



# USING DISCOURSE AND TASKS TO UNCOVER STUDENT THINKING

Genni Steele and Michelle Spiers

Friday April 17, 2015  
2:00 – 3:00 pm





# ASK. LISTEN. LEARN.

# Instructional Practices

- We Ask
  - Implement tasks that promote reasoning and problem solving.
- We Listen
  - Facilitate meaningful mathematical discourse.
  - Pose purposeful questions.
  - Support productive struggle.
- We Learn
  - Elicit and use evidence of student thinking.



# ***Establishing Mathematics Goals to Focus Learning***

- ☐ What mathematics is being learned?
- ☐ Why is it important?
- ☐ How does it relate to what has already been learned?
- ☐ Where are these mathematical ideas going?



# Mathematical Task

A set of 7 distinct positive integers has a mean of 40 and a median of 40.

- What do you know?
- What do you need to find out?
- Share ideas about a solution path.



# Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

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# Processing

- What was the role of talk as you began thinking about the problem with your partner?





# Mathematical Task

A set of 7 distinct positive integers has a mean of 40 and a median of 40.

What is the largest possible integer that this set can contain?



# Characteristics of Tasks

What are the characteristics of tasks that promote thinking, reasoning, and communication?



# Compare and Contrast

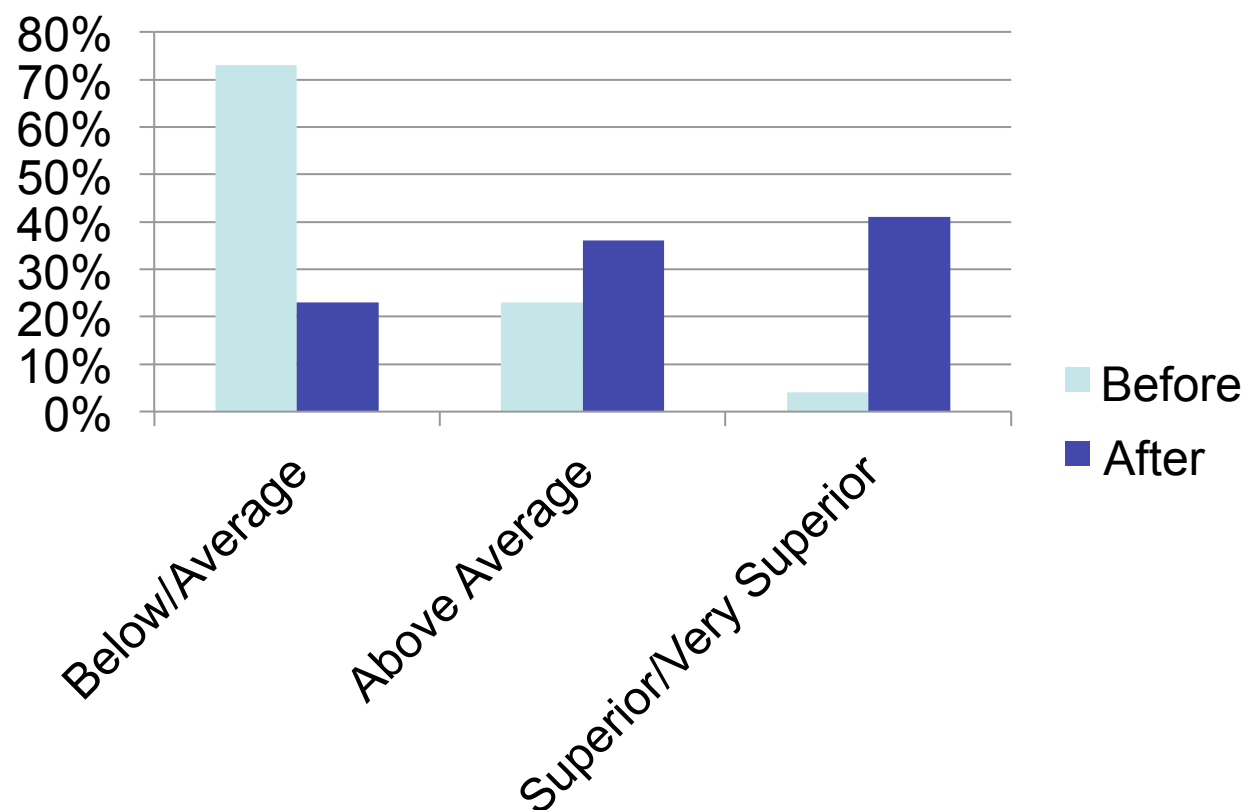


Task 1

Task 2



# Project Challenge



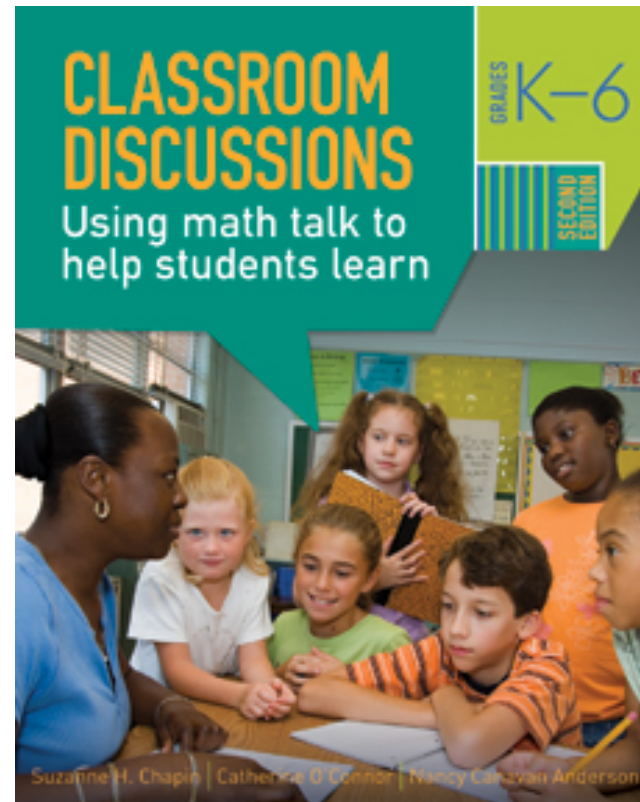


# Data Results

Turn and talk to a partner and make sense of the results from Project Challenge.

# Talk Moves

- Revoicing
- Repeating
- Reasoning
- Adding On
- Wait



