Math Solutions
FOUNDED BY MARILYN BURNS

ACADEMICALLY PRODUCTIVE TALK IN THE CLASSROOM

Genni Steele and Le'Vada Gray
Thursday, April 10, 2014
11:00 am – 12:00 pm
Convention Center Room 206

ASK. LISTEN. LEARN.

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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.
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Discuss

When solving a challenging math problem, what needs to be in place for you as a learner?

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Mathematical Task

- A ball of dough is rolled out into a circle with a 12-inch diameter. How many cookies with a diameter of 2.5 inches can be made from this dough?

Talk with your partner about what you know, what you need to find out, and any ideas you have as a solution path.

Good Questions for Math Teaching Why Ask Them and What to Ask, Grades 5 – 8 Schuster and Anderson
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Processing

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

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Talk is Critical to Teaching and Learning

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.

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Guide for Watching Video

- Assume there are things you do not know about the students, the classroom, and the shared history of teacher and students
- Assume positive intent and expertise on the part of the teacher
- Stay focused on the observation
- Stay focused on the discourse and how it serves the goals

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A First Look: Is $\frac{3}{5}$ less than $\frac{3}{4}$?

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Question to Think About

What did the teacher do prior to this lesson to allow for the student discourse?

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Norm (nôrm)

- a standard or pattern, esp. of social behavior, that is typical or expected of a group
- a principle of right action binding upon the members of a group and serving to guide, control, or regulate proper and acceptable behavior

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Two Goals for Establishing Norms

Respectful Discourse:	Each person's ideas are taken seriously; no one ridiculed or insulted, and no one is ignored or browbeaten.
Equitable Participation:	Each person has a fair chance to ask question, make statements, and express his/her ideas.

Academically productive talk is not for the most vocal or most talented students.

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Common Obstacles

I have a hard time being consistent.

I don't have time.

Kids forget the norms.

How?

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Establishing Norms

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Talk Expectations

- Everyone has the right to be heard
- Everyone has an obligation to listen and try to understand what the speaker is saying
- Everyone is obligated to ask questions when we don't understand
- The speaker has an obligation to try hard to be clear
- Everyone has a right to participate

Adapted from *Classroom Discussions* by Chapin, O'Connor, and Anderson, Math Solutions Publications

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Talk Moves

- *Re-voicing* – "So you're saying that…"
- *Repeating* – "Can you say that in your own words?"
- *Reasoning* – "Why do you agree (or 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

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Four Steps to Productive Classroom Discussions

Step 1: *Helping individual students clarify and share their own thoughts*

Step 2: *Helping students orient to the thinking of other students*

Step 3: *Helping students deepen their reasoning*

Step 4: *Helping students to engage with the reasoning of others*

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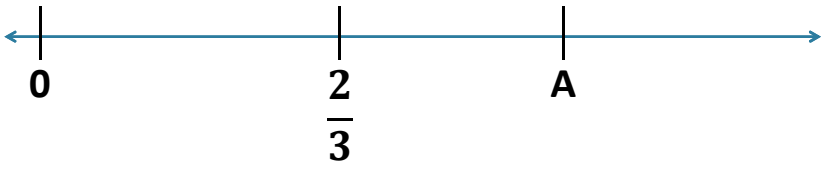
6th Grade Class

Which is a better choice, $\frac{7}{6}$ or $\frac{13}{9}$ for the location marked A on the number line.



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Four Steps to Productive Classroom Discussions

Step 1: ***Helping individual students clarify and share their own thoughts***

Useful Talk Moves:

- Turn-and-Talk
- Revoicing
- Say More

What does the teacher do?
What do the students do?

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Turn and Talk

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Four Steps to Productive Classroom Discussions

Step 2: *Helping students orient to the thinking of others*

Useful Talk Moves:

- Who can repeat?
- Turn-and-Talk: "Tell us what your partner said."

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Four Steps to Productive Classroom Discussions

Step 3: *Helping students deepen their reasoning*

Useful Talk Moves:

- Press for reasoning
- Who can repeat?
- Turn-and Talk

Video of 5th grade class exploring volume:

- What does the teacher do?
- What do the students do?

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Pressing for Reasoning

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Four Steps to Productive Classroom Discussions

Step 4: *Helping students engage with the reasoning of others*

Useful Talk Moves:

- What do you think about that?
- Do you agree or disagree… and why?

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Planning Talk Based Lessons

- Identify the mathematical goals
- Anticipating confusion
- Asking questions
- Planning Implementation
  - Talk Moves
  - Talk Formats

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Planning the Task

- **What are the mathematical goals?**
- **What confusions do you anticipate?**
- What questions will you have in your pocket for:
  - Students who are stuck?
  - Students who "get it?"
- Which Talk Formats would you use? Why?
- **Which of the Talk Moves would you plan on using?**

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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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