

Leadership

Helping Principals and Teachers Talk About Learning

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Building a Teaching Bridge from Reading to Math

Marilyn Burns



“What do you think is important when teaching reading?” I asked a group of teachers recently.

They seemed surprised, since I had come there to conduct a two-day professional development session on math instruction.

“Did you mean about reading or about math?” Justin asked gently. I think he was trying to rescue me.

“About reading,” I responded. Then I asked the teachers to work in small groups and list their ideas.

That opening question was deliberate. From my experience providing professional development in mathematics to teachers over the past 30 years, I’m convinced that one of the greatest challenges at the elementary level is teachers’ content knowledge. When in college, many took only the required courses in mathematics, and they often

come to the teaching of mathematics with a combination of trepidation, lack of confidence, fear of the subject matter, and a general lack of comfort.

In contrast, when teaching reading and language arts, elementary teachers are generally comfortable with the concepts and skills to be taught and take delight in watching their students become competent readers. Their eyes light up when they find the perfect book for a particular student. But I don’t often see elementary teachers with the same attitude toward or intuition about math activities or materials. They don’t see the potential in math instruction for the kind of involvement, excitement, and creativity that emerges when they are teaching reading.

We know that children learn best when they connect new learning to their existing knowledge and skills. I think that the same holds true for how teachers teach. So how can principals help teachers build on the skills and strengths they demonstrate in teaching reading and language arts to improve their math teaching? One way is to initiate, as I did, a schoolwide conversation to help teachers think about what they can apply from their teaching of reading to their teaching of mathematics.

Here are some of their responses regarding reading instruction:

“We want our students to love reading.”

“We want students to develop good word attack skills.”

“We want students to read fluently.”

“We use a variety of teaching strategies—shared reading, guided reading, independent reading, read alouds.”

“We include comprehension from the very start.”

“We ask children to make predictions about what might come next in a story.”

“We want students to identify what’s important and what’s not as important in what they read.”

Then, to shift their focus, I said “Let’s go back through your ideas and think about how each might apply to the context of teaching *math* instead of teaching *reading*.” The resulting discussion was revealing. Some acknowledged that the focus on comprehension and thinking skills so prevalent in their language arts instruction was missing in their math teaching. In discussing the relationship between fluency in reading and fluency in math, some admitted that while they

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saw comprehension as key to reading fluency, in math they often felt relieved when students could just compute accurately. One teacher commented, “Sometimes I know that the students really don’t understand why they are borrowing or carrying, but I don’t know what to do.” The teachers also revealed that the confidence they felt in their ability to articulate what they were doing with reading instruction didn’t exist in their math instruction.

To build their confidence, we first discussed one aspect of teaching reading that is different in teaching math. In reading, there is one gatekeeper skill—decoding. It is the essential skill that gives readers access to the entire world of printed matter. However, there isn’t a comparable gatekeeper skill for math. Children must first learn to count and then add and subtract small numbers. Next, they learn about place value and working with larger numbers before moving on to multiplication and division.

All of this early learning relates to whole numbers. Then students have to learn about fractions, decimals, percents, and so on. There is no one gatekeeper skill that children can practice and perfect; they must build a succession of skills.

Comprehension Is the Key

But there is one significant way that teaching reading and math are similar. When a child is learning to read, everybody knows that proficiency is all about bringing meaning to the printed page. For example, I can “read” anything in Spanish, since I’ve studied some Spanish, yet still not understand much of what I’m reading. Likewise, no child can be considered to be a proficient reader if he or she can pronounce the words but doesn’t understand the material. Comprehension is key to being a successful reader, and the same standard should hold true for math.

If children have memorized the math facts and can perform computational procedures, teachers often think of them as proficient. But we’ve seen over and over again how

Teaching Math by the Book

There are hundreds of children’s books that are appropriate and effective for teaching mathematics, and many are available in school libraries. I’ve compiled a list of more than 100 such books that your school librarian can check. (Go to www.mathsolutions.com, click on Publications, and you’ll find a link to the At-a-Glance Chart of Children’s Literature.)

Choose a book that has appeal for a wide range of grade levels. For example, try *Chrysanthemum*, written and illustrated by Kevin Henkes. It’s about a little mouse named Chrysanthemum who is tormented by others in her class who make fun of her name for being too long and for being the name of a flower. It’s a tender story and the characters and situation are unforgettable.

Read the book aloud to young children and then write Chrysanthemum on the board with the author’s first name, Kevin, underneath. Ask the children: How many more letters are there in Chrysanthemum than are in the author’s name? Children can use interlocking cubes to make a train of 13 cubes to represent Chrysanthemum and another train of five cubes to represent Kevin. Then they can compare the lengths of their own names to Chrysanthemum. Older students can compile a graph of the lengths of all of the first names in the class, including Chrysanthemum, and then figure out how many letters are in their combined names.

Children’s books won’t answer all of the needs for improving math instruction, but they serve as one way in to encourage teachers to take a new look at their math teaching and to build their interest in further professional development for teaching mathematics.

children can borrow, carry, bring down, or invert and multiply without understanding why the procedures work or how to apply them to problem-solving situations. The challenge is to help math students develop meaning and make sense of what they do.

When I asked the teachers to translate some of the instructional strategies they were comfortable using for literacy into opportunities for teaching math, these were some of their responses:

- In *reading*, teachers often ask students to make predictions about what might come next; in *math*, they can ask students to make estimates before solving problems.
- In *reading*, writing and oral communication are important aspects of instruction; in *math*, having students write down and discuss their ideas can help them develop, cement, and extend their understanding.
- In *reading*, teachers do not expect children’s writing to be identical, even when writing about the same topic; in *math*, teachers can

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encourage different methods for reasoning, solving problems, and presenting solutions.

- In *reading*, vocabulary instruction is integral; in *math*, teachers can start a word chart for math terminology, consistently use correct math vocabulary, and encourage children to do the same.

- In *reading*, read-aloud books provide students with common experiences from which they can learn; in *math*, there are many children's books that can provide a

stimulus for problem-solving (see sidebar, page 2).

- In *reading*, teachers blend whole-class discussions, small-group instruction, and individualized reading and writing; in *math*, the same strategies can be appropriate and effective.

For principals to help teachers make significant improvement in their math instruction, it's essential that they deepen teachers' understanding of the mathematics they have to teach. Teachers can't

teach what they don't understand, and they can't teach well what they don't appreciate. Talking to teachers about math instruction in terms of reading instruction can give them a different and more positive perspective.

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