

January 31, 2019
Improving Indoor Environments for Older Adults



ENGR110/210

Perspectives in Assistive Technology



David L. Jaffe, MS
Instructor

13
Years

Questions?



Classic Rock Favorites

- 3 - Fleetwood Mac
- 2 - AC/DC
- 2 - Nirvana
- 2 - Pink Floyd
- 1 - Beatles
- 1 - Bon Jovi
- 1 - Eric Clapton
- 1 - Journey
- 1 - Queen
- 1 - Tom Petty



Attendance Sheet, Evaluation Form, and Meet with Dave Signup



For all students:

- Attendance Sheet
- Meet with Dave signup

For everyone:

- Class Session Evaluation Form



ENGR110210 Enrolled Student Attendance List
January 10, 2017

ENROLLMENT	Name of Enrolled Student	ENROLLMENT	Name of Enrolled Student
10001	Adams, Justin Alexander	10001	Adams, Justin Alexander
10002	Adams, Peter Alexander	10002	Adams, Peter Alexander
10003	Adams, Peter Alexander	10003	Adams, Peter Alexander
10004	Adams, Peter Alexander	10004	Adams, Peter Alexander
10005	Adams, Peter Alexander	10005	Adams, Peter Alexander
10006	Adams, Peter Alexander	10006	Adams, Peter Alexander
10007	Adams, Peter Alexander	10007	Adams, Peter Alexander
10008	Adams, Peter Alexander	10008	Adams, Peter Alexander
10009	Adams, Peter Alexander	10009	Adams, Peter Alexander
10010	Adams, Peter Alexander	10010	Adams, Peter Alexander
10011	Adams, Peter Alexander	10011	Adams, Peter Alexander
10012	Adams, Peter Alexander	10012	Adams, Peter Alexander
10013	Adams, Peter Alexander	10013	Adams, Peter Alexander
10014	Adams, Peter Alexander	10014	Adams, Peter Alexander
10015	Adams, Peter Alexander	10015	Adams, Peter Alexander
10016	Adams, Peter Alexander	10016	Adams, Peter Alexander
10017	Adams, Peter Alexander	10017	Adams, Peter Alexander
10018	Adams, Peter Alexander	10018	Adams, Peter Alexander
10019	Adams, Peter Alexander	10019	Adams, Peter Alexander
10020	Adams, Peter Alexander	10020	Adams, Peter Alexander
10021	Adams, Peter Alexander	10021	Adams, Peter Alexander
10022	Adams, Peter Alexander	10022	Adams, Peter Alexander
10023	Adams, Peter Alexander	10023	Adams, Peter Alexander
10024	Adams, Peter Alexander	10024	Adams, Peter Alexander
10025	Adams, Peter Alexander	10025	Adams, Peter Alexander
10026	Adams, Peter Alexander	10026	Adams, Peter Alexander
10027	Adams, Peter Alexander	10027	Adams, Peter Alexander
10028	Adams, Peter Alexander	10028	Adams, Peter Alexander
10029	Adams, Peter Alexander	10029	Adams, Peter Alexander
10030	Adams, Peter Alexander	10030	Adams, Peter Alexander
10031	Adams, Peter Alexander	10031	Adams, Peter Alexander
10032	Adams, Peter Alexander	10032	Adams, Peter Alexander
10033	Adams, Peter Alexander	10033	Adams, Peter Alexander
10034	Adams, Peter Alexander	10034	Adams, Peter Alexander
10035	Adams, Peter Alexander	10035	Adams, Peter Alexander
10036	Adams, Peter Alexander	10036	Adams, Peter Alexander
10037	Adams, Peter Alexander	10037	Adams, Peter Alexander
10038	Adams, Peter Alexander	10038	Adams, Peter Alexander
10039	Adams, Peter Alexander	10039	Adams, Peter Alexander
10040	Adams, Peter Alexander	10040	Adams, Peter Alexander
10041	Adams, Peter Alexander	10041	Adams, Peter Alexander
10042	Adams, Peter Alexander	10042	Adams, Peter Alexander
10043	Adams, Peter Alexander	10043	Adams, Peter Alexander
10044	Adams, Peter Alexander	10044	Adams, Peter Alexander
10045	Adams, Peter Alexander	10045	Adams, Peter Alexander
10046	Adams, Peter Alexander	10046	Adams, Peter Alexander
10047	Adams, Peter Alexander	10047	Adams, Peter Alexander
10048	Adams, Peter Alexander	10048	Adams, Peter Alexander
10049	Adams, Peter Alexander	10049	Adams, Peter Alexander
