Using Checklists

A Case Study of Damien

"We Didn't Do Math Like This in My Old School."

Integrating a New Student

Being the new student in a classroom is never easy. This transition becomes even more challenging when it occurs in the middle of the school year and when the curriculum in the new school differs from what the student is accustomed to. In this case, Marion Perkins shares how she helped such a student transition into her classroom community.

Classroom communities change constantly as new students enter the classroom at varying points throughout the year. It can be challenging for teachers to help new students transition into the mathematical community during the year. This can be particularly challenging when the new student has a more traditional background in mathematics instruction.

Time 1

Damien entered my class in the middle of the year. At first, he appeared to slip in without a problem. An avid football player, he made friends the first day on the playground. He appeared comfortable in class, smiling often and raising his hand to volunteer ideas.

Math class, however, created issues for Damien. After a week or so he often commented, "We didn't do math like this in my old school." He was confused by the alternate strategies students were sharing for adding numbers. For example, one day we were solving the problem 3,487 + 5,018 when one student shared:

I added the 3,000 and 5,000 to get 8,000. Then I added the 400 to get 8,400. Next I added 87 + 10 to get 8,497. Then I added 3 from the 8 to get 8,500 and then the 5 that was left to get an answer of 8,505.

I could see Damien's eyes glaze over as he listened to this strategy. Although he clearly thought of himself as a good student, his number sense was extremely weak, and he had no idea how to add even relatively small numbers in his head. For instance, one day I asked him, "How much would 85 + 20 be?" and he couldn't figure it out without writing it down. I could tell that his self-confidence was waning as he became increasingly aware that what we were doing was very different from what he was accustomed to and that he didn't have the prerequisite skills and number sense to do well. Compounding the problem was the fact that he missed about 10 days of school for a family vacation at a crucial point in our fraction study. I again heard him sigh and remark, "We never did any of this at my old school."

Although my students were helpful and encouraging, and we kept trying to include Damien in our math discussions, I wondered if it would ever happen. Damien was becoming quieter, more hesitant, and less willing to share ideas.

Time 2

One day shortly after Damien returned from his vacation, several students were playing a game called Fraction Track, a game in which they move counters along number lines, marked in thirds, fourths, fifths, tenths, and so on. Using knowledge gained from playing that game, the students began to add and subtract fractions.

Damien had missed a lot and was very confused, so I worked with him one on one to teach him the game and evaluate his thinking. I asked him, "What parts do you get, and what parts are still confusing about this game?"

"I don't get the fraction where the top is bigger," he answered, adding his regular refrain, "We never did anything like that in my old school."

"Let's play together and see what we can figure out," I suggested. We played for about 15 minutes, and I observed his quick and solid mathematical thinking. I could sense him building understanding as he played. At one point he had to play $\frac{7}{4}$ By this time he had become more comfortable working with improper fractions. He played $\frac{3}{4}$ on the fourths track and needed to use the rest up on another track. I wrote:

$$\frac{7}{4} - \frac{3}{4} =$$

"So you played the $\frac{3}{4}$," I said, "How much do you still have to play?"

"Damien looked up completely baffled, and said, "I don't know."

"What are you thinking about?" I asked.

"I don't know which numbers to subtract," he answered. "We never did this at my old school."

"Well, let's think," I said. "You have $\frac{7}{4}$ and you used $\frac{3}{4}$." How many fourths would still be left to use?"

With that little clue, Damien kept going and figured it out. I realized, however, that he was still operating on a model of math class in which you must be taught every procedure before you can do anything. The idea that you can figure things out for yourself in math was still brand new to him.

Time 3

Damien's progress from this point was uneven, but it was progress. A few days later his eyes sparkled as he raised his hand and searched for the words, slowly but confidently, to restate a classmate's conjecture about adding fractions with the same denominators. "I think the same

as Matt," he said. "If the, uh, bottom number, the, uh, denominators are the same, you can just add the top numbers, the numerators, and get the answer." Significantly, Matt was one of his football buddies.

Time 4

A week or so later Damien perked up when I announced one day that we would be adding decimals.

"You look happy," I remarked.

"Yes," He answered, with a smile, "wd did do this at my old school. I know how to add decimals."

This time when we shared strategies, Damien eagerly raised his hand. "Adding decimals is easy," he said. "You just line up the numbers top to bottom. You line up the decimal points and add like usual. I learned this before." "That's interesting." I said. "So you learned that you can just line up the decimal points and add and it will work?"

Damien's response was telling about his previous math education. "I don't know," he answered. 'That's just what you do. That's what I learned." Although I took some time later to work with Damien to try to help him understand why his method worked, he didn't seem interested. I wondered if he even cared to understand why, and I felt bad for him that his moment of confidence had not played out the way he might have wished.

Time 5

However, several days later, Damien showed his emerging place in our mathematics community when several students were working on a decimal-division chart in which they found the decimal equivalents for each fraction ($\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$, $\frac{4}{5}$, etc.) and looked for patterns. On that same day Damien had received our classroom award for "Making a Smooooth Transition into His New School." When I was giving Damien his award, I had reminded the class of how easily he had fit into our class and the games at recess. I mentioned his friendliness and his positive attitude that made other kids want to be with him. He beamed at this recognition.

The students worked hard and with good concentration on their charts, first filling in the decimals they knew like 0.5 for $\frac{1}{2}$ and 0.75 for $\frac{3}{4}$

For ones they didn't know, the used calculators, recorded them, and looked for patterns. As the work progressed, I noticed Damien interacting eagerly with Kaitlin, a new group mate who likes math a lot and is especially friendly like he is. They were sharing ideas about patterns and clearly making some wonderful discoveries together. They were not getting distracted from the task, as Damien sometimes did when he did not understand what we were doing. Instead they were eagerly proceeding down a long chart, filling in numbers and discussing patterns they found.

When recess time arrived, most of the students had not finished the chart. I told them they could continue to work during silent reading after recess, if they chose to, in preparation for our discussion the next day. After recess, Kaitlin and Damien were once again huddled together over their papers, discussing patterns in hushed tones while other students were reading around them. I realized that Damien was finally feeling like a member of this community.