Universal Design: Inclusion and Access

HTCTU
High Tech Center Training Unit

Gaeir Dietrich ● HTCTU Director
gdietrich@htctu.net
www.htctu.net

First Case for 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.
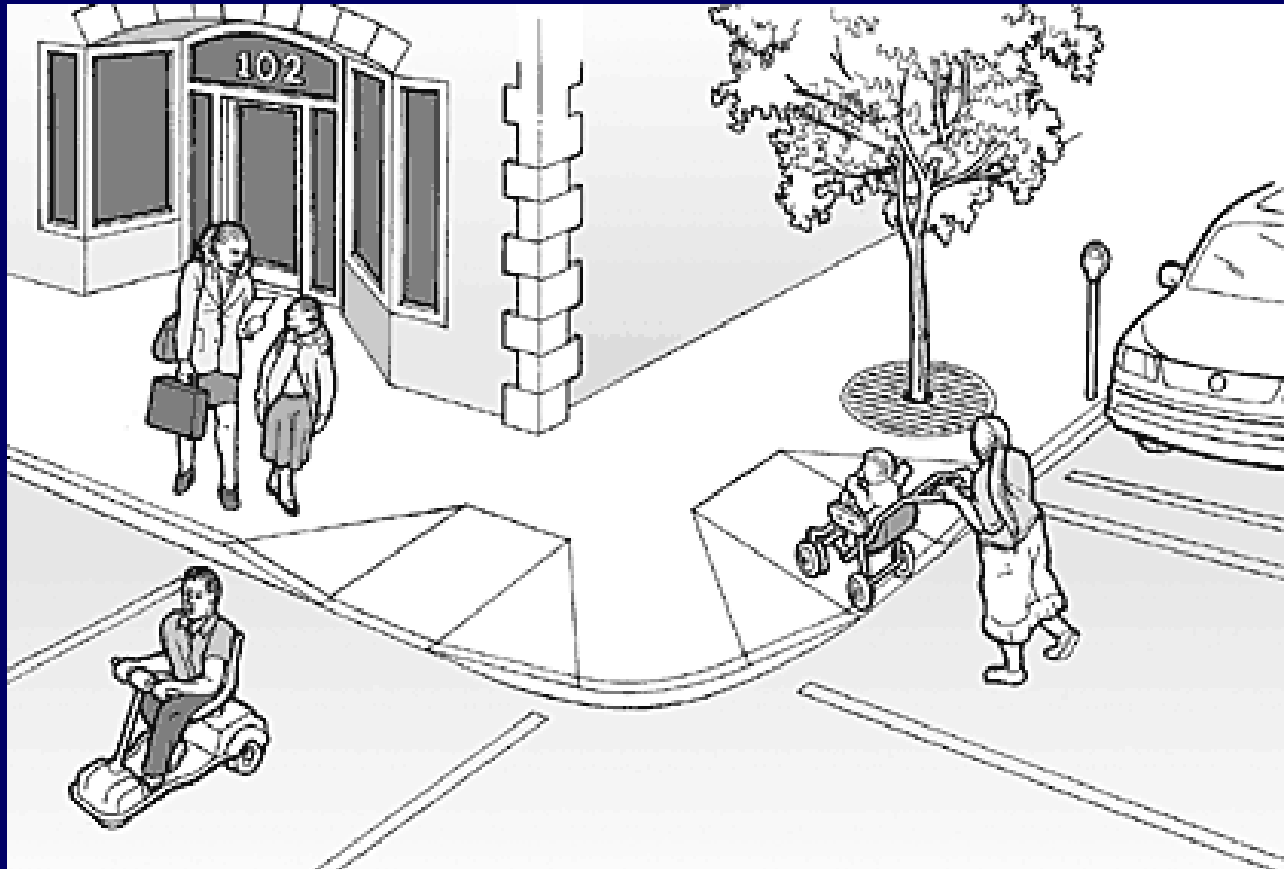 –Ron Mace (1941–1998)

  - Center for Universal Design at North Carolina State University

Design Idea

- Designing for people with special needs adds functionality for all of us!

- Design idea applies not just to physical spaces but to technology, as well!

- There are times when all of us are functionally blind or functionally deaf.
  - TV Raman

Increasing Usability!

UD Idea Expanded

- How can the principles of physical access be applied to help people learn?
- Universal Design for Learning!

