Selecting and Sequencing Student Solutions

Miss Stastny: I think the biggest challenge for me with the five practices would probably be the sequencing and the connecting at the end, just because some of them aren't quite there, so I don't want to try to connect it to something that's above where they are, that's higher thinking but I want to sequence it to get to the goals. I think being able to select and sequence based on what they're doing, even if it's not on the monitoring sheet, to add it in and to be able to connect it to get all of them to where I want them to be and not confuse them more I think is my biggest struggle.

Peg Smith: Selecting is the practice of determining which solution strategies the teacher wants to have shared during the whole class discussion.

In order to make the selections, the teacher needs to review the data they've collected on their monitoring tool, and decide which of the solutions, and ultimately, in what order would best help the students access and make sense of the mathematical ideas that she's targeting in the lesson.

Selecting can be very challenging, particularly if you are not clear on what it is you're trying to accomplish mathematically. So, selecting must be done in light of the mathematical learning goals that you've articulated for the particular lesson. It's not about letting a thousand flowers bloom, and letting every student share what they've done. It's about trying to decide which solutions are going to allow you to make the mathematics that you wanna put on the table, visible for discussion.

Mister Strong: The idea of choosing the perfect sequence, to be able to open a discussion and how it's going to lead from beginning to end, and how are you going to get to where you want to go. That's an invaluable thing to try to put together. It's not the easiest thing to do, so you've got to practice it.

Peg Smith: Another thing to consider-is who will be the presenter. This is an opportunity for a teacher to really consider which student, who produced a particular solution, has not had time, recently, to be seen as publicly competent as a mathematical doer. In this sense, selection can be an issue of equity. Making sure that, over time, each and every student has an

opportunity to demonstrate competence in a public setting of the classroom.

Sequencing is really about the order in which you're going to arrange the solutions that are going to be discussed, such that the first solution that gets talked about is one that every student in the class can access. It may be a solution that uses some sort of a concrete model, or representation, that makes the mathematical idea clear. And, it may, then, build up to a more abstract or symbolic representation, so that what you're doing is, you're taking students on a journey. You're beginning with something that everyone will relate to. And, then, you may be moving to another solution that is slightly more complicated, or more abstract.

And, through this process, what you're doing is, you're developing a mathematical story line. There's something specific that you want students to learn, and every solution that you have discussed provides some piece of information that helps you get to the endgame.

The sequence needs to build understanding so that every piece of work that's examined adds to the understanding in some unique way. If a piece of work isn't contributing something different, then there's probably no reason to talk about it. I think one of the challenges is being clear about what you're trying to accomplish. Understanding the mathematics well enough to see how one piece, one solution strategy, fits with the next.

One challenge that teachers often face in selecting and sequencing, is when you should feature a misconception. The first thing to think about is that every error students make may not be worthy of having a class discussion about it. But, when a student has a missing-piece conceptually, and multiple students in the class hold the same misconception, then it's really important to have a public discussion about it, so that students can come to understand not just how to get the right answer, but why it doesn't make sense to do it this way.