10050	Adams, Peter Alexander	10050	Adams, Peter Alexander
10051	Adams, Peter Alexander	10051	Adams, Peter Alexander
10052	Adams, Peter Alexander	10052	Adams, Peter Alexander
10053	Adams, Peter Alexander	10053	Adams, Peter Alexander
10054	Adams, Peter Alexander	10054	Adams, Peter Alexander
10055	Adams, Peter Alexander	10055	Adams, Peter Alexander
10056	Adams, Peter Alexander	10056	Adams, Peter Alexander
10057	Adams, Peter Alexander	10057	Adams, Peter Alexander
10058	Adams, Peter Alexander	10058	Adams, Peter Alexander
10059	Adams, Peter Alexander	10059	Adams, Peter Alexander
10060	Adams, Peter Alexander	10060	Adams, Peter Alexander
10061	Adams, Peter Alexander	10061	Adams, Peter Alexander
10062	Adams, Peter Alexander	10062	Adams, Peter Alexander
10063	Adams, Peter Alexander	10063	Adams, Peter Alexander
10064	Adams, Peter Alexander	10064	Adams, Peter Alexander
10065	Adams, Peter Alexander	10065	Adams, Peter Alexander
10066	Adams, Peter Alexander	10066	Adams, Peter Alexander
10067	Adams, Peter Alexander	10067	Adams, Peter Alexander
10068	Adams, Peter Alexander	10068	Adams, Peter Alexander
10069	Adams, Peter Alexander	10069	Adams, Peter Alexander
10070	Adams, Peter Alexander	10070	Adams, Peter Alexander
10071	Adams, Peter Alexander	10071	Adams, Peter Alexander
10072	Adams, Peter Alexander	10072	Adams, Peter Alexander
10073	Adams, Peter Alexander	10073	Adams, Peter Alexander
10074	Adams, Peter Alexander	10074	Adams, Peter Alexander
10075	Adams, Peter Alexander	10075	Adams, Peter Alexander
10076	Adams, Peter Alexander	10076	Adams, Peter Alexander
10077	Adams, Peter Alexander	10077	Adams, Peter Alexander
10078	Adams, Peter Alexander	10078	Adams, Peter Alexander
10079	Adams, Peter Alexander	10079	Adams, Peter Alexander
10080	Adams, Peter Alexander	10080	Adams, Peter Alexander
10081	Adams, Peter Alexander	10081	Adams, Peter Alexander
10082	Adams, Peter Alexander	10082	Adams, Peter Alexander
10083	Adams, Peter Alexander	10083	Adams, Peter Alexander
10084	Adams, Peter Alexander	10084	Adams, Peter Alexander
10085	Adams, Peter Alexander	10085	Adams, Peter Alexander
10086	Adams, Peter Alexander	10086	Adams, Peter Alexander
10087	Adams, Peter Alexander	10087	Adams, Peter Alexander
10088	Adams, Peter Alexander	10088	Adams, Peter Alexander
10089	Adams, Peter Alexander	10089	Adams, Peter Alexander
10090	Adams, Peter Alexander	10090	Adams, Peter Alexander
10091	Adams, Peter Alexander	10091	Adams, Peter Alexander
10092	Adams, Peter Alexander	10092	Adams, Peter Alexander
10093	Adams, Peter Alexander	10093	Adams, Peter Alexander
10094	Adams, Peter Alexander	10094	Adams, Peter Alexander
10095	Adams, Peter Alexander	10095	Adams, Peter Alexander
10096	Adams, Peter Alexander	10096	Adams, Peter Alexander
10097	Adams, Peter Alexander	10097	Adams, Peter Alexander
10098	Adams, Peter Alexander	10098	Adams, Peter Alexander
10099	Adams, Peter Alexander	10099	Adams, Peter Alexander
10100	Adams, Peter Alexander	10100	Adams, Peter Alexander

Sign Up to Meet with Dave

Before class outside Thornton 110
After class in Thornton 110
Other times in Peterson Building, Room 113

Date & Time	Enter Your Name & Specify 15 minute time block
Wednesday - January 18 th Morning - 8:30am - 11:30am	
Afternoon - 1:00pm - 4:30pm	
Thursday - January 19 th Morning - 8:30am - 11:30am	
Afternoon - 1pm - 3:30pm	
Before class - 5:45pm - outside classroom	
After class - 8pm	
Friday - January 20 th Morning - 8:30am - 11:30am	

Perspectives in Assistive Technology - 2017
Class Session Evaluation Form

Use a pen with a legible font!

