



IT WORKED!

Conceptual Understanding of Multiplying Fractions

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My story started with a problem some of my 5th-grade teachers were having with bringing conceptual meaning to multiplying fractions. Prior to this, they had always felt it was “easy” just to teach multiplying across the numerator and denominator, but began questioning their practice. They began to examine why the procedure was so easy but the justification of why it works was not. The teachers began to examine the fact that although students were good at the multiplication procedure, they couldn’t answer more in-depth questions about fraction multiplication.

My first question to this small group of teachers was: How long do we have until you have to teach this? They told me that they would be “multiplying fractions” during the next quarter, which gave us about four weeks to work on thinking about teaching the topic differently. We arranged to meet every Thursday during their common plan time and recess, which gave us one hour and forty-five minutes per session. For the first meeting, I asked them to be prepared to discuss the resources they currently used to teach the topic. I also recommended that they should look over some other resources they had or could find online if they had time.

By giving the teachers a small chore to do prior, we were able to go into our first meeting with some ideas and resources. Of course, I also brought resources that might help them think about the conceptual part of multiplying fractions. Looking at tasks that address student learning and common misconceptions was going to be my contribution if no one else came up with it. For our next meeting, I asked teachers to create or find a lesson that could be a starting point for students. This lesson also had to involve some sort of activity that connected to strategies or models students had used before. I asked the teachers to come prepared to discuss why they believed their lesson fit those criteria.

Our next meeting was very productive; it took all the time we had to share and put together a rough version of a lesson that would encompass most of the components of a good lesson plan. I felt my place in this meeting was to give ideas they may not have thought about. Two things I really wanted the team to incorporate in the lesson were at least one contextual problem and the use of something students were already familiar with using whole numbers. I asked them to think about an area model as a starting point so that students could see what happens to the product when multiplying unit fractions such as one-fourth and one-half.

For our next meeting, we decided we would “try out” that lesson. I found that I *wanted* to do the lesson! I was pumped! I wanted to show the teachers that even with a “draft” version of a lesson it can all be good! That happened in my mind for a good 10 seconds—and then I realized that this was not about *me*. This was about helping teachers help their students. So instead I asked, “Who will volunteer to do this lesson we have all agreed might work?” The teacher that volunteered surprised me—I thought that Mrs. L would hang back and take the “wait-and-see” method.

I arranged with the principal to cover the other teachers' classes for 55 minutes so that we could all be in Mrs. L's classroom and then debrief about what we learned after the lesson. Sometimes all you have to do is ask!

We collected student work, snapshots of white boards, and pictures of what Mrs. L wrote on the board for discussion during the debrief. I wanted Mrs. L to have the first say about how she thought the lesson went and what could we do differently next time. I was extremely pleased that Mrs. L followed our planned lesson which allowed us to have a conversation about refining the lesson. At the end of our debrief I shared a formal lesson study protocol so that they could see our work doesn't stop there. The teachers decided they wanted to repeat the process with the revised lesson in another classroom. This might have been the highlight of the process for me because Mrs. C stepped up and said I will do it next. The team went back to the principal and asked for some more time.

I felt having this lesson study protocol as a tool for working with teachers seemed to work for this situation. As I reflected on the month-long work with these teachers, I realized we might have had some really great conversations had we pre-tested the students and then post-tested them. However, we were able to collect informal data about students. What worked in this situation was that this was relevant to the teachers. I sent a short survey to them to see how the process affected them. Comments such as, "Before this I thought 'Well, we will do multiplying fractions in two days and move on.' But now I have several lessons to use to work on conceptual understanding and to build up to the formal procedure for multiplying fractions." Another teacher commented that she will be looking for tasks that will help students visually divide fractions to share with her team.

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