

Setting Up the Mathematical Community

First Steps in Creating the Mathematics Community

At the beginning of the school year, teachers begin creating a classroom environment that is inclusive of all participants and that allows all students to share ideas and listen to and learn from each other. An important component of this work is to provide meaningful contexts that encourage students, including those who do not feel confident in their math abilities or who opt to stay on the periphery, to share their thinking and build on each other's ideas. In this case, fifth-grade teacher Suzanne Wilcox shares the approach she uses on the first days of school to begin creating an inclusive mathematics community.

The first day of each new school year offers unique opportunities to bring together a new group of learners and establish a community in which each person can learn with and from others. As I greet my class in September, I always think about this and keep in mind my own goals as the students and I collectively establish this new learning community.

I know an opportunity to set the stage for this community will present itself early in the school year, but I never know exactly how or when. This year it happened within the first hour of the first school day! My 20 new students were organizing their desks and storing their books and supplies when I pointed out to them that they each had two big textbooks. In my effort to motivate them to take care of the books, I asked, “How much do you think each one costs? What is your estimate of their value?” Shaun was anxious to respond.

I know Shaun only through his older brother, who was a student in one of my previous classes. I am aware that Shaun has multiple learning challenges, a complicated educational plan, and a reputation for “acting up” in class and on the playground. I knew that I wanted Shaun to have a significant role as a learner early on in the class, so I immediately asked him to respond.

“Twenty bucks,” he said. I responded by saying, “I think you’re right, Shaun. These books are probably worth between

20 and 35 dollars.” A little lesson was forming in my mind, and it was very connected to the creation of the learning community that I was hoping for. “So, if each of these books is worth about 20 dollars, how much do you think all of them are worth for all 20 students in our class?”

Several students responded. Molly, a student entirely new to me, at first gave the answer \$40. I wrote the following equations on the board to help Molly.

$$\begin{aligned}2 \times 2 &= 4 \\20 \times 2 &= \\20 \times 20 &= \end{aligned}$$

When Molly looked at the equations, she realized the answer to 20×20 is 400, not 40. I wrote on the board:

$$\text{\$}20 \times 20 \text{ books} = \text{\$}400$$

“Shaun said he thought each book was worth 20 dollars. Then Molly said there were 20 books at 20 dollars each, and we got \$400. Are we done? Are these books worth 400 dollars?” Another student, Carl, raised his hand and suggested, “It’s 800 dollars. I just doubled it. We have 2 books each, so the total is doubled.”

I turned to the board and paused, asking, “So how could I record your thinking mathematically, Carl? Is that adding or multiplying or what, that doubling you did?”

“Multiplying,” answered Carl. “It’s like 400 times 2.” I added that number sentence to the board and also used Carl’s idea to add to the first equation:

$$\begin{aligned}\text{\$}400 \times 2 &= \text{\$}800 \\ \text{\$}20 \times 20 \text{ books} \times 2 \text{ books each} &= \text{\$}800\end{aligned}$$

I invited the class to think along with Carl and me, “So now we’ve got $20 \times 20 \times 2$, the way Molly started, and Carl’s method of multiplying 400 by 2. Do these work?”

The discussion continued in this way, with the students building on each other’s ideas. Many of the students seemed to become more and more intrigued as the discussion evolved. I decided to follow up on this interest by asking them to do some writing.

“I’d like you to turn to your notebooks and record what we have been thinking about here. Please write today’s date and the heading, Textbooks, and write a few sentences about what we figured out about the value of our textbooks. You can record these number sentences and tell what Shaun told us, what Molly figured out, and how Carl thought about doubling.” I added, “One of the things we are going to be doing this year is thinking about math ideas all together as a group and then also for ourselves. I think this conversation has been really interesting, so I’m going to write it down in my notebook as well.”

I pulled my own notebook out, sat down beside a student and recorded the thinking illustrated by the equations on the board. As I looked around this new class, writing down their ideas, I was satisfied that we had at least begun to create the learning community that I envision.

Mrs. Wilcox actively looks for ways to engage her students in meaningful discussions around mathematics. One way she does this is to bring up questions that are about the class so that there is common ground. She involves not only the students already excited about math but also the students who are quieter and those who may not have the same level of confidence and competence as others. By recording students’ ideas publicly and letting students know that she is keeping track of their thinking, she communicates to them that she values and attends to their ideas. In this way, Mrs. Wilcox begins the process of building a strong mathematical community.

Questions for Discussion

1. What mathematical behaviors, which are helpful in building a mathematics community, was Mrs. Wilcox modeling and supporting during this discussion?
2. Think about the ways in which you can involve a range of students in activities and problems that are meaningful to them. How can you take advantage of opportunities that arise early in the year that will help build a supportive math community in your classroom?