Lecture 01a: Course Overview & Introduction to Assistive Technology - David L. Jaffe, MS

Are you an enrolled student? - Yes - No

The purpose of the questionnaire is to help the teaching team assess today's class session. Please rate the following issues:

Speaker's overall presentation: speaking volume, understandability, ease of following concepts and arguments, clarity of explanations, quality of PowerPoint slides, use of supporting media (videos) and presentation aids (blackboard/whiteboard), stage presence, knowledge of topic, preparedness, presentation structure, organization, pace and management of allotted time, opportunity for questioning and class engagement, provided good examples, concepts, and demonstrations
 Presentation content: topic relevant, relevance to the broad scope of assistive technology, presentation of new information, appropriate level of detail and technical content, overall value of presented material

Submit your comments, questions, and suggestions, especially if you found portions of the lecture to be particularly good or bad. Supply your name if you want a response and use the back of this form if you need more room.

What one item did you hear, see, or learn that was new, surprising, interesting, or provided a new perspective?

How much did you learn from today's lecture? - A great deal - a bit - a moderate amount - a little - nothing

What is your stress level today? - low - medium - high

How is your stress level trending? - downward - steady - upward

Passengers' Signup for Field Trip to VA



Passenger Signup Sheet
VA Palo Alto Health Care System
Thursday, February 7th
Departure Point and Time: Littlefield Center @ 4:30pm

Driver's name, cell & email:	Dave Jaffe	650/892-4464	davejaffe@stanford.edu
Car make, model, color:	Black Honda Civic Si		
Passengers:	1. Name: _____	Cell: _____	
	2. Name: _____	Cell: _____	
	3. Name: _____	Cell: _____	

Driver's name, cell & email:	_____		
Car make, model, color:	_____		
Passengers:	1. Name: _____	Cell: _____	
	2. Name: _____	Cell: _____	
	3. Name: _____	Cell: _____	
	4. Name: _____	Cell: _____	

Driver's name, cell & email:	_____		
Car make, model, color:	_____		
Passengers:	1. Name: _____	Cell: _____	
	2. Name: _____	Cell: _____	
	3. Name: _____	Cell: _____	

- ▶ Please sign up with a car pool driver. Unless otherwise arranged, the departure point from Stanford is the Littlefield Center.
- ▶ Let me know if you are biking, a solo driver, or driving with specific classmates so I can send you a map and directions.
- ▶ Please make your best effort to arrive at the pick-up point on time.

Pickup at Littlefield Center



Prosthetics Question



- **Question:** "How are low-income amputees who don't have healthcare insurance able to obtain prosthetic devices?"
- **Gary's Answer:** "In California, low-income families qualify for Medi-Cal and 2 years after their disability they also qualify for Medicare. However, if they have undocumented immigration status or have not contributed to Medicare, they may not qualify for any system support. In that case, we have to work with them to figure out a cash price that guarantees they get something. Most folks however will be able to get Medi-Cal assistance. The California Department of Vocational Rehabilitation will sometimes assist as well."

Suggested Outline for Mid-term Presentation



- Introduction of team and its members
- Brief abstract
- Statement of problem
- Magnitude of problem addressed by this project
- Discussion of interviews with those who suggested the project and potential users
- Statement of specific challenge
- Identification of existing solutions and discussion of their limitations
- Description of brainstormed design concepts
- Analysis of considered design alternatives
- Description of top selected design concepts, including their technical feasibility, engineering difficulty, estimated cost, user acceptance, safety considerations, etc
- Design visualizations: photographs, videos, sketches, drawings, models, and prototypes
- Future work and challenges for continuing the project toward fabrication and testing with users
- **SEVEN MINUTE Presentations**

Presentation Considerations & Suggestions



- Project status - what has been done, what remains
 - Problems encountered, resolved, and pending
 - Plans for the remainder of the quarter
-
- Due to the limited class time for presentations, there will be no opportunity for teams to field questions.

