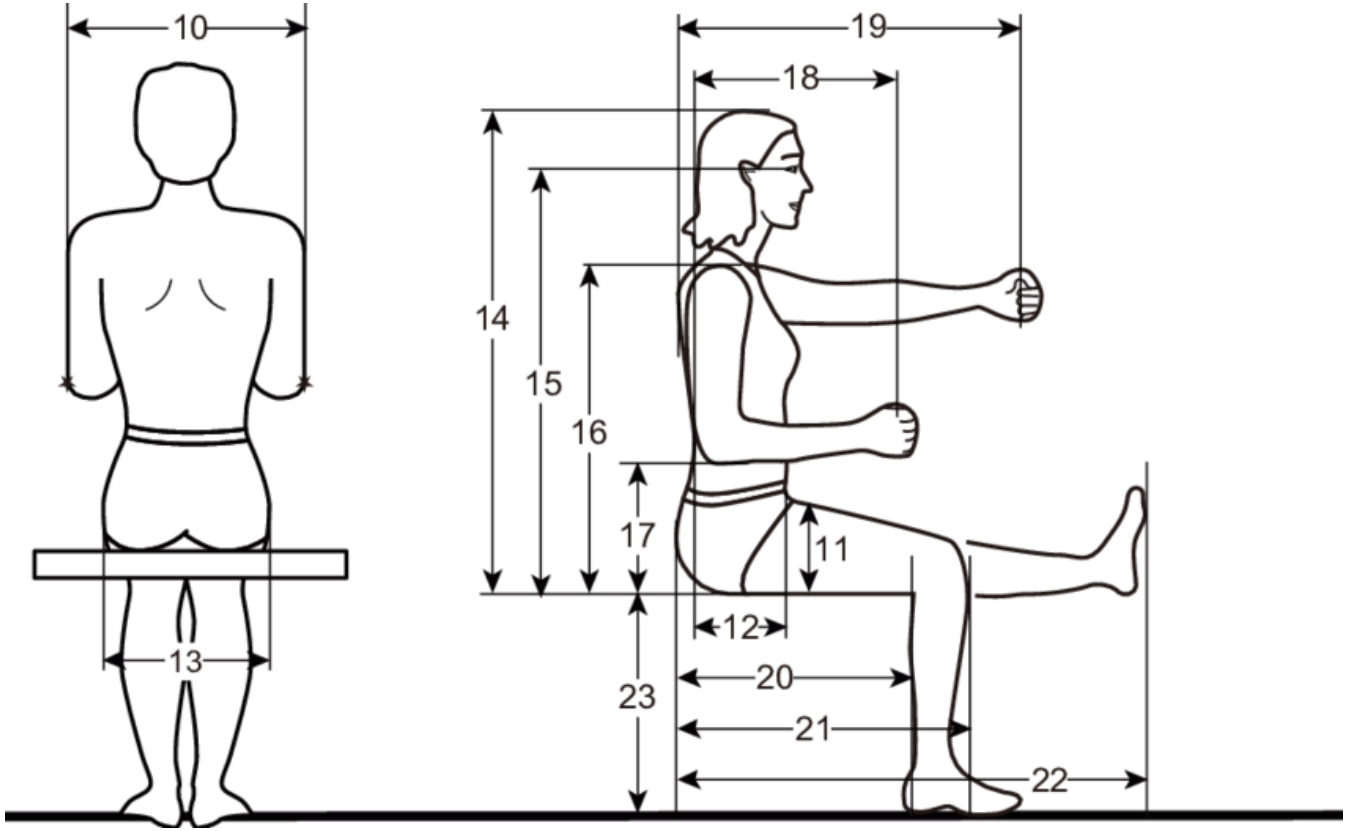
Accessible Design

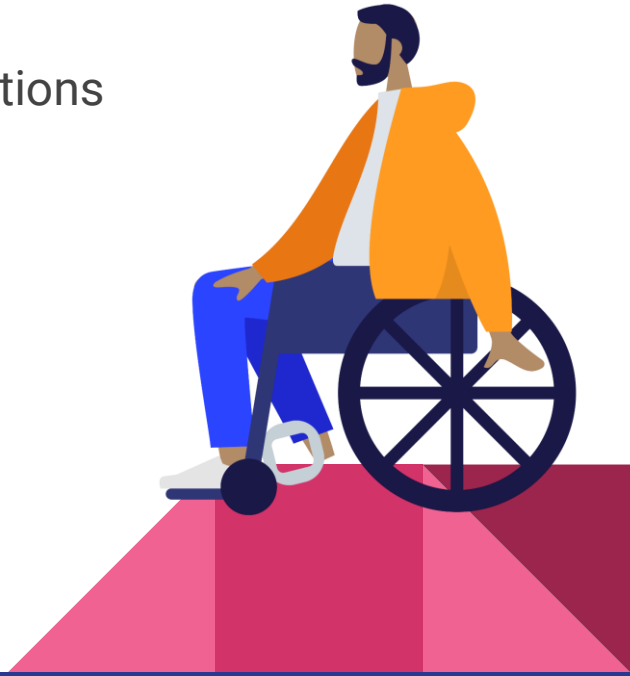
Anastasia Schaadhardt
INFO 200



What happens we design for the “average” person?

Spectrum of ability

- People have varying degrees of ability in different areas--vision, hearing, mobility, cognitive, etc.
- Degree of ability can change due to temporary conditions
- Degree of ability often changes over time



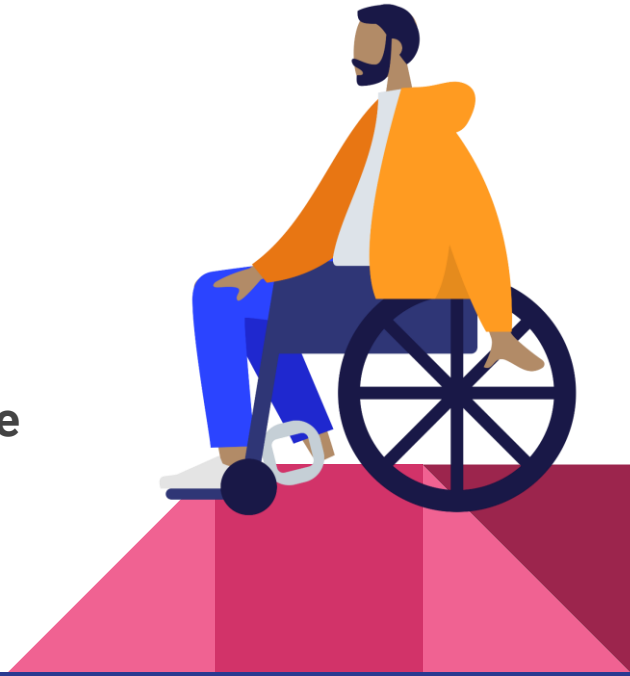
If you design without accounting for variation in ability, your design will fail

Designs that account for all abilities are called **accessible designs**

What is Disability?

Definitions of Disability

- Usually we consider someone disabled if they have a **long-term or permanent impairment** of an ability
- Some people fit this definition but do not identify as disabled
- The Americans with Disabilities Act (ADA) defines a person with a disability as:
    - Someone who has a physical or mental impairment that **substantially limits one or more major life activities**



Definitions of Disability

- United Nations Convention on the Rights of Persons with Disabilities:
  - “Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which **in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others**.”
  - In other words, a society and environment built for non-disabled people prevents them from participating in society as equals
- So, how do we overcome these barriers?

Models of Disability

Medical Model

- Focuses on lack of “normal” function
- Solutions involve “restoring” function through medical interventions and cures
- The onus is on the disabled person to adapt to a society built for “normal,” abled people

Social Model

- Focuses on inaccessible environments and ableist society
- Solutions involve changing the environment to be accessible and inclusive
- The onus is on society to remove access barriers and adapt to varying abilities

