

# Universal Design: Making Websites More Usable for All Learners

Allison Kidd, ATRC  
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# Assistive Technology Resource Center

- Allison Kidd
  - Assistive Technology IT Coordinator
  - UDL / Accessibility Specialist
- ATRC – Our Services
  - Provide Assistive Technology for students with disabilities
  - <http://atrc.colostate.edu>
  - Provide support for faculty and staff at CSU on accessibility
  - <http://accessibility.colostate.edu>

# What is Assistive Technology?

- Any technology that increases access to computers or electronic information.
  - Text-to-speech
  - Voice recognition
  - Literacy Support
  - Screen Reader Software
- A bridge between digital materials and students.
- Provides alternate ways of accessing materials.

# What is Accessibility?

- Can Assistive Technology interact with the electronic content?
  - **Not Automatically!**
- Content must be designed to interact well with technology.

# Universal Design

Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

—Ron Mace, [UD Institute](#)





# Universal Design for Learning



Build-in “Ramps” to make documents work with technology from the start.

# Types of Disabilities

Apparent

- Mobility Impairments
- Visual Impairments / Blindness
- Hearing Impairments / Deafness

Non-  
apparent

- Learning Disabilities
- Attention Deficit Disorder (ADD/ADHD)
- Autism Spectrum Disorder
- Traumatic Brain Injury (TBI)
- Post Traumatic Stress Disorder (PTSD)
- Mental Illness

# Disabilities and Types of AT

<i>Disability Type</i>	<b>Cognitive</b>	<b>Visual</b>	<b>Hearing</b>	<b>Motor</b>	<b>Mental health</b>
<i>Examples</i>	Dyslexia; TBI; Autism Spectrum	Low Vision; Blindness; Color Blind	Hearing loss	Arthritis; SCI; MS; other	PTSD; anxiety; depression
<i>AT Used</i>	Text to speech Visual display	Screen Magnification, Screen reading software, Keyboard Only	FM systems, Captions	Voice Recognition, Keyboard Only, Headpointers, Eye gaze, Switches	Visual adjustments, Text to speech
<i>Access Issues:</i>	<ul style="list-style-type: none"> <li>• Crowded, dense content</li> <li>• Timed participation</li> <li>• Non-intuitive navigation</li> </ul>	<ul style="list-style-type: none"> <li>• Images, graphs</li> <li>• Long links</li> <li>• Videos</li> <li>• Mouse requirement</li> <li>• Color-dependent content</li> </ul>	<ul style="list-style-type: none"> <li>• Audio or Video lacks caption and/ or transcript</li> </ul>	<ul style="list-style-type: none"> <li>• Small buttons</li> <li>• Timed tasks</li> <li>• Cumbersome navigation</li> </ul>	<ul style="list-style-type: none"> <li>• Retaining information</li> <li>• Cluttered or dense content</li> <li>• Processing information quickly</li> </ul>



# Universal Design with HTML5

- Includes accessibility standards
- Developing towards a set of standards makes a website more universally usable by multiple users
  - Across Browsers
  - Across Platforms
  - Mobile Devices
  - Assistive Technology Compatibility
- Considerations for Mobile Devices and Accessibility Overlap by 75%
- ARIA – An Accessible Alternative to Flash
  - [W3C Summary of ARIA \(http://www.w3.org/WAI/intro/aria\)](http://www.w3.org/WAI/intro/aria)

# The Standards

- Section 508 Guidelines
  - Required Compliance for Institutions with Federal Contracts
  - Being updated to reflect WCAG 2.0
- WCAG 2.0
  - 3 Levels of Priority
    - A: The Absolute Minimum, But Not Enough
    - AA: Recommended Industry Standard
    - AAA: Nitpicky Level for the Ambitious
- [WCAG 2.0 Overview \(w3.org/wai/intro/wcag\)](https://www.w3.org/wai/intro/wcag)

# Features of a Universally Designed Website

- Intuitive Navigation
- White Space
- Color Schemes
- Documents for Download – Word, PDF, etc.
- Keyboard Access
- Screen Reader Accessibility
- Video & Audio Captions

# Use of Headings

- Logical, Not Just Visually Pleasing
- Hierarchical – Table of Contents
- Don't Skip Levels
  - H1 – Should be Page Title
  - H2 – Most Important Information on Page
  - H3 – Less Important Sections
- Any Lower Levels May Not Be Reached

# Links – Descriptive Text

- Descriptive Text Should Be Unique
- When Taken Out of Context, Links List Should Still Make Sense.
- Avoid Generic Terms Like “Learn More” or “Click Here”
- E.g. “Learn More About WCAG 2.0”

# Images – Descriptive Alt Text

- Avoid Redundant Descriptions
- Be Concise
- Consider Context
- If the Image Were Removed, How Would You Convey the Information Using Text?
- Null Tag May Be Used If:
  - The Image is described in surrounding text.
  - The Image is purely decorative.



# Context is Key

- Alternative text for images should describe the meaning of the image in its context



- Ice Cream Manufacturer
- Girl Scouts of America
- My Niece's Blog
- Diversity Website

# Basic Process for Testing

## 1. Use an Automated Checker

- WAVE Tool: in Browser or Firefox Plugin
- IE Web Accessibility Toolbar (WAT)

## 2. Manually Check Results of Automated Tools

- Automation only goes so far (only catches 25% of errors)
- Computers Can't Think – Alt Text may not be useful

## 3. Navigate Using Keyboard and Screen Reader

- Compliant is not always usable

# Testing With Screen Readers

## Short Lists of Commands for Testing Websites:

- JAWS (Windows)
  - [Basic JAWS Commands \(http://webaim.org/articles/jaws/\)](http://webaim.org/articles/jaws/)
- NVDA (Windows Open Source)
  - [Basic NVDA Commands \(http://webaim.org/articles/nvda/\)](http://webaim.org/articles/nvda/)
- VoiceOver (Mac Built-in)
  - [Testing With VoiceOver \(http://webaim.org/articles/voiceover/\)](http://webaim.org/articles/voiceover/)

# Recommended Tools

- WAVE Tool in Browser
  - <http://wave.webaim.org>
- WAVE Firefox Plugin
  - <http://wave.webaim.org/toolbar/>
- IE Web Accessibility Toolbar (WAT)
  - <http://www.paciellogroup.com/resources/wat>
- NVDA
  - <http://www.nvaccess.org/download/>
- JAWS Trial Version
  - <http://www.freedomscientific.com/downloads/jaws/jaws-downloads.asp>

# WCAG 2.0 Resources

- [W3C Quick Reference \(w3.org/wai/wcag20/quickref\)](http://w3.org/wai/wcag20/quickref)
  - Provides a Quick Reference for WCAG 2.0 Standards Broken Down By Type (html, css, etc.)
- [WebAIM WCAG 2.0 Checklist](http://webaim.org/standards/wcag/checklist)  
 [\(http://webaim.org/standards/wcag/checklist\)](http://webaim.org/standards/wcag/checklist)
  - Provides a Checklist Based on WCAG 2.0

# CSU Accessibility Resource

- <http://accessibility.colostate.edu>
- Work in Progress
- Emphasis on User Experience
- Breaks Down the Most Important Points
- Springboards to Other Sources for More
- Can Be a Community Effort
- Open to Adding Tools / Insights You Find Helpful