Judging Your Presentation



Your team will be judged on the overall quality of the presentation, the effectiveness of your design process, and your progress toward a design solution using the following metrics:

- Delivery: (How the team presented) - professionalism, enthusiasm, conviction, confidence, energy, volume
- Process: (How the team addressed the problem) - problem information, background research, design concepts brainstormed & prototyped, testing & evaluation
- Presentation: (What the team presented) - clarity, organization, and completeness of the information presented
- Design: (What the team produced) - creativity, originality, functionality of the design concept and the likelihood it will meet the user's needs
- Overall: (Overall score) - combined impression of presentation and project effort

Important Considerations



Most important - **practice your presentation** to maximize the quality of its content, clarity, conciseness, completeness, understanding of your design decisions, creativity, pacing, and timing.

PowerPoint Presentations:

- Send me your PowerPoint file or link to Google Docs
- Upload any videos to YouTube & include link on the slide
- Do not embed videos in your slides
- The length of your presentation is **SEVEN MINUTES**

Work with Diligence

- ▶ Time is your team's most precious resource
- ▶ 5 weeks of class left to work on your projects
- ▶ Mid-term team presentations in 2 weeks
- ▶ Outline presentation & report



VA Palo Alto Health Care System



The **VA Palo Alto Health Care System** (VAPAHCS) is a United States Department of Veterans Affairs healthcare group which consists of **three inpatient facilities** (VA Palo Alto Hospital, Menlo Park VA Hospital, and Livermore VA Hospital), plus **seven outpatient clinics** in San Jose, Capitola, Monterey, Stockton, Modesto, Sonoma, and Fremont.



VAPAHCS is a teaching hospital associated with the **Stanford University School of Medicine**. It provides patient care services as well as education and research. Health care is provided in areas of medicine, surgery, psychiatry, rehabilitation, neurology, oncology, dentistry, geriatrics, and extended care. **1,300** University residents, interns, and students are trained annually.

VAPAHCS operates nearly **900 beds**, including **three nursing homes** and a **100-bed homeless domiciliary** serving more than 85,000 enrolled veterans.

VAPAHCS is home to a variety of regional treatment centers, including a Polytrauma Rehabilitation Center, **Spinal Cord Injury Center**, a Comprehensive Rehabilitation Center, a Traumatic Brain Injury Center, the **Western Blind Rehabilitation Center**, a Geriatric Research Educational and Clinical Center, a Homeless Veterans Rehabilitation program, and the National Center for Post-Traumatic Stress Disorder (PTSD).

VAPAHCS maintains the **third largest research program** in the VA with extensive research centers in geriatrics, mental health, Alzheimer's disease, spinal cord regeneration, schizophrenia, **Rehabilitation Research and Development Center**, HIV research, and a Health Economics Resource Center.

Photos from last year































Pre-Lecture Discussion Topics



- 22 - Ethical / Moral Dilemmas Related to Disability
- 22 - In the News - New Assistive Technology products and research
- 20 - Assistive Robotics - Robotic technology benefitting people with disabilities and older adults
- 15 - **Overview of Accessibility - How this design feature relates to products, with many examples**
- 15 - Ten Commandments of Making - Adam Savage's Maker Faire video
- 15 - Video Theatre - Watch and discuss videos of new products and prototypes
- 12 - Vintage Assistive Technology - Products and devices from the past
- 12 - The Upside of Failure - Learning from prototypes that didn't work
- 12 - Who is Disabled? - Making a determination with limited information
- 12 - Innovative Marketing Metrics - How we use words to measure and advertise
- 9 - Famous people with disabilities - Focus on TV characters



Overview of Accessibility



All y

What is Accessibility?



Accessibility is a:

- ▶ Design concept
- ▶ Design specification
- ▶ Design consideration
- ▶ Design goal
- ▶ Product feature



What is Accessibility?



That enables people:

- ▶ Individuals with disabilities:
 - ▶ Sensory
 - ▶ Physical
 - ▶ Cognitive
 - ▶ Neurological
- ▶ Older adults
- ▶ Kids
- ▶ Everyone