Bio-psycho-social Model of Functioning, Disability and Health

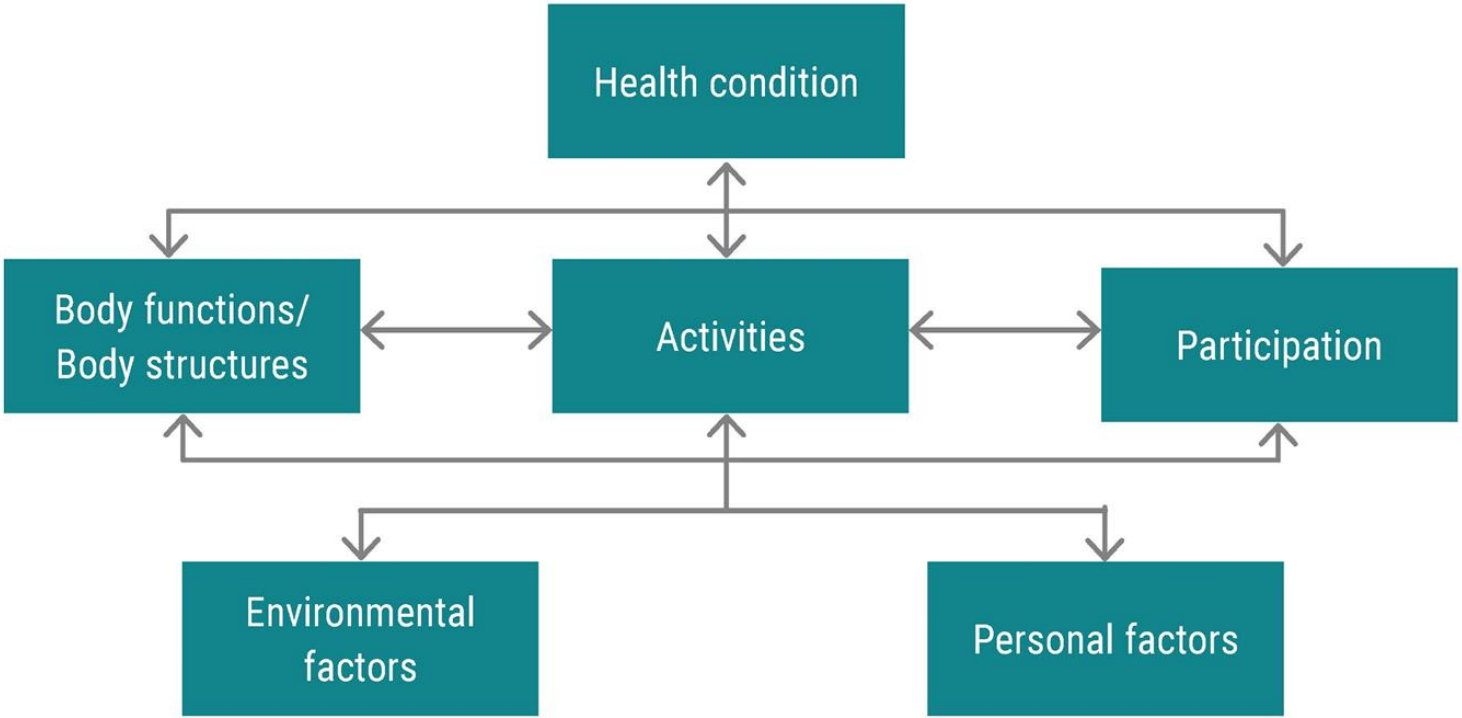


Figure 1: Bio-psycho-social model of the International Classification of Functioning, Disability and Health (ICF)

Prevalence of Disability

- 15% of the global population (WHO, 2011)
- US Census Bureau/Social Security (2014):
  - 27% have non-severe disability
  - 17.6% have severe disability

(Some) Types of Disability

- Vision
  - Blindness
  - Low vision
  - Colorblindness
- Hearing
  - d/Deafness
  - Hard of hearing
- Speech
  - Ability to speak
  - Speech impediments
- Mobility
  - Function of limbs
  - Spinal cord injury
  - Dexterity
- Cognitive
  - Learning disabilities
  - Dyslexia, dysgraphia, dyscalculia
  - ADHD
  - Memory loss
- Psychological
  - Mental illnesses
- Invisible
  - Chronic pain
  - Chronic fatigue
  - Epilepsy
  - Severe allergies

Universal Design

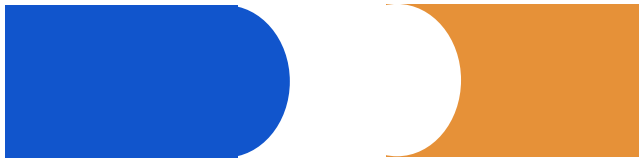
Universal Design

- Designing products to be usable by as many people as possible, not just the “average” user
- Examples:
  - Curb cuts
  - Automatic doors