*Classroom Discussions: Using Math Talk to Help Students Learn, 2009*

# Talk Moves

- *Revoicing* – “So you’re saying that...”
- *Repeating* – “Can you say that in your own words?”
- *Reasoning* – “Why do you agree/disagree?”
- *Adding On* – “Who thinks they can explain why that makes sense?” or “Add to what was said.”
- *Wait Time* – both after a question is asked and after a question is answered

# Meaningful Discourse is Critical

1. Talk can reveal understanding and misunderstanding.
2. Talk supports robust learning by boosting memory.
3. Talk supports deeper reasoning.
4. Talk supports language development,
5. Talk supports development of social skills.

*Classroom Discussions: Seeing Math Discourse in Action, Grades K–6. A Multimedia Professional Learning Resource* by Nancy C. Anderson, Suzanne H. Chapin, and Catherine O'Connor. © 2011 Scholastic Inc.





# Expressions

Place these expressions on a number line.

$3x$

$\frac{x}{2}$

$x^3$

$x + 2$

$2x$

$x$

$x^2$

$\sqrt{x}$

$x^3$



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# Video Student Discourse

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# Final Thoughts...

- Curiosity is a driver of motivation – how you pose tasks can ignite curiosity.
- Look for tasks that:
  - Focus on rigorous math
  - Are equitable and accessible
  - Promote struggle
  - Have more than one avenue to explore
  - Are open to exploration



# High Quality Math Talk

“Our goal is not to increase the amount of talk in our classrooms, but to increase the amount of high quality talk in our classrooms—the mathematical productive talk.”

*—Classroom Discussions: Using Math Talk to Help Students Learn, 2009*



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