The Case of Dontrell: Developing Literacy Skills Through Mathematics

Maria Martinez-Roberts reflects on one of her students who begins the school year as a nonreader. She shares how his interest and strength in mathematics contributes to the development of his literacy skills and how the development of his literacy skills enables him to continue to grow mathematically.

Dontrell, a quiet, shy boy with a myriad of learning and emotional difficulties, joined our class community a few months into the school year. He was a nonreader, working at the preprimer level, and had language delays that made oral communication difficult and written communication even more so. Both physical and emotional factors affected Dontrell's ability to focus and make academic progress. While Dontrell was polite and tried to do his best, he often became frustrated and would retreat into an "I can't do this" stance.

Within a few days of his arrival, I noted that Dontrell looked forward to our mathematics time. He would lift his head off his desk and listen to the other students share their thinking. He would not make attempts to record any of his thinking with number or word representations, but he was beginning to "read" the work of his classmates. One day when I crouched near his desk and asked him what he thought about Lexi's strategy for solving 23×4, he stated,

I think she likes to use 20 first. But I would use 25 four times and then subtract two 4s.

As we moved to solving multiplication problems with larger numbers, Dontrell began raising his hand to share his thinking. I was amazed at his ability to hold all his steps in his head and articulate each step without writing anything down. He was showing evidence of strong numeric reasoning and was beginning to feel confident sharing his ideas.

On one particular day, I gave each group of students a transparency on which to represent their strategies for solving a multiplication problem. I asked each group to discuss their individual strategies, come to a group consensus on one strategy they wanted to share, and record that strategy in their individual journals before preparing their transparency. As I walked over to Dontrell's group, I noticed that he had not only recorded his team's strategy but had also drawn an array and written several sentences about his strategy. This was the first time that he had attempted to do any writing! Dontrell proudly shared his group's thinking at the overhead.

As the weeks passed, I began to use Dontrell's math ideas for his literacy work. One of his classmates or I would write his ideas in his journal and then he would practice

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reading “my words and my thinking.” We made cards for words that he used often, such as “break apart,” “took away,” “friendly number,” and “close to my number.” Dontrell’s fascination with numbers and his pride in his ability to solve problems gave him the confidence to attempt more reading and writing activities. He enjoyed writing stories that represented multiplication and division situations. He would sometimes read a short picture book and then rewrite the story as a math problem. Dontrell shared with me that he now thought math was fun because he liked how we “talked about math and did the math in lots of different ways.”

As spring and the end-of-the-year state assessments approached, our class began discussing test-taking skills. Our mathematics end-of-grade test would consist entirely of word problems. Despite Dontrell’s reading difficulties, he would not be allowed any testing modifications due to a variety of factors, including timing, the particularities of our state’s special education laws, and the irony of his testing above his cognitive level. I knew that Dontrell was a strong mathematical thinker with flexible and efficient strategies for computing. His spatial visualization skills and oral geometric language were also at grade level benchmarks. However, despite the progress he had made in decoding words and comprehending text, I wondered how he would be able to sustain and interpret the mathematical ideas amidst all the reading he would have to do during the nearly 2 1/2 hour mathematics test. How would he navigate through words such as *approximately* and *estimate* and *perpendicular* and all the words that provided the context for the math problems he would have to solve?

I felt certain, based on my observations and his formative and summative assessments throughout the school year, that Dontrell would be able to be successful with the next grade’s course of study in mathematics. When the end-of-grade testing results arrived, I was delighted to see that he had scored in the top scale in mathematics, with the sixth highest score in our class of 26 students! Clearly, his love of mathematics had provided the incentive he needed to tackle the difficult reading that the test included.

Dontrell had clearly come far since arriving in our classroom, but much work remained. Although he had done very well in the mathematics assessment, he had not passed the end-of-grade reading assessment. As I celebrated the progress that this fragile learner had made, I reflected on the role that his mathematical ability had on his cognitive, affective, and social development. I was left with questions about the work of building on his mathematical ability to develop his literacy skills, and how this work could continue. For example,

- How had his positive disposition, number fluency, and competence in mathematics affected his literacy fluency?

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- What strategies does a fragile reader employ to make sense of the mathematical ideas embedded in the words that he or she cannot decode or comprehend?

- How does the processing of mathematical ideas support the semantic and syntactical processes needed to read and comprehend text?

- What more could I and Dontrell's future teachers do to take advantage of the opportunities for literacy development that his mathematical strengths provide?

It is critical to identify the strengths of students who have special needs in some areas. In this case, Ms. Martinez-Roberts recognized Dontrell's strengths in mathematical reasoning and built on these strengths to increase his understanding both in mathematics and in reading.

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