Universal Design for Instruction: Practical Techniques for Post-secondary Education

Bryan G. Cook
Professor, Dept. of Special Education
University of Hawaii
Objectives

Participants will

1. understand the need to universally design instruction.

2. learn the guiding principles of universal design for instruction (UDI).

3. learn specific procedures consistent with UDI.
Overview of Presentation

- Overview of UDI
- Guided Notes
- The Pause Procedure
- Graphic Organizers
- Questions, Comments, and Ideas
- Application Activity
The Need for UDI

- **Increasingly diverse** college student body
  - 40% age 25 or older
  - 31% racial/ethnic minorities
  - 34% attending college part-time
  - 20% increase in international students from 1998 to 2004

- **Students with disabilities**
  - 2.3% in 1978 to 9.8% in 1998
The Need for UDI

- **Student retention**
- Shift in pedagogy from delivering instruction to **promoting learning**
- **Barriers** include:
  - Unclear expectations
  - Textbooks inaccessible
  - **Lectures** requiring **extensive notetaking**
  - Difficulty attaining accommodations
Origins of UDI

- Buildings designed for the “average” person
  - Require retrofitting to accommodate others
- Retrofits expensive, call attention to user, solve one problem at a time
Origins of UDI

- Universal design “consider[s] … broadest possible range of users from the beginning” (Ron Mace, architect)
- Increases access for many unintended users
- Exs: Ramps, curb cuts, electric doors, captions on TV, easy grip tools
What is UDI?

“The design of instructional materials and activities that makes the learning goals achievable by individuals with wide differences in their abilities to see, hear, speak, move, read, write, understand English, attend, organize, engage, and remember”

(Council for Exceptional Children)
What is UDI?

- Simply stated, UDI is an essential element of **good teaching** to proactively meet the needs of diverse learners.
Principles of UDI (or L or E)  
(Scott, McGuire, & Shaw, 2001)

- Equitable use
- Flexibility in use
- Simple and intuitive
- Perceptible information
- Tolerance for error
- Low physical effort
- Size and space for approach and use
- A community of learners
- Instructional climate
Equitable Use

- Instruction is **identical** whenever possible, **equivalent** when not.
- Ex: All students use **pause procedure**, **guided notes**, and **graphic organizers**; not just those with disabilities/low achievers.
Flexibility in Use

- Instruction accommodates a wide range of individual abilities.
- Provide choice in methods of use.
- Ex: Use varied instructional methods
  - group activities (pause procedure)
  - hands-on activities
  - web-based discussions
Simple and Intuitive

- Instruction is **straightforward** and **predictable**.
  - Eliminate *unnecessary* complexity.

- Examples:
  - clear grading rubric
  - accurate and comprehensive syllabus
Perceptible Information

- **Necessary** information is communicated effectively.

Examples:

- reading material in digital format and/or on-line
- **graphic organizers, guided notes, pause procedure**
- repeat key terms/phrases
Tolerance for Error

- Instruction *anticipates variation* in learning pace and prerequisite skills.

- Examples:
  - provide frequent feedback
  - on-line “practice” exercises
  - pause procedure, guided notes
Low Physical Effort

- Minimize nonessential physical effort
  - does not apply when physical effort is integral to course
- Ex: Allow students to use a word processor for writing essay exams
Size and Space for Approach and Use

- Consider **appropriate size and space** for approach, reach, manipulations, and use.

- Ex: circular seating arrangement allows students to see and face speakers during discussion
A Community of Learners

- The instructional environment promotes interaction and communication

Examples:
- structure study/discussion groups, e-mail lists, chat rooms
- learn students’ names
- acknowledge excellent performance
Instructional Climate

- Instruction is **welcoming and inclusive**.
- **High expectations** for all.
- Ex:
  - highlight diverse thinkers
  - share innovative approaches developed by students
Another View of UDI’s Guiding Principles

- Multiple/alternative means of:
  - Representation
  - Engagement
  - Expression
    - Students can do an oral presentation, write a paper, or take a multiple choice test
UDI – The Research Base

- No experimental research located on the effectiveness of UDI in post-secondary environments.
- UDI is an *umbrella* or *conceptual term*
- Research does support procedures consistent with UDI
Notetaking & Postsecondary Ed.

- Dominant instructional mode is **lecture**
  - Demands extensive **note-taking**

- Students typically take poor notes
  - Quality and completeness of notes are strong predictors of student outcomes
Text Reading in Postsecondary Ed.

- **Discrepancy** between texts and students’ reading level
- Typically, little or no guidance/explanation given with readings.
- **Reading comprehension** particularly difficult for many students.
- Students complain **not enough time** to read and digest texts.
Guided Notes:
What is it and How to ...

- GN = handouts that guide students through a lecture
- Identify the **most important course content**
  - Less can be more
- Delete key facts, concepts, and relationships from lecture outline
- Remaining information structures and contextualizes notes
Guided Notes:
What is it and How to …

- **Insert cues** (*, ⇒) to indicate where and how many facts/concepts to write.
- **Other symbols** for adding own examples/questions for review (!) or emphasizing “big ideas” (👍)
- Leave **plenty of space**
- Don’t require too much writing
- Include **additional resources** such as URLs and references
Guided Notes: Rationale

- Consistent with **UDI principles**
- Improves **accuracy** of notes
- **Frees** students from **excessive writing**
- **Actively involves** students in constructing notes and following lecture
GNs: Research Highlights

- Lazarus (1993): College students with LD increased quiz scores after using GNs.

