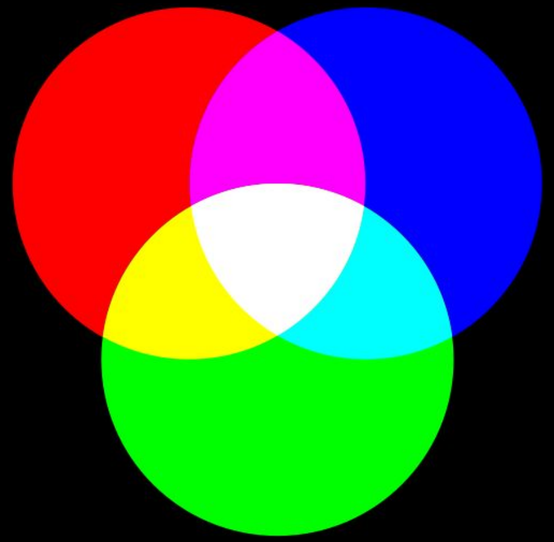
Introduction to Web Design

Design and Accessibility



Introduction to Web Design

Design and Accessibility

Thought

Design is a process that involves thoughtfulness.

Design can encourage healthy (or unhealthy) habits, foster sustainable lifestyles (or not), and make us feel happy (or frustrated). Thoughtful design takes this important influence into account, and thoughtful designers carefully consider the implications on consumers' behaviour and habits when they craft brands, objects and interfaces. – Kristen Nozell, Ad Age

https://www.youtube.com/watch?v=BBPjKgpODIc

Introduction to Web Design

Form

Design and Accessibility

Image

Color
Typography

Composition

https://www.youtube.com/watch?v=GJN7TemsZtY

Introduction to Web Design

Form:
Image

Design and Accessibility

Photography

Illustration

Line and shape

Texture

https://blog.tubikstudio.com/web-design-basic-types-of-images-web-content/

Introduction to Web Design

Design and Accessibility

Form:
Color

Hue

Value

Intensity

https://color.adobe.com/create/color-wheel

Introduction to Web Design

Form:
Typography

Design and Accessibility

Font selection

Type size
Alignment

Letter spacing

Line spacing

Grammar

https://xd.adobe.com/ideas/principles/web-design/best-modern-fonts-for-websites/

Introduction to Web Design

Form:
Composition

Design and Accessibility

Rhythm

Proportion
Structure

Variation

Balance

Boundary

Space

https://xd.adobe.com/ideas/process/ui-design/design-composition-key-principles/

Introduction to Web Design

Context

Design and Accessibility

Device

Web browser

Age of visitor

Literacy

Geographic location

Language(s)

Ability

https://xd.adobe.com/ideas/principles/web-design/12-dos-donts-web-design-2/

Introduction to Web Design

Accessibility

Design and Accessibility

"When we talk about accessible code, what we are really talking about at its core is inclusiveness. The actual process . . . involves rules and standards, tests and tools; but inclusive development is more abstract than that. It’s a shift in thinking . . . Inclusive development means making something valuable, not just accessible, to as many people as we can.”

—Carie Fisher

Getting to the Heart of Digital Accessibility

Accessibility: Categories of Disability

Vision impairment

Mobility impairment
Auditory impairment

Cognitive impairment

Cultivating a mindful design approach allows you to do more with less.

Digital Accessibility

Digital Accessibility

Digital accessibility is the practice of ensuring that digital technology, including websites, mobile applications, immersive experiences, digital environments, and mixed reality, can be consumed by anybody or entity, regardless of visual, mobile, cognitive, and auditory abilities.

For example, somebody with weaker arms may need to use a mouthstick to type. A person with auditory issues uses captions to watch videos. Those using hearing aids, and those who are blind or have low vision will use a screen reader to read aloud what's on the screen. A person who has suffered a stroke may have difficulty using a mouse. An older individual with dexterity issues may have problems using a keyboard.

Universal Design

Needing accessible digital environments is also necessary for the non-disabled, and/or those compromised due to situations such as a broken limb, pregnancy, or simply juggling tasks and only having one hand to work with. Imagine being in a noisy airport and needing to watch a video concerning your flight and having lost your headphones. In this case, captions would be essential.

W3C

Access to digital technologies, including to the Internet, is a basic human right, according to the United Nations Convention on the Rights of Persons with Disabilities. Most of the international community has adopted this UN convention and other binding policies.

The World Wide Web Consortium (W3C) has created international standards for digital creations, in addition, the W3C Web Accessibility Initiative (WAI) has further developed standards and support materials to help designers, developers, content creators, designers and others in the field understand and implement accessibility.

"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect," says Tim Berners-Lee, W3C Director and inventor of the World Wide Web W3C.

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 the content.

Do not use content that causes seizures or physical reactions.

