

Math Solutions Professional Development

Q&A: Using Talk in Math Class to Help Students Learn

Q. Many of our teachers have students talk with each other during math to support learning. As a faculty, we'd like to learn more about talk and how to use it effectively. What recommendations do you have for how we can begin?

A. Your school's decision to focus as a faculty on talk can have a significant impact in your classrooms and in your interactions as professionals. We wholeheartedly support your journey and hope the following will be useful to you.

Faculty Discussion About Math Talk

Since so many of your teachers are working with talk as an instructional tool, it is important to come together to discuss classroom talk—including its role in supporting learning, the beliefs teachers have about talk, and the benefits and challenges of using talk in the classroom. Following are a few ideas for how you might facilitate a faculty discussion.

Sometimes a quote provides a thought-provoking context for thinking together about an idea. For example, here's one we like about talk in the classroom:

My definition of a good teacher has changed from "one who explains things so well that students understand" to "one who gets students to explain things so well that they can be understood." (Steven C. Reinhart, "Never Say Anything a Kid Can Say!" *Mathematics Teaching in the Middle School* 5, 8 [2000]: 478)

An interesting quote like this one provides the opportunity to begin conversations on ideas and experiences teachers have about instruction. You might frame small-group conversations about Steven's quote with one or more questions like:

- What do you think Steve means by his definition of a good teacher?
- Imagine Steve's classroom. What do you think you might see and hear?
- In your own learning, what experiences have you had where talking and listening were used to support your understanding? What was it like?

While teachers are talking, it's important for you to circulate and listen in on conversations. This builds your awareness of responses to the quote and of learning experiences your teachers have had where talk played an integral role. When you bring the faculty back together, you will want to briefly acknowledge the energy and focus of their conversations. And then you might ask for comments from several of the groups using a question like this:

We've all had experiences learning about something by listening to a teacher or instructor talk about it. And we've all had experiences where learning was supported by talking and listening. What is the impact on learning when you have to talk and listen about the concept you are trying to understand?



Because a whole-school focus on talk is your goal, finding out together what's going on with talk in your building is important. Here are some questions to guide small-group conversations. Consider having each group use markers and large chart paper to record their ideas to share with the entire faculty—especially in response to the questions related to benefits and challenges.

- What experiences do you have with using student talk to help children learn?
- What benefits have you seen?
- What challenges have you encountered?
- What recommendations would you make to others who are not yet using student talk as an instructional tool?

Allow enough time for the conversations, at least 20 to 25 minutes. Listening in on conversations will help you know how long the discussions should go—not so long that groups go on to discuss other topics and not so short that ideas don't have a chance to emerge. Before you stop the conversations, provide a warning and directions to post any records you want the whole group to review.

Briefly looking at the benefits and challenges groups have posted will set the stage for these two follow-up questions:

- What would you like to learn about student talk?
- What questions do you have about it?

Considering these two questions will give you and your faculty direction for digging deeper into the productive use of classroom talk in math class. Compile groups' responses to the questions *What would you like to learn about student talk?* and *What questions do you have about the use of student talk to support learning?* Record these on charts for use in future conversations.

A Note About Faculty Discussions

We hope the next example helps you launch your faculty into conversations that will spark interest, highlight the expertise that already exists, and set directions for new learning.

It's important to stop here, though, and acknowledge an assumption we've made about facilitating talk with adults. Our hunch is that you use talk with your faculty to learn new things and solve problems. However, for others who don't, we have a few suggestions.

To support participation, organize the faculty into groups of four to six teachers so that everyone has the chance to share his or her experiences and ideas. While there are a variety of ways to establish and facilitate those groups, thinking about the following may promote richer conversations.

- Is your faculty new to having collegial conversations? If so, consider providing, or establishing together, guidelines that support everyone in actively participating, listening to others' ideas, and asking questions that encourage reflection and elaboration of ideas.
- Do teachers have the opportunity to talk with teachers at other grade levels and broaden their understanding about their colleagues and the expertise they bring to the school?

If not, you may want to find a way to mix things up and randomly assign groupings. Or you could create mixed groups that represent the range of grade levels in your school.

- Is there something specific that you want from the conversations? If so, let teachers know before they begin to talk. Expectations for a product or a contribution to the whole-faculty discussion can help keep conversations focused and productive.

Conversations reveal the expertise teachers already have with talk. Their experience provides a starting place to learn together about the role talk has in students' learning and how to support talk through instruction.

