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Using the Video “Student Skills.”

This 25 minute video is a collection of 11 clips, each showing a student demonstrating a skill. All clips originate in the same week, when students were studying Bits and Pieces II, Investigation 3. In some clips the student is using a skill to answer a practice problem in an “opener,” in some the student is using a prior skill in the pursuit of developing a new concept or skill, and in some the student is using the skill in a homework setting.

The Place of Skills in CMP One of the ongoing concerns of teachers (and parents) is that students need to practice skills. CMP does not dispute this. I should share information from the *Implementing and Teaching Guide*^Ω, such as the overarching goal for CMP:

All students should be able to reason and communicate proficiently in mathematics. They should have knowledge of and skill in the use of the vocabulary, forms of representation, materials, tools, techniques, and intellectual methods of the discipline of mathematics, including the ability to define and solve problems with reason, insight, inventiveness, and technical proficiency.

I need to acknowledge that one of the reasons that parents may think that skills practice is missing in CMP is because you do not see pages of “drill” in the student texts. In fact, CMP students routinely practice skills in at least 2 ways: on ACE (homework) questions, particularly the “Connections” questions, and within classroom investigations of Problems. The former are designed to review skills already developed; the latter are designed to give students the opportunities to choose and use prior skills in the development of new skills.

^Ω See [appendix](#) for more on “Practice with Concepts, Related Skills, and Algorithms,” in *Implementing and Teaching Connected Mathematics, 2006*

Assessing Skills Used by Students on the Video

As with the “Teacher Questions” video, the “Student Skills” video is best assigned as a homework investigation where viewers, collaborating in pairs or small groups, can re-view clips as often as needed, with a transcript as support, focusing on:

- What skill is the student demonstrating?
- When did the student learn this skill?
- Is the student proficient?
- Is the algorithm traditional? Mathematically correct?
- How does this skill relate to either the meaning of fractions or multiplying fractions (the focus of *Bits and Pieces II*, Inv. 3)?
- In what setting has the skill arisen? Homework, a new Problem or some other setting?
- Does the student seem confident? Is he/she making sense?
- Has the teacher chosen to include this skill practice at an appropriate time? (See Teri’s reflection for Day 3.)
- Are there occasions when students are seen using procedural skills without any relation to developing conceptual knowledge?
- What value is there in practicing procedural skills for their own sake?

Large Group Discussion

The students on these clips show an impressive mastery of several skills related to computing with fractions. Large group discussion time is not needed to enumerate all the skills. Instead it may be more thought-provoking to ask about the relationship between deploying previously mastered skills and developing new knowledge. How do procedural skills and conceptual knowledge relate to each other? Are there occasions when students are seen practicing procedural skills for their own sake? What emphasis should practice of skills have in CMP?

The teacher refers to the need for some practice in “Teacher Reflections” for Day 3, “Developing an Algorithm for Multiplying Fractions,” and in her interview on “Action Research.” So, if the large group discussion needs any stimulus I can show these short clips and have teachers react to them.

Other Audiences for “Student Skills”

This video might be used with Principals or parents. A possible scenario is sketched below.

Different Audiences, Different Goals This video could be used with Principals or parents to help them better understand the place of skill development and practice in CMP, and the relationship between developing concepts and practicing procedures.

LAUNCH:
Before viewing the video “Student Skills.”

One way to proceed would be to allow Principals or parents time to read through the 3 problems, 3.1, 3.2, and 3.3, and then ask them to

- list the skills they think students will *bring* to these problems
- identify any skill they think students will *develop* by doing these problems.

EXPLORE:
View the video with some focus questions in mind.

While viewing the video of students using skills in various contexts, Principals or parents should keep in mind the list they made before viewing the video.

- Are there any skills that you expected to see that did not arise? Did any skills appear on the video that you had not expected to see?
- How do the skills you see students using relate to the concept being developed?
- Is there evidence that students are making sense of the skills they use?
- Where are students in relation to the skill you thought students would develop by doing these problems? Still developing? Proficient?

SUMMARIZE: A large group discussion of the place of skills in CMP should also include reference to the assessment results achieved by CMP students on a variety of tests. See Research and Development at www.connectedmath.msu.edu