

# Planning and Leading Mathematical Discourse

To engage students in productive mathematical conversations, teachers must plan, initiate, and orchestrate discourse in ways that encourage student learning.

Smith and Stein (2011) identify five practices for orchestrating productive mathematical discourse:



## Anticipating:

**“Actively envision how students might approach the mathematics task they will work on.”**

Thinking about student approaches, possible errors, and misconceptions allows teachers to better plan their questioning strategies.

## Monitoring:

**“[Pay] close attention to students’ mathematical thinking and solution strategies as students work the task.”**

Did any students use strategies you did not think about?  
Did any use a visual model or more sophisticated strategy that you want to illustrate with the class?  
Did any make errors that highlight a common misconception you want to highlight with the class?



## Selecting:

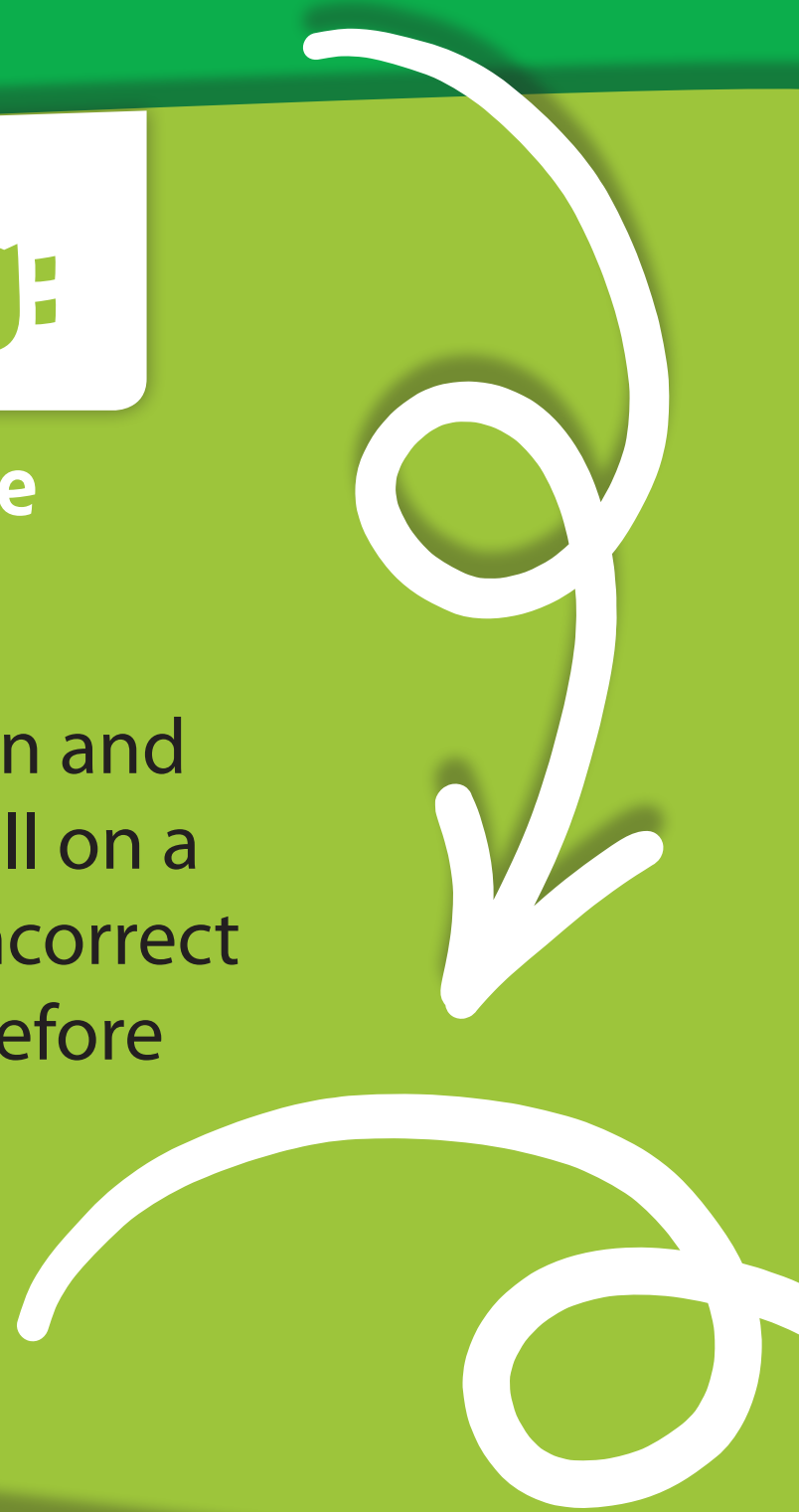
**“Select particular students to share their work with the rest of the class to get specific mathematics into the open for examination.”**

The selected students can be alerted in advance to give them time to gather and organize their thoughts.

## Sequencing:

**“Make decisions regarding how to sequence the student presentations.”**

The goal is to maximize the connections between and among ideas. For example, a teacher may first call on a student or group with incorrect thinking or an incorrect answer to highlight a common misconception before the class discusses the correct answer.



## Connecting:

**“Help students draw connections between their solution and other students’ solutions as well as the key mathematical ideas in the lesson.”**

This synthesis will help reinforce and extend learning. For example, consider asking the following questions: How are these two ideas similar? How are they different? How does this second idea build on or extend the idea we’ve just heard?

These five practices build on each other to help teachers orchestrate mathematical discourse in meaningful ways. Although it is not possible to anticipate every strategy students might present, the five practices provide a way to capture, make sense of, and organize mathematical discourse in ways to maximize learning.

Adapted from two whitepapers by Kersaint, G. (2017). *Selecting and sequencing student solutions and Orchestrating mathematical discourse to enhance student learning*. North Billerica, MA: Curriculum Associates.