Help users navigate and find content.

Make it easier to use inputs other than the keyboard.

Understandable

Make text readable and understandable.

Make content appear and operate in predictable ways.

Help users avoid and correct mistakes.

Robust

Maximize compatibility with current and future user tools.

The practice of digital accessibility is deeply rooted in principles of Universal Design. Universal Design is the design and composition of an environment so that it can be accessed, understood, and used to the greatest extent possible by all people regardless of their age, size, ability, or disability. An environment (or any building, product, or service in that environment) should be designed to meet the needs of all people who wish to use it. This is not a special requirement, for the benefit of only a minority of the population. It is a fundamental condition of good design. (The Centre for Excellence in Universal Design.)

Who benefits from accessible websites? Identify those in your network that could benefit from universal design.

What are some social issues concerning creating inclusive spaces?

What is disability justice?

ac·ces·si·bil·i·ty

Noun

The quality of being easy to obtain, use, understand, reach, or enter.

What is ‘Web Accessibility’

- The inclusive practice of removing barriers that prevent interaction with, or access to, websites by people with disabilities.

Web accessibility - Wikipedia

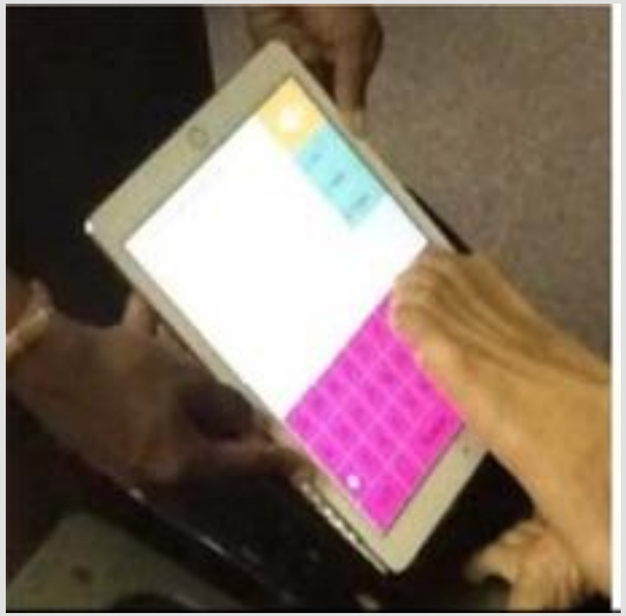
Assistive Technology

- Any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain or improve functional capabilities of individuals with disabilities.

- Examples:
  - Screen Readers
  - Pointing devices
  - Switches
  - Alternate keyboards
  - Siri, Amazon Echo, etc.

Alternate Access Methods

- Alternate keyboards
- Single button mice
- Trackballs / Joysticks
- Head pointing devices
- Pointing / Typing aides
- Head mice
- Switches / Onscreen keyboards
- Touch windows
- Eye gaze



Low tech pointing devices can include:

- Head / Chin pointers
- Styluses
- Adapted hand pointers
- Mouth sticks

2010 U.S. Census: Nearly 1 in 5 have disability

- About 56.7 million people, 19% of the population, had a disability in 2010, according to a broad definition of disability, with more than half of them reporting the disability was severe.
- About 8.1 million people had difficulty seeing, including 2.0 million who were blind or unable to see.
- About 7.6 million people experienced difficulty hearing, including 1.1 million whose difficulty was severe. About 5.6 million used a hearing aid.
- About 19.9 million people had difficulty lifting and grasping. This includes, for instance, trouble lifting an object like a bag of groceries, or grasping a glass or a pencil.

Web Content Accessibility Guidelines (WCAG) 2.0

- (WCAG) 2.0 defines how to make Web content more accessible to people with disabilities. Accessibility involves a wide range of disabilities, including visual, auditory, physical, speech, cognitive, language, learning, and neurological disabilities. Although these guidelines cover a wide range of issues, they are not able to address the needs of people with all types, degrees, and combinations of disability. **These guidelines also make Web content more usable by older individuals with changing abilities due to aging and often improve usability for users in general.**
- Web Content Accessibility Guidelines (WCAG) 2.0

WCAG 2.0

- The four guiding principles of accessibility in WCAG 2.0:
  - **P**erceivable
  - **O**perable
  - **U**nderstandable
  - **R**obust

- Three levels of conformance: A, **AA**, AAA

- Divided into 63 success criteria.