- Multiply your options!
  - Multiple means of Engagement
  - Multiple means of Representation
  - Multiple means of Expression / Action

Principles of UDL

- Provide multiple means to engage learners
  - Engagement
- Present content and information in different ways
  - Representation
- Provide multiple means for students to express what they know
  - Action/Expression

The Magic

- Designing with others in mind expands your own reality
- Individuals who are differently abled
  - interact with the world differently
  - experience the world differently
  - see the world differently
- Designing for those different from ourselves expands our perspective

Expanded Perspective

- ☐ The preschooler and the four walls

- ☐ The first grader's perception of same and different

- ☐ TV Raman and the middle

Learning Styles

☐ We can have an experience of expanding our perspective by looking at how people learn!

☐ Different people prefer different modes for taking in information

■ Sometimes people always prefer a particular mode; sometimes is situational

Learning Profile[1]

- ☐ Visual
  - ■ Visual graphic
  - ■ Visual written
- ☐ Auditory
- ☐ Kinesthetic

How do you learn?

- ☐ Read each question and choose the best answer for you
- ☐ Add the columns and collate the results on the back

- ☐ We will take a few minutes to complete the learning profile

Small Group Discussion

- What did you realize from taking the learning styles profile?

- Do you see implications for how you communicate/interact with others?

- Do you recognize the learning styles of family or friends? How do their differing styles affect interaction?

Consider Some Results

- Low on Auditory
  - May be better face-to-face than over the phone
- Low on Visual Graphic
  - May struggle with charts and graphs and maps
- High on Kinesthetic
  - Learn by doing

Aha!

- ☐ Auditory wife; visual graphic husband

- ☐ Auditory father; kinesthetic son

- ☐ Visual written mother; kinesthetic son

Doing Unto Others…

- ☐ If we are high visual written
  - ■ May expect students to **read** material before the lecture/lab
- ☐ If we are high visual graphic
  - ■ May assume that **charts and graphs** will help all students
- ☐ If we are kinesthetic
  - ■ May expect to engage students in an **activity** with no written preparation

Additional Strategies?

- Lecture (auditory)
- Readings (visual written)
- Writing assignments (visual written)

- Graphic organizers (visual graphic)
- Activities (kinesthetic)

What if I'm not good at...

□ As extra credit or an activity, encourage students to come up with

- Relevant activities
- Graphic organizers
- Outlines
- Videos
- Music

UDL and Accommodations

- Legal class
  - All tests take home and open book
  - Students allowed one week
  - Writings are limited by word count—not time

Assessment

- What are you really testing?

- Are you testing students' ability to stay cool under time constraints?
- Testing their short-term memory?

- Are there "real world" parallels you could utilize?

Real World Parallels

- Legal class
  - One-week because lawyers work under some time limits
  - Open book because lawyers always have references
  - Word limit because that is what is expected in that profession
- And, this instructor is never asked for accommodations on tests!

Simple Ideas that You Can Use!

WHAT CAN YOU DO?

For Non-auditory Learners

- ☐ Speak looking directly at the person
  - ■ Allows additional visual context
- ☐ Build in pauses
  - ■ Allows processing time
- ☐ Point; use gestures; draw
  - ■ Uses visual to reinforce auditory
- ☐ Include captions
  - ■ Seeing and hearing aids in learning new vocabulary

For Non-visual Learners

- ☐ Use concrete terms
  - ■ Avoid *this, that, here, there, thing*
- ☐ Meaningless!
  - ■ "Get that thing over there."
  - ■ "You can see that…."
  - ■ "Set both factors equal to zero and solve."
- ☐ Provide e-text so that students can use text-to-speech (TTS) to hear materials read aloud

For Kinesthetic Learners

- "Walk" them through the steps
- Make sure they know where to go and what to do when they get there
- Draw on maps when giving directions
- Include "activity-based" homework and assessment when possible

Multiple Modalities

- Design so that materials can be used in whichever modality works best for the learner!
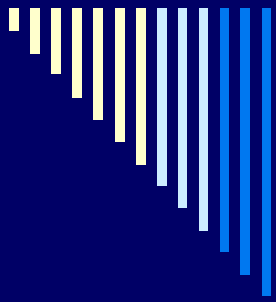
UDL AND TECHNOLOGY

Captions

- One of the BEST examples of universal design and access
- Seeing and hearing new vocabulary aids learning
  - Many studies have shown that captions aid anyone learning new vocabulary
- Transcripts can be translated and searched in multiple languages

Audio Description

- Describing actions in words
- Clearly verbalizing processes
  - Reinforces vocabulary
  - Makes steps concrete
  - Provides clarity of purpose of steps
- Teaches to all modalities

E-text

- By creating text documents, all students can…
  - Translate the text using Google translate
  - Easily highlight text, make notes, copy quotes

AND

- ☐ E-text is the basis for allowing assistive technology to interact with documents!

