Landmark Teaching Principle™ #3

Micro-Unit & Structure Tasks

MICRO-UNITING UNITS

This example "syllabus" [1] shows how one might break down a mathematics chapter into categories, versus using the sections as a single topic. It includes a focus on certain study skills, topics, resources, modes of delivery, discussion prompting questions, and potential assignments.

- Note: The book being used with this class is: PreCalculus: Graphical, Numerical, Algebraic, 5th edition, by Demana, Waits, Clemens, and Foley, published by Addison-Wesley Longman, Inc.

Topic Breakdown

While chapters are often split into sections, it can be necessary to micro-unit further by breaking sections into subtopics, and sometimes changing the order of sections based on one's approach.

For instance, chapter one can be split as follows:

- Intro to the Importance of Modeling with Graphs (1.1)
- Preview Basic Functions (1.3)
- 12 Basic Function Project (1.3)
- Domain & Interval Notation (1.2)
- Graphical Transformations (1.5)
- Combining Functions (1.4)
- Composing Functions (1.4)
- Inverse and One-to-One Functions (1.4)
- Piecewise Functions (1.3)
- Modeling & Graphing (1.6)
- Review & Assess

Once the chapter as a whole has been divided into subtopics, one can expand upon each topic in the course of planning for the unit. Be sure to determine overall study skills which will be focused on, what resources will be needed, the manner in which each topic will be taught, the assignments that will be given, and any further information, such as questions or vocabulary.

[1] Breakdown taken from work done by Hildebrandt, K. and Hamon, K. for the Landmark School Math Department in conjunction with a grant from John Brendan.

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Example of Topic Breakdown

- For the full chapter breakdown, see the attached pdf.

Chapter 1:

- Study skills/Language focus:
  - Learning to take 2-column notes.
  - Managing long-term projects
  - Working with word problems
  - Using a textbook as a resource through reading about topics, checking answers, etc. Note: Build to this throughout the chapter.

Topic	Resources	Mode of Delivery	Leading Questions	Assignment
Specific Topic	• Include any worksheets, presentations, sorts, or other activities created for this topic.	• Detail the method of teaching: notes from book, lecture, activity, collaboration, PowerPoint, etc. in the order they will be taught.	• Create questions that will activate students' thinking and help lead them to understanding.	• List any class work and/or homework assignments to be completed.
EXAMPLES:				
Preview Basic Functions (1.2)	• Basic Function Sort • Basic Function PowerPoint	• Have students sort cards by graphs, then flip over to make generalizations about equations – see if they can put names with equations. • Show PowerPoint having students identify functions. • Post functions on bulletin board in room as a reference.	• What is happening to the graph? • How are these graphs similar / different?	• pg 96 #9-12, pg 105 #1-10, pg 106 #37
Transform-ations (1.5)	• Transformation Explore Worksheet with graphing • Transformation Note Template • Comparing Transformed Functions PowerPoint	• Start with Explore. • After, guide students in how to translate what they learned into 2 column notes using template. • As an extended activity, have students identify functions in the PowerPoint.	• How do you change what a function looks like? • What can you do to the equation to make it look the way you want?	• pg 133 #2-20 even, 21, 22, 25, 26, 33, 34, 42-48 even • Note: give several days

HOW DOES THIS MICRO-UNIT & STRUCTURE TASKS?

- This takes a complete chapter and breaks it into concepts that tie together.
- Homework and class work include a variety of activities, but the structure within them allows for a gradual developing of independence.

Breaking down larger units and chapters helps the teacher and students see not only all the parts, but the ways in which they connect.

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