Section 508

- Applies to the federal government
- Adopted as part of the 2001 Amendment to the Rehabilitation Act
- Initially based on WCAG 1.0 (May 1999)

- Section508.gov

WCAG 2.0 vs. Section 508

- WCAG 2.0 Success Criteria are more explicit than the existing 508 Standards.
- WCAG 2.0 is written in a way that is technology neutral and is therefore directly applicable to a wide range of content types and formats.
- WCAG 2.0 has 38 Level A and AA Success Criteria. Of these, 22 are phrased differently but equivalent in substance to current 508 requirements.
- Section 508 is in the processes of being updated to align with WCAG 2.0 (level AA)
- Comparison Table of WCAG 2.0 to Existing 508 Standards

WCAG 2.1

- 28 additional success criteria are proposed that will be added to existing WCAG 2.0.
- Scheduled to be implemented in 2018

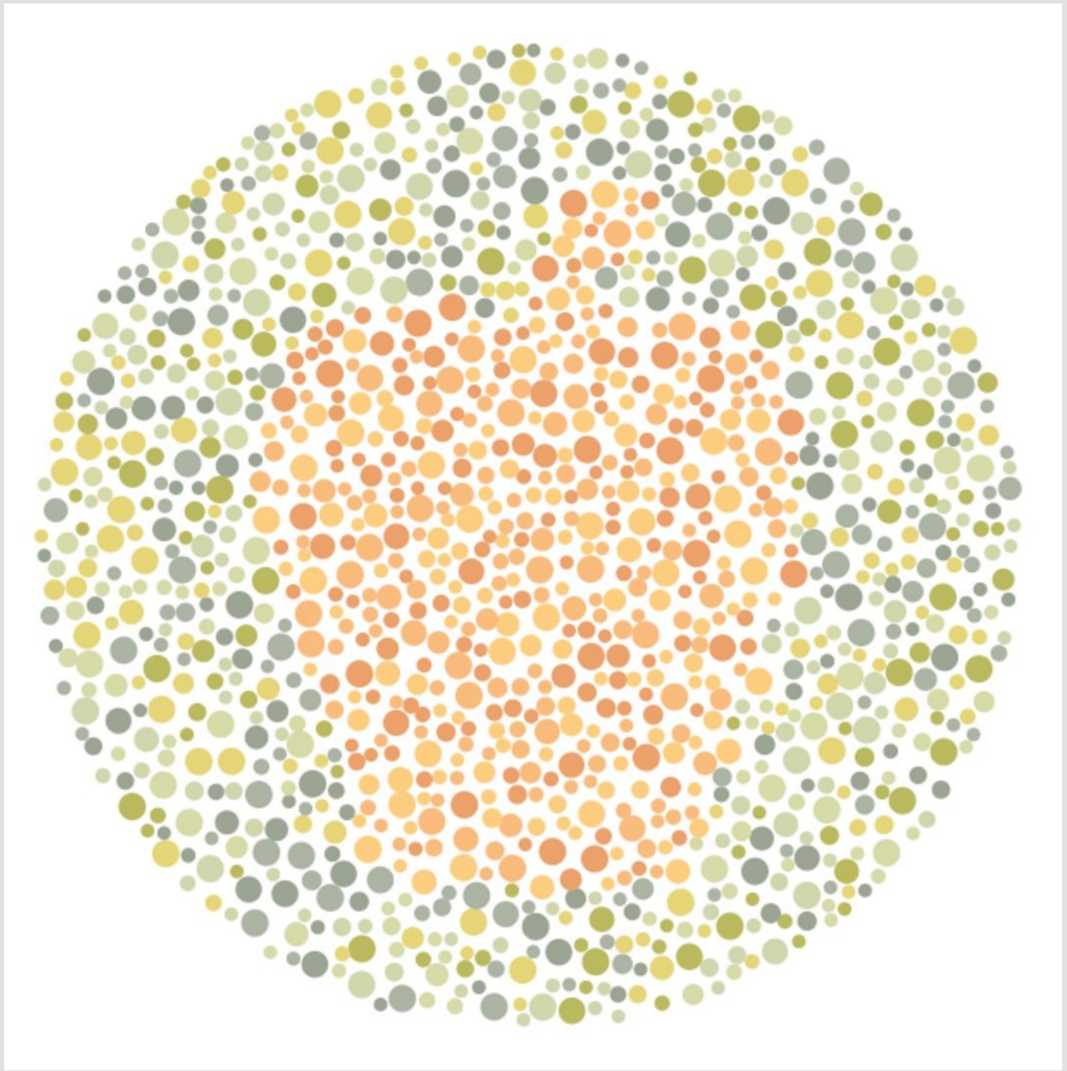
- Web Content Accessibility Guidelines (WCAG) 2.1

Spectrum of Disabilities

- Visual
- Auditory
- Physical
- Cognitive
- Speech

Visual Disabilities

- Low vision
  - Partial sight
  - Poor acuity
  - Tunnel vision
  - Clouded vision
- Color blindness
- Blindness



Examples of Good Practice for Visual Disabilities

- Images & controls should have equivalent text alternatives
- Text, images & page layouts can be resized without losing information.
- Video content has text or audio alternatives, or audio-description track.
- Text and images have sufficient contrast between foreground and background color.
- Provide consistent, predictable navigation.
- Avoid using color alone to identify links or controls.