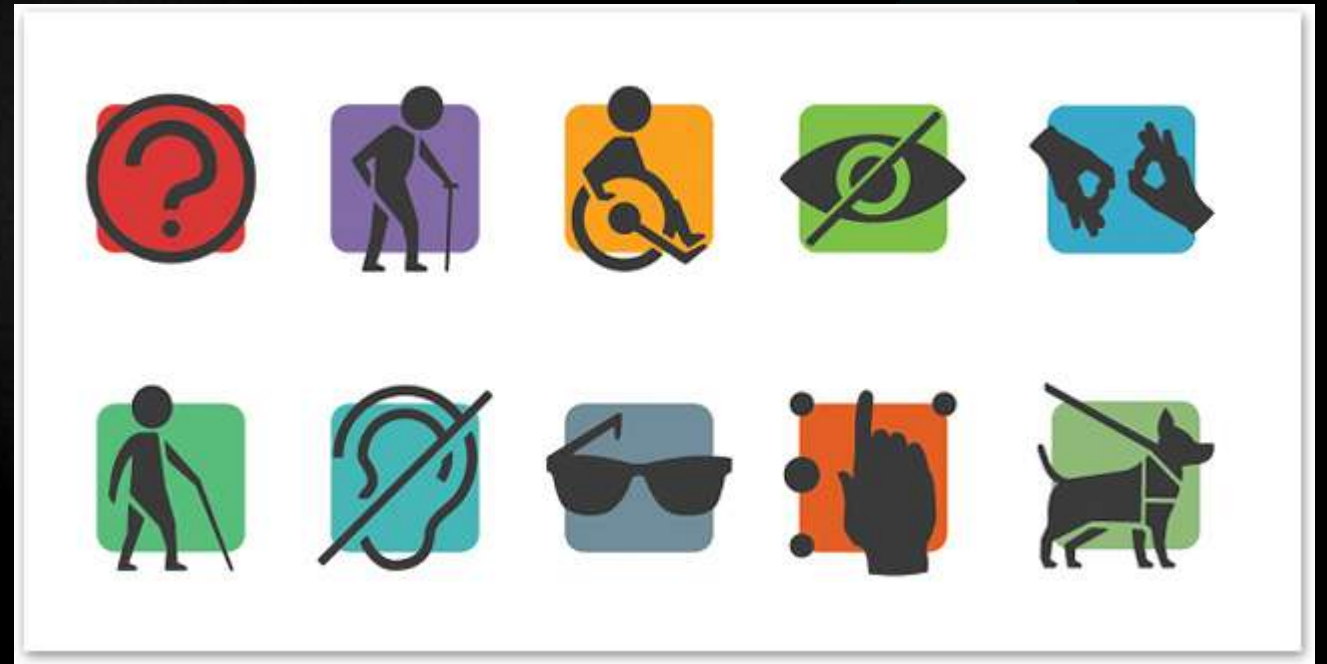


What is Accessibility?



To better interact through:

- ▶ Sight
- ▶ Sound
- ▶ Touch
- ▶ Smell
- ▶ Mobility
- ▶ Understanding
- ▶ Communication
- ▶ Manipulation
- ▶ Teaching / learning



What is Accessibility?



With the real world:

- ▶ Other people
- ▶ Infrastructure:
 - ▶ Buildings
 - ▶ Institutions
 - ▶ Transportation systems
- ▶ Products:
 - ▶ Computers
 - ▶ Internet
 - ▶ Websites
 - ▶ Household items
 - ▶ Office items