Book Study—Another Avenue for Learning

We are fortunate at Math Solutions Professional Development (MSPD) to be connected to teachers and coaches across the country who lead the way for others in thinking about math instruction. From them, we find out what has been helpful to them and their colleagues.

Nancy Litton, one of our MSPD instructors, has experience with talk as a common focus at her school in Piedmont Unified School District in California.

Nancy explained, "We chose the book [*Classroom Discussions: Using Math Talk to Help Students Learn*](#) to read as a faculty. My principal made it possible, especially in the beginning, for teachers to read a chapter together and then discuss it. We began the process at a staff development meeting before school started and then continued with smaller assignments at faculty meetings throughout the year."

About the impact, Nancy said, "Reading the book together and trying the strategies worked well. The book covers all grade levels. It addresses so many important ideas in mathematics and has relevance for other subjects as well. It was helpful to study this together as a faculty over the course of a school year."

Rose Palmer, another MSPD instructor who is a Math Coach in Portland, Oregon, had this to say about the book studies she helped teacher leaders facilitate with *Classroom Discussions*: "While the book is intended to support talk in math classrooms, it is a very useful resource for all teachers. It helps them understand the role of communication in student learning and supports them as they learn to facilitate productive talk in their classrooms."

Introducing Math Talk to Students

To help you decide if *Classroom Discussions* would be a useful resource for your faculty, we talked to Nancy Anderson, one of the book's authors and one of our MSPD instructors. She shared her thinking about using talk to help students learn math.

For the first day of school, Nancy advises both those who are new to talk and those who are experienced, "Introduce students to the idea that talking about mathematics can help them become better mathematical thinkers." In her conversation with students, she includes ideas like:

- Thinking and talking together can help all of us understand math better.
- It often takes more than one person to solve difficult problems, and working together in groups can help with that.
- We can learn new ways of thinking about math from listening to how others think.



- Talking about our own thinking can help us clarify our thoughts.
- Our talk will focus on math and reasoning and we'll use vocabulary important to the math we're learning.
- We'll learn together what it takes to understand another person's thinking.

Sharing her thinking in this way, Nancy gives students an important message about how they will learn mathematics in her classroom.

Establishing Expectations for a Respectful Classroom

Nancy is clear about another message for the first day of school. She counsels, "Explicitly state the classroom expectations for a respectful and courteous classroom that allows productive math talk." In her classroom, she makes sure that:

- Expectations for respectful interactions are communicated and maintained—always.
- Every student is listening to what others say.
- Every student can hear what others say.
- Every student may participate by speaking out at some point.

During the first few weeks of school, Nancy revisits these ideas and expectations as she involves her students in mathematics investigations and problems. She knows that to cement learning from these experiences, students must come together to talk about what they've found and questions they have.

Using Teacher Tools to Support Talk

Throughout the year and especially in the first few weeks of school, Nancy carefully and deliberately facilitates her students' mathematical dialogue. Consistently, she uses tools or strategies that support her goals of:

- using mathematically productive talk to help students learn;
- providing students the time they need to think and reason;
- making students' ideas accessible to themselves and to others;
- eliciting respectful discussion of ideas;
- extending discussions; and
- increasing students' participation.

One of the tools Nancy uses consistently is "wait time" after she poses a question. Her students know that she will wait to allow everyone to think through the question. When she finally calls on someone, her students also know she'll wait, if needed, to give that student the chance to put his or her thinking into words. She eases any discomfort students may feel with comments like "This is a complicated question. It takes time to put your ideas into words, and that's OK," and "Would you like to hear others' ideas and I'll come back to you in a few minutes?" Comments like these and her determined and consistent use of wait time let her students know she will give them the time they need to think and reason mathematically.

Asking students to restate someone else's idea is another strategy Nancy finds useful. In class discussions, she often stops to ask questions like, "Can someone restate what Shawna just said?" and "Can you retell Manuel's idea in your own words?" This strategy has several benefits. First, it verifies that students could and did hear what was said. Second, it gives the class another version of the first student's contribution,



provides more time to process the ideas, and increases the likelihood that students can follow the conversation. And finally, it clarifies Shawna's or Manuel's ideas and provides that student with evidence that her or his thinking has been taken seriously.

Further Study

Nancy and her coauthors, Suzanne Chapin and Catherine O'Connor, describe additional effective strategies in *Classroom Discussions*. This thorough and thought-provoking resource provides a rationale, guidance, and abundant examples to help educators implement productive mathematical talk in their classrooms.