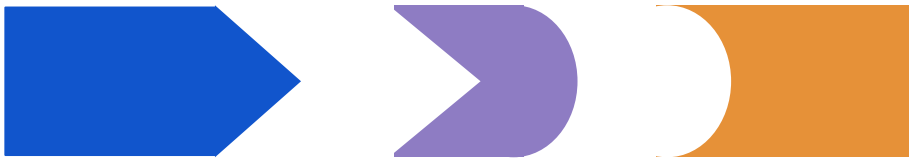

CUT THE CURBS
Build A BETTER WAY
WALK of SHAME

Ability-Based Design

a)



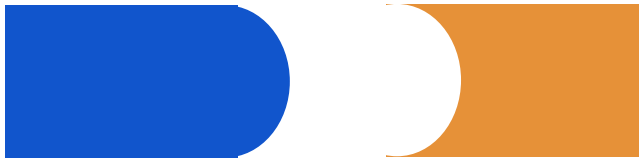
b)



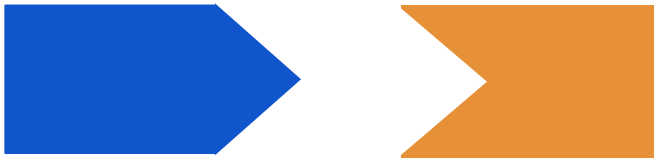
Wobbrock, Kane, Gajos, Harada, & Froehlich 2011

Ability-Based Design

a)



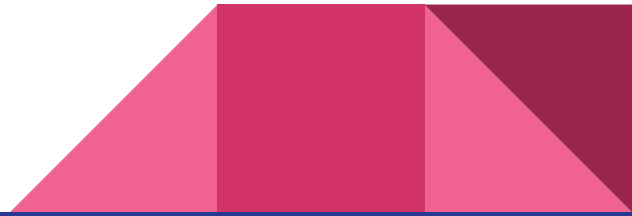
b)



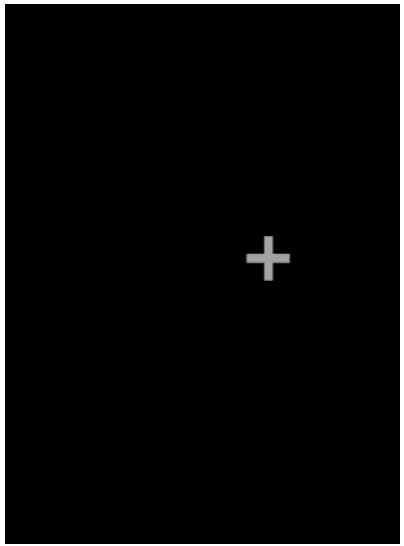
Wobbrock, Kane, Gajos, Harada, & Froehlich 2011

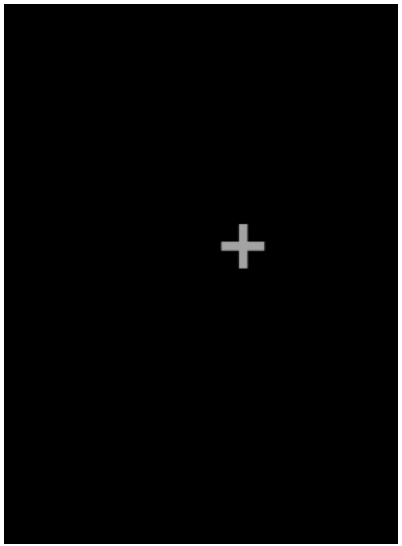
Ability-Based Design

- Systems should be more aware of the user's situation, context, and environment
- Systems should be designed for the users' current abilities ("come as you are")
- Many ABD solutions involve interface customizability and methods of determining the user's context/abilities



SmartTouch (Mott et al. 2016)





- Touchscreens assume users can tap a target with one finger in a clean landing + lift
- SmartTouch observes the user's touch patterns, and resolves their touch targets based off these observations

https://www.washington.edu/boundless/ischool-accessibility/

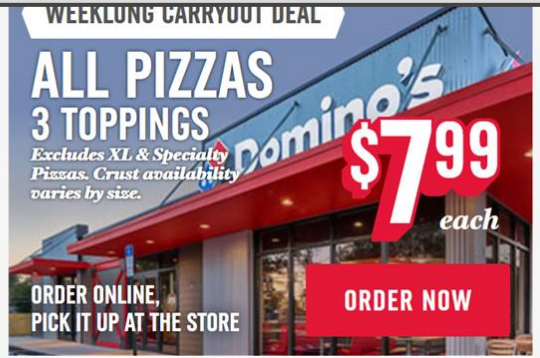
http://faculty.washington.edu/wobbrock/pubs/chi-16.01.pdf

Challenge: What if anyone, anywhere, at any time, could interact with technologies that are ideally suited to their specific abilities?

