

Reflecting on Student Work *The Math Forum @ Drexel*

1. Select the student work. Video clips of classroom work can be used for very young students. Usually plan on 1 piece (or set of pieces/drafts) for a 60-minute session. Pick a piece of work that represents a persistent or critical issue involving either a math concept or a student's approach to learning. Naturally the piece(s) selected should have enough material to support reflection on the student's thinking.
2. Do the problem/assignment that the students did. Solve the problem with as many different strategies as you can (e.g. guess and check, with and without algebra, geometric reasoning, using data and probability tools, etc.).
3. Identify the main concepts and strategies involved, differentiating between those that have to be involved and those that are optional.
4. Use the following process to discuss what you see in the student work in order to understand what they did and were thinking.

Work in groups of 3-5 people. Select a recorder to keep notes of what is said. Go around in a circle and each person shares one thing that they notice about the student work. Try to keep moving so that all ideas and voices are heard and keep discussion and judgment to a minimum for now. Keep going until there are no more noticings or time requires moving on. Example of types of noticing:

- The way the work is organized
- The understanding of the question or problem
- The techniques and problem-solving strategies used: from random guessing to development of mathematical models.
- Accuracy in calculations.
- Which parts of their solution process do they communicate/make visible and which not?
- What connections do they make to prior knowledge and experience?
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Be careful not to impose your expectations on the students' work and not to judge it. Look closely at all aspects of a student's work and be prepared to have your view expanded or to be left with questions. If you find yourself making claims about what is going on in the student's head, turn those into questions or wonderings. Instead of "James doesn't know other factors", try "James did not write down any other factors. I wonder if James knows the other factors? I wonder if James thought about finding other factors."

5. Design a question or a task for the student that would help you understand more about what the student is doing and thinking. If the student appears to have made mistakes, do not try to teach the correct approach yet. Focusing on eliciting more information from the student. Use your wonderings from step 4 as good areas for investigation. Share your task with your colleagues in your group and have others describe how they think a student might approach such a task.

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