



Mathematical Practice: Reasoning and Discourse 6-12



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.



Positive Influences of Math Discourse

- Talk can reveal understanding and misunderstanding
- Talk supports robust learning by boosting memory
- Talk supports deeper reasoning
- Talk supports language development
- Talk supports the development of social skills



Project Challenge

Scores on TOMA-2	Beginning
Below Average	73%
Average	
Above Average	23%
Superior/ Very Superior	4%



Talk Moves

- Revoicing
- Repeating
- Reasoning
- Adding On
- Waiting



Revoicing and Repeating

- **Revoicing**—Clarify unclear student statements and provide students the opportunity to verify the revoiced statement. “So you’re saying that”
- **Repeating**—Invite other students into the conversation by restating someone else’s reasoning. “Can you repeat what she just said in your own words?”



Reasoning and Adding On

- **Reasoning**—Invite other students to agree or disagree with another student’s reasoning and provide an explanation. “Do you agree or disagree? Why?”
- **Adding On**—Invite students to participate through prompting for additional thoughts. “Would someone like to add something more to this line of thinking?”



Waiting Time

- **Waiting**—Allow more hands to raise and thoughts to develop by waiting after a question has been asked. This move also includes waiting after calling on a student for that student to verbalize his or her thoughts.



Which Does Not Belong? Why?

- 2, 6, 5, 10
- 9, 16, 25, 43
- $\frac{1}{2}$, 50%, 0.5, 5
- $y=x$, $y=x^2$, $y=x + 2$, $y=2x$



Age Problem

At some time in the future, John will be 38 years old. At that time, he will be 3 times as old as Sally. Sally is now 7 years old. How old is John now?



Processing Age Problem

- During the discussion, which Talk Moves did you notice me using?
- How did these Talk Moves promote your understanding of the problem?
- How would these Talk Moves support the Mathematical Practice of constructing a viable argument?



Talk Formats

- Whole-class discussion
- Small-group discussion
- Partner talk

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



Processing the Experience

- What was the value of working with a partner?
- What was the value of working with a small group?
- How do the Talk Moves and the difference formats impact the discourse?



What is Discourse?

Discourse is both the way ideas are exchanged and what the ideas entail.

- Who talks? About what? In what ways?
- What kinds of questions are important to ask?
- Whose ideas and ways of thinking are valued and important?



Math Talk in My Classroom

Respond in writing:

- How will the use of Talk Moves and Talk Formats improve discourse in your classroom?
- What obstacles do you anticipate? What ideas do you have for overcoming them?



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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