What tools did you rely on most? How could the sites have been designed more effectively to help you as a user? Which site worked better for you? Why?

ADDITIONAL RESOURCES

Simulation Tools

- NoCoffee Chrome Add-On:
  https://chrome.google.com/webstore/detail/nocoffee/jjeeggmbnhckmgdhmgdckeigabjfbddl/related
  Simulates various visual impairments including color blindness, glaucoma, mascular degeneration, etc.

- VisionSim (iPad App) https://itunes.apple.com/us/app/visionsim-by-braille-institute/id525114829?mt=8
  Simulates various visual impairments including color blindness, glaucoma, mascular degeneration, etc.

Resources

- WebAim: Visual Disabilities:http://webaim.org/articles/visual/
  Overview of common visual disabilities including color blindness.

- "Why Your Links Should Never Say 'Click Here'"
  http://uxdesign.smashingmagazine.com/2012/06/20/links-should-never-say-click-here/
  Article explains how low vision web users browse the web.

- WebAim: Alt Text: http://webaim.org/techniques/alttext/
  Explains how to write appropriate text alternatives to imagery.

MODULE 6: No Vision - Screen Reader (Plan about 10 minutes to complete)

Lia is a business student at SUNY Oswego and just got a new mac laptop. Lia has very low vision and is looking forward to learning how to use the built in screen reader, VoiceOver that came with the operating system. Her mentor suggested trying out the tutorials on WebAim to get used to VoiceOver.

A screen reader verbalizes the visual content, including text and images, on the screen. Screen readers are generally used by individuals who have had low or no vision. Historically screen reader software has been extremely expensive, but more operating systems are coming with adaptive technology built in. People who use screen readers are generally quite adept and are more dependent on hearing than you may be. They are often able to speed up the voice on the screen reader to speed up their experience and efficiency.

Simulation Instructions

1. Turn on VoiceOver, the built in screen reader for Mac OSX. (System Preferences > Universal Access or COMMAND + FUNCTION + F5).
2. Open the WebAim voiceover form training in a browser: http://webaim.org/articles/voiceover/forms
3. Use VoiceOver to navigate and fill out the forms on the page.

Questions to Consider:

- What did you discover while attempting this task? Were you able to complete the task? How is navigating with sound different from navigating with vision? What features helped you in this experience?

ADDITIONAL RESOURCES

Resources

- WebAim: Visual Disabilities:http://webaim.org/articles/visual/
  Overview of common visual disabilities including color blindness.

- WebAim: VoiceOver Practice Forms: http://webaim.org/articles/voiceover/forms
  This is a good opportunity to experiment with a screen reader.

- "Why Your Links Should Never Say 'Click Here'"
  http://uxdesign.smashingmagazine.com/2012/06/20/links-should-never-say-click-here/
  Article explains how low vision web users browse the web.

- WebAim: Skip Navigation Links: http://webaim.org/techniques/skipnav/
  How to make repetitive navigation tolerable for keyboard navigators.

- WebAim: Alt Text: http://webaim.org/techniques/alttext/
  Explains how to write appropriate text alternatives to imagery.

Accessibility Tools

- JA*WS* *http://www.freedomscientific.com/downloads/jaws/jaws-downloads.asp*
  Screen Reader for Windows -- most popular, but not free.

- NVDA http://www.nvaccess.org/download/
  Screen Reader for Windows, free.

- VoiceOver: http://www.apple.com/accessibility/osx/voiceover/
  Screen Reader for Apple, free.

- Braille Touch: https://itunes.apple.com/us/app/brailletouch/id579725651?mt=8
  Braille writer app for iOS, free.

MODULE 7: Aging User - Desktop (Plan about 10 minutes to complete)

Georgia is 70 years young. She lives in rural Onondaga County where she is unable to access high-speed Internet or local newspaper delivery. She uses a dial-up modem to access her local news. She turns off images in her browser to keep speeds a little faster. Georgia's hands aren't as steady as they used to be and suffers from arthritis, so she uses a special joystick mouse to help her.

Note: This simulation is *not* running at dial up speeds -- it would be *much* slower.

Simulation Instructions

1. Open Firefox. Navigate to Tools > Web Developer Extension > Images > Replace Images with Alt Attributes
2. Put on the Macular Degeneration simulation glasses.
3. Either use a regular mouse with your non-dominant hand or the joystick mouse to navigate.
4. Load the local newspaper website into the browser: http://syracuse.com
5. You've heard that there is a new winter farmer's market opening soon. Find out when and where the winter farmer's market is.
6. Remember to reset the browser when you are finished.

Questions to Consider:

- How far did you get in accomplishing your goals? What worked and what did not work for you? What was frustrating about the experience? How could the site be designed differently that might help Georgia reach her goals more effectively?