ORDER ONLINE MENU COUPONS TRACKER PIZZA PROFILE VIEW YOUR LOCAL DOMINO'S SIGN IN & EARN REWARDS

START YOUR ORDER DELIVERY or CARRYOUT

If you are using a screen reader and are having problems using this website, please call 800-252-4031 for assistance.



Why don’t more companies embrace accessible design?

Some perceive accessible design to be:

- Too hard
- Too expensive
- Not a large enough percentage of customers (therefore, not worth the time, effort, and cost)
- Only about ADA compliance
- A “favor” for disabled people

Major companies are becoming more dedicated to accessibility

- Microsoft has a Chief Accessibility Officer and is leading in many accessibility innovations
- Adobe, Facebook, Google, and Apple all have accessibility teams and initiatives
- They all need more designers and engineers who understand accessibility

Design Fluent Design System Inclusive Design Careers Articles

https://www.microsoft.com/design/inclusive/

Inclusive Design

Inclusive Design is a methodology, born out of digital environments, that enables and draws on the full range of human diversity. Most importantly, this means including and learning from people with a range of perspectives.

Getting Started

Accessibility should not be an afterthought; it should be part of your design!

Embrace existing recommendations and learn more:

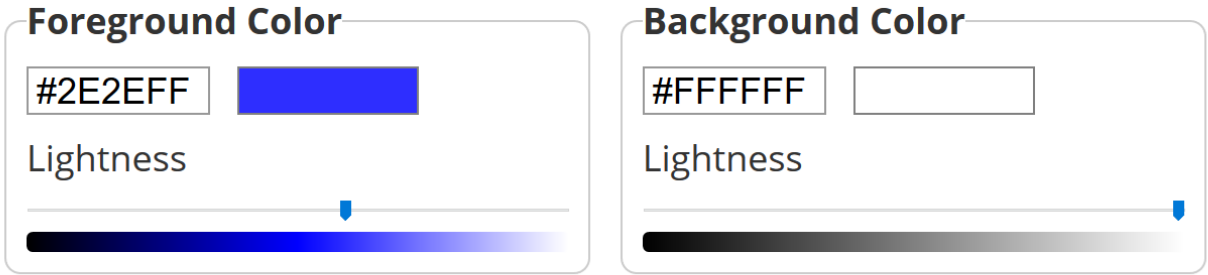
UW IT Accessibility Guidelines**
https://www.washington.edu/accessibility/checklist/

W3C Web Accessibility
https://www.w3.org/standards/webdesign/accessibility

Web Content Accessibility Guidelines (WCAG)
https://www.w3.org/TR/2018/REC-WCAG21-20180605/

Contrast Checker

Home > Resources > Contrast Checker



Contrast Ratio

7.11:1

permalink

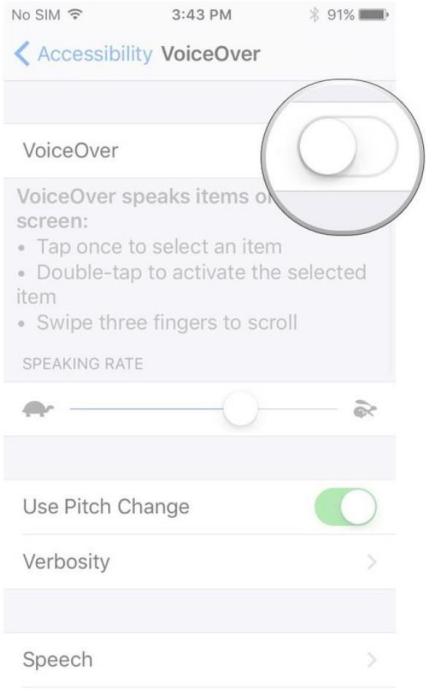
https://webaim.org/resources/contrastchecker/