Technology for UDL

- Programs (Assistive Technology or AT) which some individuals with disabilities MUST have for access can aid many learners
- AT enhances interactivity of learning materials

E-text Creates Flexibility

- ☐ Can use software to have the text read aloud

- ☐ Can use software to create MP3s
  - ■ Listen on the go

- ☐ Balabolka creates MP3s for free!

Listen to Learn

- Text-to-speech (TTS) programs read aloud
  - Benefits those who are highly auditory or who have visual impairments
- Many also have "multimodal" features (visually highlights as it reads)
  - Benefits those who are auditory and visual or who have learning disabilities
  - Also benefits those with attention difficulties

AT Examples

- Kurzweil 3000
  (Kurzweil 1000 for those who are blind)
  - PC or Mac
  - www.kurzweiledu.com
- Claro Read
  - PC or Mac
  - www.claroread.com

Free TTS Options

- PC
  - Balabolka
  - Natural Reader
  - Windows Narrator
- Mac
  - Voice Over
- Both
  - Adobe Reader

High Visual

- Graphic organizer programs allow "mind-mapping" (visual graphic)
- Toggle from graphic to written (visual written) or vice versa!

AT Examples

- Inspiration
  - www.inspiration.com

- Kurzweil, R&W Gold
  - Built-in feature

Low Auditory & High Visual

- ☐ Sonocent Audio Notetaker
  - ■ "Visual" interface of what you are hearing

Low Auditory High Kinesthetic

☐ Learn to write in cursive!

- Uses large muscles; can help to take notes when listening

☐ Sonocent may also help

- Use the color-coding and organizing features to engage in "doing" while listening

Low Visual Written

- Speech recognition programs allow you to write using your voice
  - Benefits those who are highly auditory or who have learning disabilities or who cannot use the keyboard/mouse

AT Examples

- ☐ Dragon NaturallySpeaking
  - ■ PC
- ☐ Dragon Dictate
  - ■ Mac
- ☐ Built-in options on Mac & PC
  - ■ Mac: Mac Dictation
  - ■ PC: Windows Speech Recognition

In Summary

- ☐ Multiple means of Engagement
- ☐ +
- ☐ Multiple means of Representation
- ☐ +
- ☐ Multiple means of Expression / Action
- ☐ =
- ☐ Add up to teaching all students in ways that better meet individual needs!
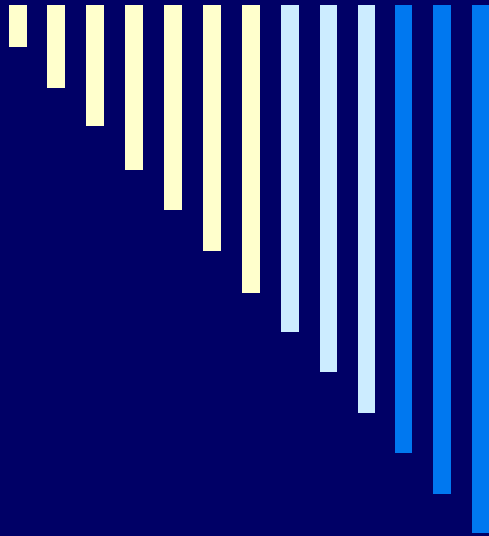
To Learn More

Sonoma State UDL

- Minimizes barriers and maximizes learning for all students
- Materials used and understood by everyone
  - Create genuine learning opportunities
  - Focus on recognition, skills and strategies, prioritizing

- http://enact.sonoma.edu/

UDL Movement

- ☐ CAST
  - ■ www.cast.org
- ☐ Natl Ctr of Universal Design for Learning
  - ■ http://www.udlcenter.org/
- ☐ Sonoma State University
  - ■ http://enact.sonoma.edu
- ☐ Colorado University Boulder
  - ■ https://assett.colorado.edu/

Accessibility

- W3C Guidelines
  - WCAG (Web Content Accessibility Guidelines) 2.0
  - http://www.w3.org/TR/WCAG20/
- DO-IT (University of Washington)
  - http://www.washington.edu/doit/
- WebAIM
  - http://webaim.org/

Accessible Digital Media

- DCMP Captioning Key
  - http://www.dcmp.org/captioningkey/
- NCAM – STEM
  - http://ncam.wgbh.org/experience_learn/educational_media/stemdx/guidelines
- WGBH – Web Media
  - http://ncam.wgbh.org/invent_build/web_multimedia/accessible-digital-media-guide/guideline-h-multimedia

One Site for Free Assistance

☐ Free programs funded by the CCCCO

☐ Sidekick

- www.toolsthatinspire.com

Questions?

- Gaeir (rhymes with "fire") Dietrich
  - gdietrich@htctu.net
  - 408-996-6047

- Time of the essence? Please contact our front office staff
  - Erika Owens
  - eowens@htctu.net
  - 408-996-4636