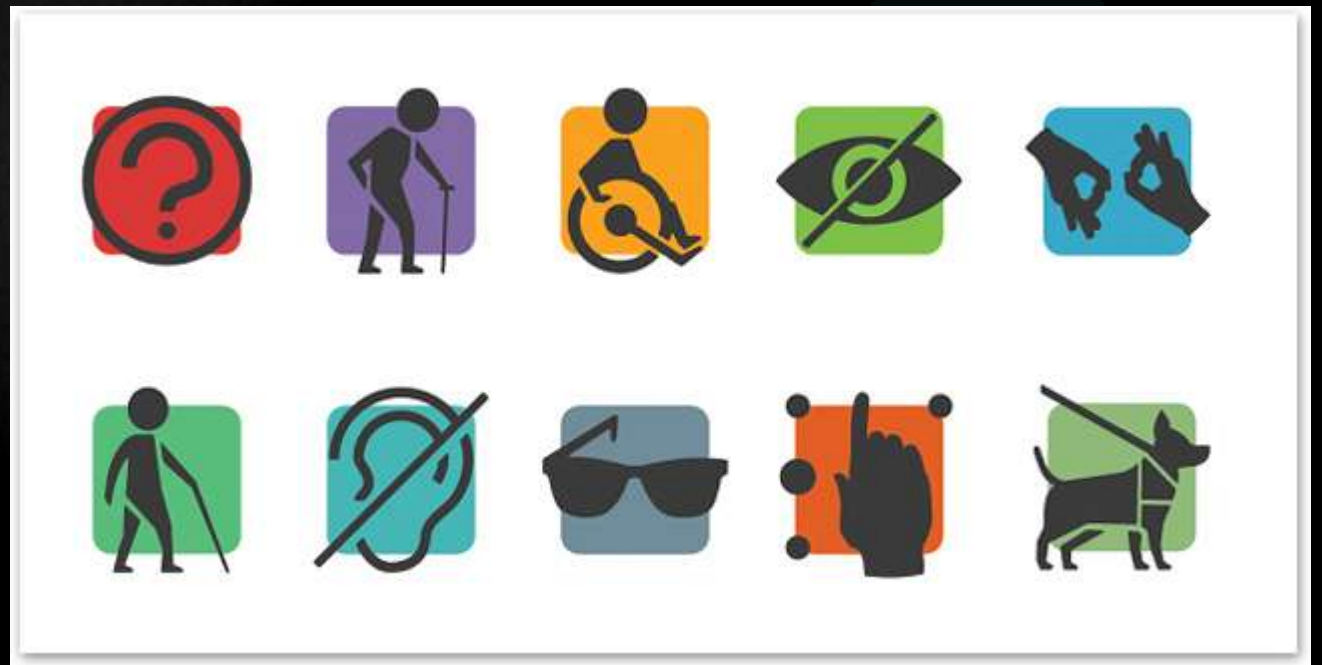


What is Accessibility?



Through an enhanced hardware and / or software user interface:

- ▶ Alternate ways
- ▶ Augmented ways
- ▶ Customized ways
- ▶ Preferred ways



What is Accessibility?

For these purposes:

- ▶ Education
- ▶ Vocation
- ▶ Recreation
- ▶ Daily living

Little Things Do Make A Difference

Little Things Do Make A Difference

Little Things Do Make A Difference

Little Things Do Make A Difference



The Goal of Accessibility



The ultimate goal of the accessibility movement is to ensure that everyone - regardless of ability or disability - has an **equal chance to participate in society**. In the face of constant technological change, this becomes more difficult but also extremely necessary. The only way to allow people with disabilities to **engage fully** in the activities that interest them is to give them access to all the possibilities open to everyone else, including those offered by twenty first century technology.

Accessible Technology in the 21st Century

- The Future

Examples of Devices that Provide Accessibility



Building Access

- ▶ Door Opener
- ▶ Ramps
- ▶ Workspaces
- ▶ Signage
- ▶ ATMs



Computer Accessibility



As the computer age continues, more and more technology is being created to make computers and the internet accessible for people of all ability levels.

For **visually impaired users**, programs offer **audio description** or **screen reading**, while **monitor settings** can be modified to make visual reading easier or **braille embossers** can be added as **alternative output devices**.



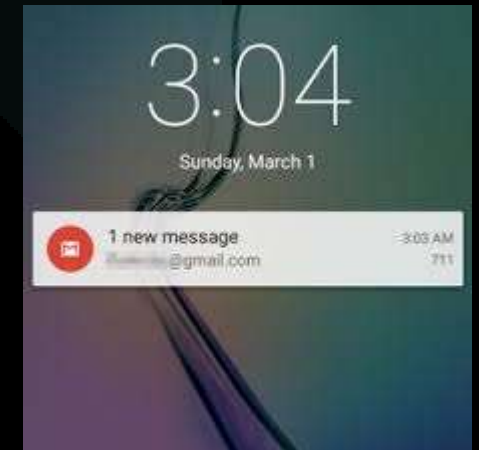
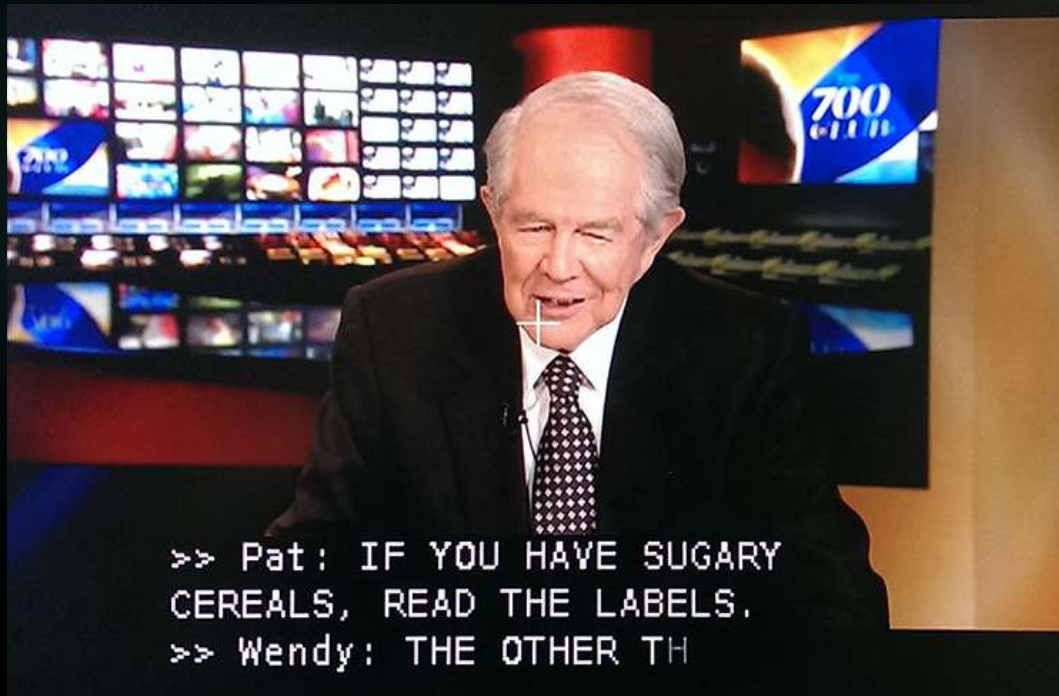
Accessible Technology in the 21st Century

