Accommodations for Learning

The Case of Ezra Who "Just Knows" the Answer

Motivating students to become meaningfully engaged with the work is an ongoing concern for all teachers. But while the issue of motivation is significant in working with all learners, it can take a surprisingly central role in our work with those students who arrive at the answers quickly and are constantly seeking additional challenge. In the following case, Katrina Sajak works with Ezra as she identifies ways to redefine her expectations for him. In doing so, Ms. Sajak is able to meet her math goals not only for Ezra but also for other students in her class.

Every year I have at least one student in my class like Ezra. He is one of those quick-thinking human-calculator kids who "just knows" the answer. He is not an arithmetic-only student who knows only a narrow slice of the mathematical ideas being studied. He has some good, solid understanding about numbers and operations, and he enjoys playing around with mathematical ideas. What frustrates Ezra is the requirement that he "show his thinking" or "show how he solved the problem."

The kind of math work we do in our class demands that students learn how to effectively communicate, model, and represent their thinking so that each student becomes able to work with each other's ideas. I value the way in which these representations help students deepen their own understandings and promote discourse in our classroom community, and I am committed to helping all students achieve this goal.

For many students, showing how they solved the problem is easy because as they are solving it, they leave behind a record of their solution. Students like Ezra "just know," and they hear the requirement to show their thinking as a burden—an extra step they have to do. As the year progresses, these students can become deflated, confrontational, and defensive if we continue to require them to carry out these extra steps. With this in mind, I decided to find out more about what was going on for Ezra. An opportunity came up as the class was working on *How Many More?* story problems. Students were asked to solve each problem and show the solution with an equation and a number line.

When I first looked at Ezra's paper, I struggled to figure out what to say to him about it. Although he got five of the six problems correct, he had completely avoided using the number line, and the steps of his solutions were poorly organized on the page. I knew it was time to talk with him about communicating his thinking. I needed him to see the value in this aspect of learning mathematics! In addition, I was worried about the problem he got wrong (he had written $43 + 18 = 68$); Ezra calculates problems like this all the time in his head—just for fun!

As I began to talk to him about his work, I immediately felt his distress. Ezra was not comfortable, nor was he familiar, with being "unsuccessful" in math. He said, "I have a really hard time with stuff like this. I know the answer right away, and then when I have to go back and count tens and stuff and put it on a number line, I get all confused and mess up!" He was trying so hard to meet the expectations of the assignment, yet it was inconsistent with how he worked.

I asked him if he thought it would help to just write down the answer as soon as he got it. Then he wouldn't have to hold on to it while he was showing his solution. He looked somewhat relieved, but there was still something bothering him about the "show" part.

I decided to give Ezra a slightly different direction—to satisfy his way of working as well as my need for students to represent their ideas. Instead of having him "show his thinking," or "show his work," I asked Ezra to "show why the answer makes sense." Basically, I asked him to prove why the answer he got is a reasonable and accurate one for the problem. It seems like such a minor revision, but for Ezra, the effect was profound. His expression lightened, he smiled, and he hugged me! As he returned to his work, he had renewed energy and a much livelier engagement with the activity. He has sustained that energy and engagement for several weeks now.

This case demonstrates how a carefully considered, seemingly simple extension can have far-reaching results. In resolving her dilemma with Ezra, Ms. Sajak begins by reflecting on her objectives for the activity. She clarifies for herself the importance of asking students to represent their mathematical thinking: It helps individuals think more deeply about the problem while also providing a vehicle for students to talk with one another about their work. However, when students naturally skip the recording of steps that they easily understand for problems they can solve easily, it can be tedious and unproductive for them to go back to do additional recording.

Ms. Sajak then applies some creative problem solving, working with Ezra to arrive at an agreement that satisfies her goals but is more consistent with his approach to learning. Ultimately, Ezra is able to complete the assignment and create a representation that he can share with others. Perhaps even more importantly, Ms. Sajak's solution enables Ezra to see the value in looking at the big ideas behind his answers and to maintain his enthusiasm about learning mathematics.

Questions for Discussion

1. Ms. Sajak considered Ezra's strengths, along with her own math goals for him, to create a more challenging mathematical activity for Ezra. What factors did Ms. Sajak consider when creating an accommodation for Ezra?

2. Why did Ms. Sajak feel that it was important for Ezra to represent his mathematical ideas and solutions? Do you agree with her thoughts on this subject? How do you make decisions about when it is productive for students to "show their work" or explain how they solved a problem?

3. Have you had students like Ezra who "just know" the answers but struggle with representing their work? How do you help them understand the value of representations in deepening their own mathematical thinking while bringing their ideas to the rest of the class?