- Russell et al. (1983): Positive effects of GNs when using case studies, not lecture.

- Austin et al. (2002): College students preferred using GNs.
Pause Procedure
The Pause Procedure: What is it?

- **Short** (e.g., 2-minute), **periodic breaks** to review notes and discuss content
- Pause at **natural breaks**, app. every 15 ms.
- Set timer for end of break.
- Pauses can
  - Be **independent** review of notes and/or short writing assignment
  - Be **group** (e.g., dyad) discussion of notes
  - Include time for unresolved questions
Pause Procedure: Rationale

- Consistent with **UDI principles**
- Increases **accuracy** of notes
- Provide students time to reflect, integrate, and ask questions
- Provides students and instructor with **breaks**
  - Even the best students have limited attention spans
With 1 or 2 colleagues, discuss how and why the pause procedure works.

Timer will sound after 2-minutes, at which time I’ll need you to stop talking and we’ll move on.
PP: Research Highlights

- PP=higher **free recall** and **test scores** (Ruhl et al., 1990) and more **complete notes** (Ruhl & Suritsky, 1995) for college students with LD.

- Higher exam scores when using pauses (**personal written or discussion**) of students’ **preference** (Braun & Simpson, 2004).
Take two minutes to make written reflections about PP and how you might apply it in your classroom.
Graphic Organizers
Graphic Organizers: What are They?

- A **visual and graphic display** depicting **relationships** in course content
- Advanced organizers, Venn diagrams, concept/spider/story maps, flowcharts, hierarchies
  - Not one-dimensional outlines
EVOLUTIONARY PROCESSES

- Drift: random within small populations
- Selection: directional diversifying normalizing
- Flow: between populations
- Mutation: point chromosomal

(D. Applegate, CAL)
MASLOW'S HIERARCHY OF NEEDS

Self Actualization
- Contribution, being the best that one can be.

Esteem Needs
- Self-esteem, achievements, respect by others.

Love/Social Needs
- Family, friendship, intimacy.

Safety/Security Needs
- Money, job security, bodily safety, health.

Physical Needs
- Food, water, air, sex, sleep.
Start

Do I want to do this?

NO

Don't Do It

YES

Will it likely end in disaster?

NO

Do It

YES

Will it make a good story anyway?

NO

YES
Graphic Organizers: How to …

- Can provide completed GOs to students
  - Learn by viewing
- Students can construct own GOs
  - Learn by doing
- Students can finalize partially completed GOs
Graphic Organizers: Rationale

- Consistent with **UDI principles**
- Explicitly and visually present **relationships** between concepts
- Facilitate “**nonmemorization**” study strategies.
GOs: Research Highlights

- No research located on GOs for college students with disabilities.

- **Positive effects** on higher order knowledge but not on facts (Robinson & Kiewra, 1995); on delayed but not immediate tests (Robinson et al., 1998).

- Quiz scores higher using **partially complete** GOs (Robinson et al., 2006)
  - Lead to many students constructing own GOs
Concluding Thoughts: UDI and Accommodations

- **Students with disabilities** are legally entitled to, and will often **still need, reasonable accommodations**.

- Promising notion, but **more research** warranted

- Maintain **academic integrity** of programs and courses
  - Fair treatment and evaluation across students
Discussion Questions

- For whom will UDI be effective?
- How can we as individuals implement and maintain UDI related instruction?
- How can we foster a broader adoption of UDI?
Activity I

In groups, using this powerpoint

- Determine and justify how you would use the pause procedure
  - When would you pause? What would students do?
- Select one section and construct guided notes
- Construct a graphic organizer to highlight the relation between at least two concepts discussed
  - Would you use a blank, partially complete, or complete GO? Why?

- Share with larger group
Activity II (time permitting)

- Consider which technique(s) you would be most likely to use in your instruction
- Think of a particular lecture or lesson and make specific plans for applying at least one of the techniques
- Discuss with small group
Links to UDI Resources

- [www.cast.org/](http://www.cast.org/), center for applied special technology site devoted to UDI
- [www.washington.edu/doit/](http://www.washington.edu/doit/), U. of Washington’s Do-It program’s site, extensive resources for UDI
- [www.facultyware.uconn.edu/](http://www.facultyware.uconn.edu/), U. of Connecticut’s site devoted to UDI for faculty
- [http://www.washington.edu/doit/Brochures/PDF/equal_access_uddl.pdf](http://www.washington.edu/doit/Brochures/PDF/equal_access_uddl.pdf), brochure regarding UDI for distance learning
- [www.olt.org/ILT/ada/Fame/help_1.html](http://www.olt.org/ILT/ada/Fame/help_1.html), Ohio State’s site devoted to UDI for faculty and administrators
- [www.ferris.edu/htmls/colleges/university/disability/faculty/udl.cfm](http://www.ferris.edu/htmls/colleges/university/disability/faculty/udl.cfm), overview of UDI
More Links to UDI Resources

- www.zeff.com/4C-UDL/UDresources.htm, list of UDI resources
- http://telr.osu.edu/dpg/fastfact/fastfactcolor/Universal.pdf, fast facts regarding UDI and good teaching
- teachingeverystudent.blogspot.com/2007/01/free-technology-toolkit-for-udl-in-all_12.html, free technology-related resources
- gwired.gwu.edu/dss/Newsletters/Fall05UDL/, guide for making assignments/syllabi accessible
- http://kysig.louisville.edu/whatis.htm, UDI description with specific examples