- Introduction

Computer Accessibility



For individuals with hearing difficulties, **captioning** and **visual notifications** instead of sound can offer more freedom in using a computer.



Accessible Technology in the 21st Century

- Introduction

Computer Accessibility



Adaptive keyboards and mice allow **people with motor disabilities** to get their input into a computer, while **speech recognition** is an emerging type of software that allows control of a computer by voice.



Accessible Technology in the 21st Century

- Introduction

Computer Accessibility



For those with **cognitive disabilities**, programs can be set up to **read text aloud while it is displayed**.



Accessible Technology in the 21st Century

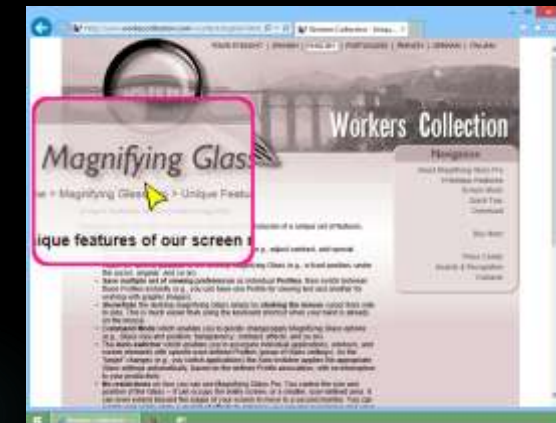
- Introduction

Examples of Devices that Provide Accessibility

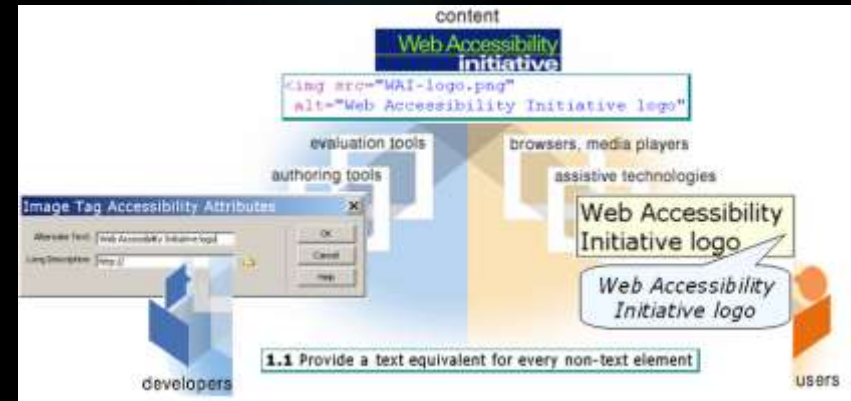


Computer Access

- ▶ Alternative Mouse
- ▶ Alternative Keyboard
- ▶ Screen Readers
- ▶ Voice Recognition
- ▶ Screen Magnifiers
- ▶ Braille Displays
- ▶ Captioned videos



Accessible Webpages



WCAG Guidelines (1 of 2)

