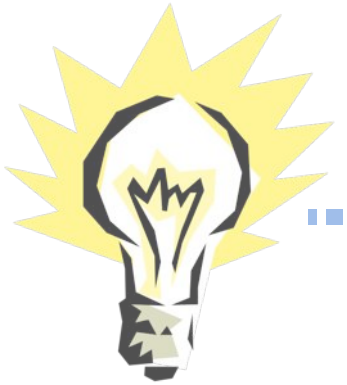
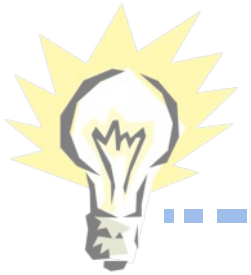


Universal Design and Assistive Technology

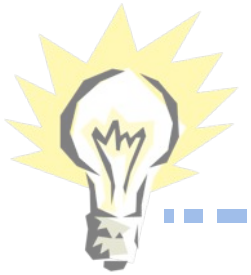
Access for All



Agenda

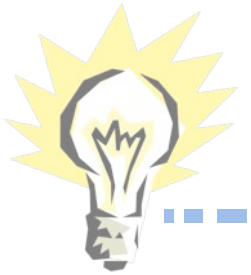
- Overview of Assistive Technology issues

- Note: See also http://sonify.psych.gatech.edu/~walkerb/classes/assisttech/index.html



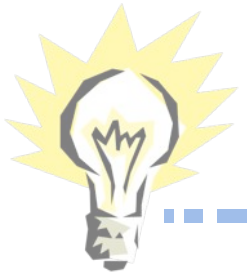
Universal Design

- Design for inclusion
- Anyone, anywhere, anyhow
- If you design for everyone, then:
  - More usable by "average" users
  - Usable (or manageable) by "non-average" users



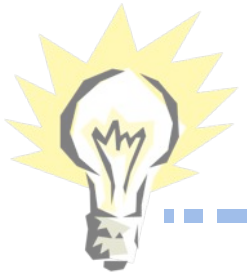
Different Environments

- "Non-average" can mean different environments, context, locations, modalities
- May require different interaction methods, rules, models



Different Users

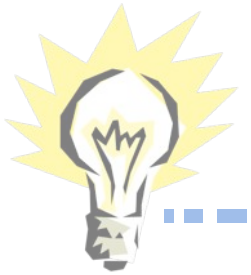
- Not just about "special" populations like those with particular physical or perceptual challenges
- Also about users not part of the original specification, new users, late adopters



Principles of Universal Design

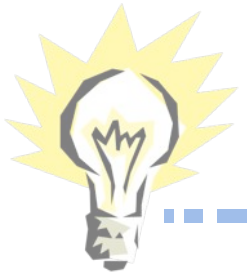
- Equitable use
- Flexibility in use
- Simple and intuitive to use
- Provide perceptible information
- Tolerance for error
- Low physical effort
- Size and space for approach and use

- Comments? Where have we seen some of these?



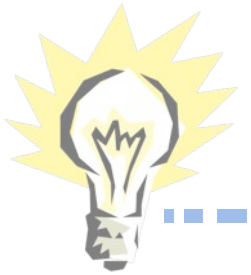
"Designing for Diversity"

- Requires really understanding the way diverse types of users interact with a system
  - (examples later)
- Imagine how your interface is "translated"
  - Different language
  - Modality (screen reader, touch, Braille)
  - Cognitive filter
  - Etc.



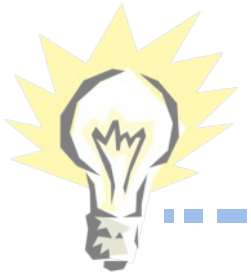
Terminology

- Ability
- Impairment
- Disability
- Handicap
- Policies, Laws, Regulations, Guidelines
- People, persons with…
- Populations vs categories of abilities



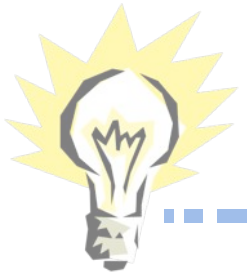
Visual Impairments

- How to deal with GUIs?
  - Keyboard vs. mouse use
- How do they know it is there?
  - "Talking Braille"
  - ATM phone jack
- Sound output
  - Screen readers, JAWS, rates, voices, quality
  - Non-speech audio
  - Equipment issues
- Math, graphs
  - Equations, graphs, tables



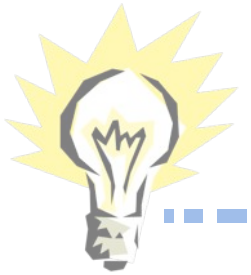
Visual Impairments, cont'd

- What about these?…
  - Equitable use
  - Flexibility in use
  - Simple and intuitive to use
  - Provide perceptible information
  - Tolerance for error
  - Low physical effort
  - Size and space for approach and use



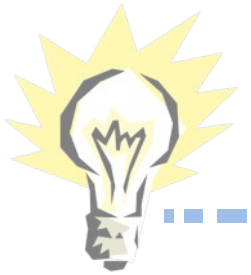
Hearing Impairment

- Does access for the blind mean no access for the deaf?
- Consider how truly multimodal interfaces can work for everyone
  - e.g., Sonification Sandbox



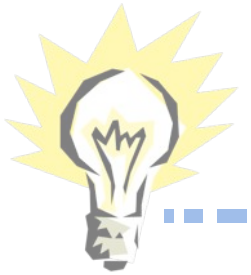
Physical Impairments

- A wide variety of "handicaps"
  - Tremor, dexterity, grip, mobility, balance, strength
- Solutions need to vary, too.
  - Eyegaze control
  - Blinks
  - Text entry like EdgeWrite
  - Brain-computer interfaces



Aging

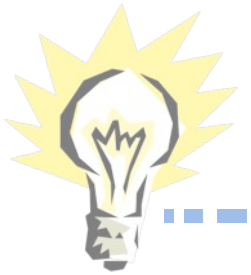
- All of the possible difficulties arise:
  - Perceptual, cognitive, motor
- There are fewer and fewer "low tech" alternatives; forcing seniors into tech
- Designers often have little experience in the realities of the older (or handicapped or deaf or…)



Resources

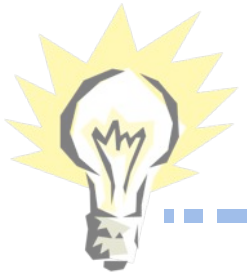
- http://sonify.psych.gatech.edu/~walkerb/classes/assisttech/index.html

- www.webaim.org
- http://www.webaim.org/info/asdvideo/asd.htm
- www.w3.org
- http://www.metroplexvoice.com/demos.htm
- http://www.catea.org/



Project Part 3

1. Implement prototype
   - Identify/complete a design
   - Justify design choice
   - Implement a prototype
     - Development platform of your choice
   - Enough so that it can adequately be evaluated in part 4
2. Develop evaluation plan
   - Usability specifications
   - What you will do in part 4



Upcoming

- Interaction Styles
- Audio
- Web