The Intersection of Accessibility and Basic Skills

Tips for Teaching Math to All Learners

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How can Accessibility affect Basic Skills?

- Students can learn ways to access the material they are working on learning.
- Instructors can use techniques that facilitate learning for students.
How can learning be more accessible?

- Universal Design
  (http://www.udlcenter.org/aboutudl/whatisudl)

- Differentiated Instruction
  (http://www.edweek.org/ew/articles/2015/01/28/differentiated-instruction-a-primer.html)

- Brain-based Learning
  (http://www.brainbasedlearning.net/)

Some overlap/similar concepts with different labels

Focus tends to be on how material is presented/taught
DSPS 33: Strategies for Success in Math

Focus is on what students need to be able to do, not on how I teach.

1. Understanding
2. Analyzing
3. Organizing
4. Memorizing

Course is taken concurrently with math
Understanding

- Knowing **how** you **learn**
- Knowing what “**level of assistance**” you are at, and improve it
- Improving cognitive skills that are related to math (e.g. **working memory**, inductive reasoning)
- Using websites for practice or tutoring / video explanations
- Accessing various tutoring resources
- Dealing with anxiety
- Working with your instructor
- Utilizing Assistive Technology, when appropriate
Analyzing

- Following the steps of **analyzing**:
  - What did they give you, what do they want?
  - What type of problem is it? What is the chapter/section called?
  - What **can** you do with it? What **should** you do (indicators)?
  - Any key issues to watch for?
- **Patterning**: How are similar-looking problems actually different?
- Analyzing the errors in your **tests** and using strategies to prevent them
Organizing

- **Regional Mapping**
- Other organizers: maps, Venn diagrams, “cheat sheets,” one-page handouts
- Process sheets (column of steps next to example problem)
- Cornell-style notes
- Visual structures – pre-made or in steps – that keep you organized
- **Flow Charts**
- Outlining challenging parts of your chapter and include examples
Memorizing

- Organizing techniques (like previous)
- Monitoring/structuring study time
- Making your own quizzes and testing yourself
- Flashcards
- Brain Dump
- “Mock” memory card – also important organizing technique
- Memorizing “templates”/structures
- Mnemonics – Acronyms/acrostics, associations, story techniques
To Assist Those with Hearing Issues

- 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 dialogue aids everyone in learning new vocabulary
To Assist Those with Vision Issues

- Use concrete terms
  - Avoid this, that, here, there, thing
  - Recognize meaningless statements…
    - “You can see that….”
    - “Set both factors equal to zero and solve.”
- Verbalize processes
  - Don’t just write it, say
- Provide e-text so that students can use text-to-speech (TTS) to hear materials read aloud
To Assist Hands-on Learners

- “Walk” them through the steps
- Make sure they know what to do and why they are doing it
- Word problems
  - Model drawing pictures
  - Model listing important information
- Use color coding / color highlighting
- Use manipulatives
Multiple Modalities

- Ask students to verbalize the processes they are using
- Encourage students to try MathTrax
  - Free tool from NASA for auditory graphing
- Design worksheets so that materials can be used in whichever modality works best for the learner!
- Create math documents in Word and save as DOCX
  - Working in LaTeX? MathType plug-in for MS Word will handle LaTeX ...
  - Toggle TeX = alt + \n- Word DOCX can then be read aloud with Central Access Reader
  - https://www.cwu.edu/central-access/reader
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