

Class Background for Video Clip: Establishing Norms for Argumentation

The students in the clip are six 6th-grade students to whom Ms. McKnight provided support and intervention several days a week in their math class. On Fridays, Ms. McKnight pulled the students altogether to another room to focus on Common Core Mathematical Practice 3. During these sessions students also worked with Sharon Heyman, a UConn graduate student working on the Bridges Project. These students were struggling in math at the time. Ms. McKnight's focused her instruction around argumentation and critiquing the reasoning of others beginning in late January. The clip is from a lesson near the end of March.

Ms. McKnight wrote the following to give a sense of her class and instruction around the video clip:

My initial goal was to engage students in forming a mathematical argument through discourse and writing. As with many students who struggle with math, these students hesitated to engage in mathematical discourse. So, I decided we needed to create a community agreement to set some guidelines. Because the students had very little experience in mathematical discourse my focus became more about strengthening mathematical discussion by modeling what this process should look like in a typical 6th-grade class. Sharon and I felt that getting them to engage in discourse and critiquing the reasoning of the others was going to be crucial to have them start the process of writing an argument.

After having the students create their community agreement, we showed them a video of other 6th grade students and asked them to notice what the students were doing and what the teacher was doing. They noted that the students did most of the talking and the teacher mainly asked questions. The second step was to model how discourse between two people who may have solved a problem with different strategies might look. I had the students use a discourse checklist to "score" the math discussion Sharon and I had after we solved a mathematical argument problem. We continued to use this checklist during our Friday sessions for student-to-student discourse. The third step was for me to be mindful about being explicit with my mathematical vocabulary and asking students many clarifying questions while they worked together in pairs or shared their thinking to the entire class. I also reminded the students that I was not looking for them to explain step-by-step how they solved a problem, but why they solved it the way they did. At this point, my focus was providing an arena for them to feel safe enough to discuss their math thinking. Over time we looked at ways they could help each other arrive at a correct answer.

It is also important to note that each session began with a type of "energizer" task that encouraged students to problem solve, reason and engage in mathematical discourse. This might have been a number talk, "can this be true?" problem, or critiquing an incorrect answer from previous sessions.

When we first started these Friday sessions, several things were apparent. The students had misconceptions about how to solve some of the problems in multiple ways, limited ability to justify their answers, didn't know how to explain their answer (the work) verbally. If they got a problem wrong, often they didn't look for how their answer was incorrect and then make adjustments. They hardly ever critiqued the reasoning of others. By the end of the school year, however, I saw lots of growth in almost all six students. One student, Chamari, highlighted in the video clip, showed the most growth in so many ways. Both Sharon and I saw his confidence level grow - he was able to clearly state how he solved a problem, he frequently shared his thoughts regarding the others students' solutions, and he was starting to show progression in his math class.