Auditory Disabilities

- Hard of hearing
- Deafness

Examples of good practice for auditory disabilities

- Audio content, including videos, provide captions or transcripts.
- Media players provide volume controls.
- Media players provide options to adjust caption text size and colors.
- No interactions that rely on using voice only.

Examples of Physical Disabilities

- Amputation
- Arthritis
- Fibromyalgia
- Rheumatism
- Muscular dystrophy
- Repetitive stress injury
- Tremors and spasms
- Quadriplegia

Good practice for physical disabilities

- Provide full keyboard support
  - All links, menu items, controls accessible via keyboard (Tab, Shift+Tab, & Return keys)
  - No keyboard traps
- Provide sufficient time to complete tasks.
- Provide consistent, predictable, simple navigation and page functions.
- Link targets, buttons should be of sufficient size.

Examples of cognitive disabilities

- Attention deficit hyperactivity disorder (ADHD)
- Autism spectrum disorder (ASD)
- Memory impairments
- Multiple sclerosis
- Perceptual or learning disorders
- Seizure disorders

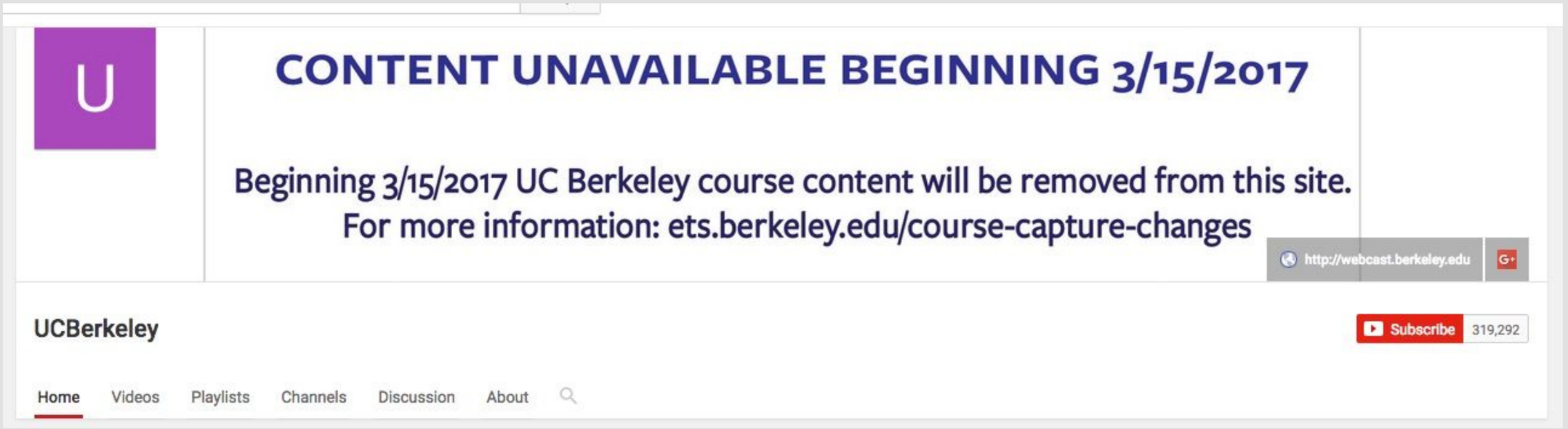
Good practice for cognitive disorders

- Provide simple navigation and page layouts that are easy to understand and use.
- Avoid, when possible, complex sentences that are difficult to read or unusual words.
- Avoid moving, blinking, or flickering content. Or provide method to disable.
- Video, animations, or audio content can be paused or stopped.
- Simple text is supplemented by images, graphs, or illustrations.

Accessibility > Compliance

Your site can be compliant, yet inaccessible.

UC Berkeley Removes Online lectures



In its review, the department looked at videos on UC-Berkeley's YouTube page, finding that automatically generated captions ***weren't complete or accurate****, a barrier for those with hearing disabilities. Some videos also had issues that made them challenging for those with vision disabilities, such as low color contrast.*

The department [DOJ] found that the university was in violation of the federal disabilities law because "significant portions of its online content are not provided in an accessible manner when necessary to ensure effective communication with individuals with hearing, vision or manual disabilities."

Source – [Why UC-Berkeley is restricting access to thousands of online lecture videos]

Checking for Accessibility

- Manual Testing
  - Keyboard check
  - Use with screen reader
- Online Tools
  - WebAIM WAVE

Accessibility Testing Demo

- Danforth University Center (DUC) homepage
- http://wave.webaim.org/report - /https://duc.wustl.edu