

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
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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
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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



E-Text

- ▶ 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 + \
 - ▶ Word DOCX can then be read aloud with Central Access Reader
 - ▶ <https://www.cwu.edu/central-access/reader>



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