ADDITIONAL RESOURCES (see Module 8 as well)

Simulation Tools

- NoCoffee Chrome Add-On:
  https://chrome.google.com/webstore/detail/nocoffee/jjeeggmbnhckmgdhmgdckeigabjfbddl/related
  Simulates various visual impairments including color blindness, glaucoma, mascular degeneration, etc.

- "Sociology of Aging: Age Related Impairments: A Simulation" by Monika Deppen Wood
  http://crab.rutgers.edu/~deppen/teach.htm
  Good examples of how to simulate old age in the real physical world.

Resources

- "Designing for Different Ages" http://sixrevisions.com/web_design/designing-for-different-age-groups/
  Addresses needs of all different Age groups.

- "Seniors as Web Users" http://www.nngroup.com/articles/usability-for-senior-citizens/
  Results of a study on senior web users.

- "Typography for the Aging Eye" http://www.aiga.org/typography-and-the-aging-eye/
  Good typography tips regardless of medium.

MODULE 8: Aging User - Tablet (Plan about 10 minutes to complete)

John is 75 and lives in a retirement community. He recently got an iPad so that he can use various apps, play games with his Grandkids and chat with them on Skype. John finds the iPad more intuitive than a computer (he never learned to type and never had to use a computer when he worked full time). John is getting braver and is using his iPad to research his hobbies and interests, and has even started doing his banking online. John navigates a little slower than he would have 10 years ago because his joints are stiff and the glaucoma in his eyes is getting worse.

Today John is pricing airplane tickets from Syracuse to Tampa. He'd like to leave right after Christmas and enjoy the heat of Florida for as long as possible.

Simulation Instructions

1. Turn on the zoom capability on the iPad by going to Settings > General > Accessibility > Zoom. Directions for how to use the zoom are on that screen.
2. Wrap tape (not too tight) around your knuckles on your thumbs, forefingers and middle fingers.
3. Put on the Glaucoma simulation glasses.
4. Load http://www.jetblue.com
5. Find the cheapest ticket from Syracuse to Tampa to enjoy the fireworks on the 4th of July in Tampa

Questions to Consider:

- Were you able to accomplish the task? What elements were easiest to use? What elements did you have trouble using? What recommendations would you make to someone designing a form or search for someone like John?

ADDITIONAL RESOURCES (see Module 8 as well)

Resources

- "Web Accessibility for Older Users: A Literature Review" http://www.w3.org/TR/wai-age-literature/
  Provides an overview of most of the available literature on aging users.

- NIH: Making your Website Senior Friendly:
  http://www.nia.nih.gov/health/publication/making-your-website-senior-friendly
  Addresses design and written content.

- "Assistive and Mainstream Technologies for People with Disabilities"
  http://www.ncbi.nlm.nih.gov/books/NBK11418/
  Addresses issues of a growing aging population and the increase in disability that accompanies longer life.

Accessibility Tools

- Magnifying Glass with Light (iOS app):
  https://itunes.apple.com/us/app/magnifying-glass-light-digital/id406048120?mt=8
  Provides the ability to magnify and see items in the real physical world.

- Silver Surf (iOS app): https://itunes.apple.com/us/app/silver-surf/id364907596
  Browser designed especially for older adults with larger buttons and text and dynamic zoom.

General Accessibility Resources

Accessibility Guidelines

- W3C Web Content Accessibility Guidelines (WCAG) 2.0: http://www.w3.org/TR/WCAG20/
- Section 508: http://www.section508.gov/

Accessibility Evaluation Tools

- WAVE Web Accessibility Evaluation Tool: http://wave.webaim.org/
- Cynthia Says: http://www.cynthiasays.com/

Accessibility Information Resources

- *A Web For Everyone: Designing Accessible User Experiences* by Sarah Horton and Whitney Quesenbery http://rosenfeldmedia.com/books/a-web-for-everyone/
  The book website also contains a number of helpful resources that are in the book. The book has an extensive list of resources for further reading.
- *WebAIM: Web Accessibility in Mind: http://webaim.org/*
  Site contains insight into both the why and how of accessibility. Very practical resource.
- *W3C Web Accessibility Initiative: http://www.w3.org/WAI/*
- *Universal Design for Web Applications* by Wendy Chrisholm and Matt May
  http://shop.oreilly.com/product/9780596518745.do
- *Access by Design* by Sarah Horton: http://universalusability.com/index.html
  A full book online -- pre-dates widespread use of HTML5.
- "The Inclusion Principle" by Margit Link-Rodrigue http://alistapart.com/article/the-inclusion-principle
- "Inclusive Design" by Faruk Ates
  http://uxdesign.smashingmagazine.com/2012/01/12/inclusive-design/
- Accessibility Checklist:
  http://www.smashingmagazine.com/the-lost-files/the-ultimate-web-design-questionnaire-and-checklist-part-6-of-8/
- "Keeping Accessibility in Mind" (Video)
  http://www.youtube.com/watch?v=yx7hdQqf8lE
- "Worldwide Access: Accessible by Design" (Video)
  http://www.washington.edu/doit/Video/index.php?vid=35