

Jennifer R. Meadows, Ph.D. jrmeadows@tntech.edu

Jane Baker, Ph.D. jbaker@tntech.edu

Why encourage classroom discourse? (http://www.math.harvard.edu/~knill/mathmovies/swf/inthenavy\_28.html)

Think like a 2<sup>nd</sup> grader. Solve the following subtraction problem using a visual representation.

34 - 6

What is the **teacher** doing to promote a productive math discussion?

What are the **students** doing to promote a productive math discussion?

## Talk Moves

#### ♦ Re-voicing "So what you're saying is that it's an odd number?"

The teacher repeats part or all of a student's utterance and asks the student to verify whether the interpretation is correct.

- Especially helpful to teachers when they do not understand what was said.
- Re-voicing is not simply repeating, The third part (verification) is necessary. (I infer.... Is that right? Is that correct?)

#### ♦ Repeating "Can you repeat what he just said in your own words?"

Students restate a contribution of a classmate either verbatim or paraphrased.

- Repeating, even when reformulated in your own words, requires another layer of thinking.
- The expectation that students be able to repeat contributions is useful. Students are "on call" and must attend to conversation.

#### ♦ Reasoning "Do you agree or disagree and why?"

Teacher asks student whether they agree or disagree with a comment, then also asks why.

- It is important to add the "why" when using this move.
- The yes or no question of "Do you agree or disagree?" is a good start point to engage students in the deeper thinking of "why?"

## ♦ Adding-On "Would you like to add on?"

Ask a student to elaborate on what she said, or ask another student to "add on" or "say more" about a classmate's contribution.

- Sometimes this move is overlooked because it is so straightforward.
- Students enjoy having a platform from which to start their comment.

## ♦ Waiting "Take you time…..we'll wait…"

Teacher allows quiet thinking time for students to develop responses.

- Waiting for a student response may feel uncomfortable to some, but with practice is becomes natural.
- This move allows more students to participate and builds confidence in those less accustomed to speaking out.

## ♦ Turn and Talk Partner Turn and Talk or Think-Pair-Share

Teacher poses a question and gives students a short time to discuss with their nearest neighbor.

- Allow students a chance to practice their contribution with one person
- Students who do not understand something fully can pose a question to their partner
- Many students emerge from partner talk more able and willing to participate in the class discussion

#### 5 Practices for Orchestrating Productive Mathematical Discussions

- Anticipating likely student responses to challenging mathematical tasks
- ✓ **Monitoring** students' responses to the tasks (while students work on tasks in pairs or small group)
- Selecting particular students to present their mathematical work during the whole class discussion
- Sequencing the student responses that will be displayed in a specific order; and
- ✓ **Connecting** different students' responses and connecting the responses of key mathematical ideas.

Task:	Standard:	
	Standard for Mathematical Practice:	
Strategy	Who and What	Order
Anticipated Strategy #1		
Anticipated Strategy #2		
Anticipated Strategy #3		
Anticipated Strategy #4		
Other Strategies		

\* Adapted from 5 Practices for Orchestrating Productive Mathematical Discussions by Margret S. Smith and Mary Kay Stein NCTM 2011

https://www.youtube.com/watch?v=YhpcxtE-di0

# NCTM Research Brief: Strategies for Facilitating Productive Classroom Discussions

# http://www.nctm.org/Research-and-Advocacy/research-brief-andclips/Strategies-for-Discussion/

- Attend to the classroom culture
- Choose high-level mathematics tasks
- Anticipate strategies that students might use to solve the tasks and monitor their work
- Allow student thinking to shape discussions
- Examine and plan questions
- Be strategic about "telling" new information
- Explore incorrect solutions
- Select and sequence the ideas to be shared in the discussion
- Use Teacher Discourse Moves to move the mathematics forward
- Draw connections and summarize the discussion

Teacher	Strategies for Productive Classroom Discussions	Students
	Classroom Culture	
	Tasks	
	Strategies	
	Thinking	
	Questions	
	"Telling"	
	Incorrect Solutions	
	Select & Sequence	
	Discourse Moves	
	Connections	

Books Worth Looking Into...

Chapin, S. H., O'Connor, C., O'Connor, M. C., & Anderson, N. C. (2012). Classroom discussions: Using math talk to help students learn, grades K-6. A Facilitator's Guide Math Solutions.

Chapin, S. H., O'Connor, C., O'Connor, M. C., & Anderson, N. C. (2013). Classroom discussions: Using math talk to help students learn, grades K-6. A Teacher's Guide Math Solutions.

Kazemi, E., & Hintz, A. (2014). Intentional talk: How to structure and lead productive mathematical discussions. Stenhouse Publishers.

Parrish, S. (2010). *Number talks: Helping children build mental math and computation strategies, grades K-5*. Math Solutions.

Small, M. (2012). Good questions: Great ways to differentiate mathematics instruction. Teachers College Press.

Stein, M. K., & Smith, M. (2011). 5 Practices for Orchestrating Productive Mathematics Discussions. National Council of Teachers of Mathematics. 1906 Association Drive, Reston, VA 20191-1502.

Sullivan, P., & Lilburn, P. (2002). Good questions for math teaching: Why ask them and what to ask, K-6. Math Solutions.