Experiencing Screen Readers

- A screen reader reads what is on the screen to the user, who navigates by gestures (phone) or on the keyboard (computer)
- What kinds of screen readers are there?
  - PC: JAWS, NVDA, Windows Narrator
  - iOS: VoiceOver
  - Android: TalkBack

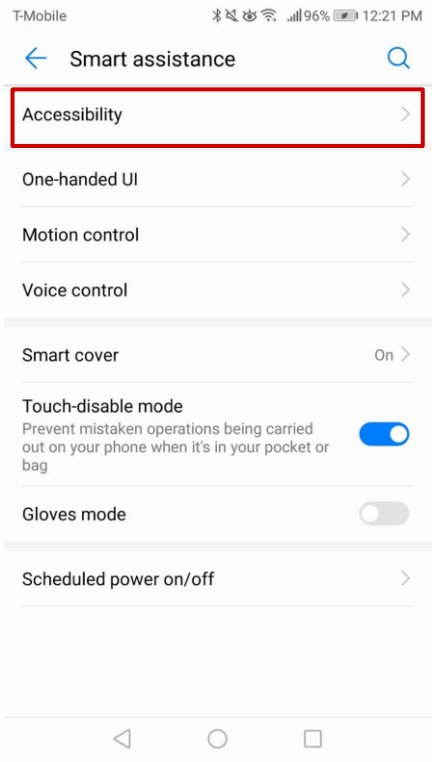
iOS

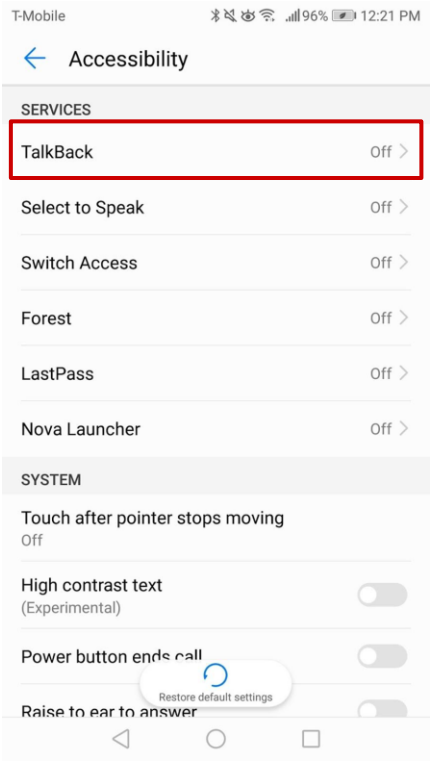
- Go to Settings > Accessibility > VoiceOver
- OR triple-click the side button (iPhone X and later) or triple-click the home button (other models)



Android

- Go to Settings > Accessibility > TalkBack
- OR press both volume keys for 3 seconds





Familiarize Yourself with Gestures

Common
Tap/Tap-Drag: describes/reads what's under your finger
Double-Tap: what single-tap normally does (select/activate)

iOS (https://www.apple.com/accessibility/iphone/vision/)
Two-Finger Swipe Down: read all
Three-Finger Swipe Up/Down: scroll

Android (http://www.apps4android.org/?p=4147)
Swipe Right-then-Left: scroll forward
Swipe Left-then-Right: scroll back

With your eyes open...

(and VoiceOver or TalkBack on)

- Open a web browser and navigate to a favorite web page
- Experiment with reading the page and scrolling up or down
- Try selecting a photo--what happens? Did you get useful information about the photo?

Now close your eyes

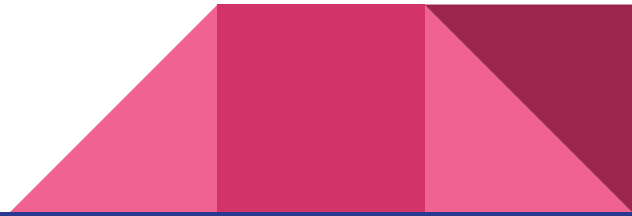
- Go to your home screen
- Start your favorite social media app and try reading your feed

Keep your eyes closed

- Go to your home screen
- Start your email app
- Try sending yourself an email

Participation

Write a short paragraph describing your experience using a screen reader.



Final Thoughts

- Look up YouTubers like **Jessica Kellgren-Fozard** and **Molly Burke**
- Look up disability rights activists like **Alice Wong** (Disability Visibility podcast) and **Imani Barbarin**
- Watch **Crip Camp** on Netflix!