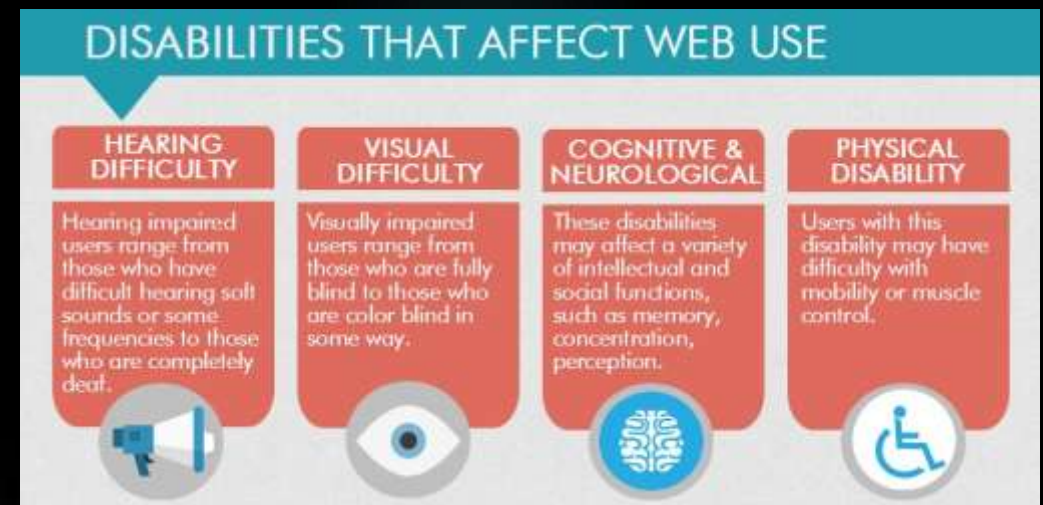
- ▶ Provide equivalent alternatives to auditory and visual content
- ▶ Don't rely on color alone
- ▶ Use markup and style sheets and do so properly
- ▶ Clarify natural language usage
- ▶ Create tables that transform gracefully
- ▶ Ensure that pages featuring new technologies transform gracefully
- ▶ Ensure user control of time-sensitive content changes



Accessible Webpages

WCAG Guidelines (2 of 2)

- ▶ Ensure direct accessibility of embedded user interfaces
- ▶ Design for device-independence
- ▶ Use interim solutions
- ▶ Use W3C technologies and guidelines
- ▶ Provide context and orientation information
- ▶ Provide clear navigation mechanisms
- ▶ Ensure that documents are clear and simple



In Summary



Accessibility is the design goal, feature, or criteria that allows people of differing abilities to **share common resources**.

In Summary



Examples of shared common resources are:

- ▶ buildings
- ▶ transportation systems
- ▶ consumer products including computers and software
- ▶ institutions such as schools, banks, government facilities, voting places
- ▶ facilities such as parks, playgrounds
- ▶ information systems such as books and the internet

In Summary

In many instances, the use of an assistive technology device can provide needed access to an otherwise inaccessible resource.



Tuesday, February 5th



Bionic Ears: Cochlear Implants and the Future of Assistive Technology

Lindsey Dolch Felt, PhD

Stanford University, Program in Writing and Rhetoric

Today



Improving Indoor Environments for Older Adults

Matteo Zallio, M.Arch, PhD

Fulbright Scholar

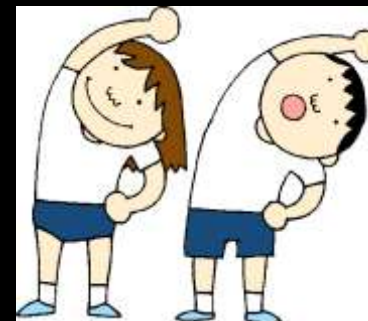
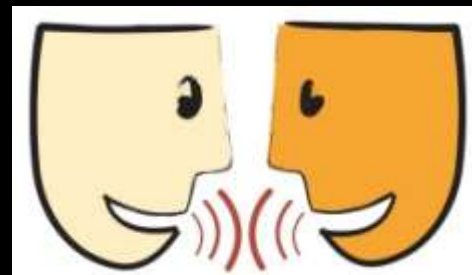
Short Break



Break Activities



- ▶ Sign attendance sheet
- ▶ Grab a cookie
- ▶ Stand up and stretch
- ▶ Take a bio-break
- ▶ Text message, web-surf, email
- ▶ Talk with classmates
- ▶ Reflect on what was presented in class



Questions?



Adjourn



class dismissed



Laptops Galore



Time for Questions?



End the class

