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A math method for Utah schools

In Our View

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As the schools get into full swing, it's a good time to talk about a mathematics teaching method that could benefit Utah schoolchildren.

It's a series of textbooks called Singapore math -- a program honed in the schools of Singapore over the last three decades that is beginning to influence American education. There are rumblings that Utah lawmakers are taking a look at the program. The method has had great success where it has been given proper support.

Singapore math's roots go back about 30 years, when educators in the city-state of about 4.5 million people began working on a new curriculum. Success was not inevitable: in 1984, Singapore's students finished 16th out of 26 nations in the Second International Science Study. About that time, however, reforms began taking toot.

By 1995, the Trends in International Mathematics and Science Study ranked Singapore's students No. 1 among participating nations, a feat it repeated in ensuing years. Other surveys have also ranked Singapore's students at the head of the world's class in math proficiency. American students, by contrast, have often finished with middling or mediocre rankings.

How does Singapore do it? The U.S. Department of Education reported: "Singapore's textbooks build deep understanding of mathematical concepts through multi-step problems and concrete illustrations that demonstrate how abstract mathematical concepts are used to solve problems from different perspectives."

"The Singapore texts don't make a huge deal about the concepts, but they present them in the correct and economical form," said Roger Howe, a Yale math professor. "It provides the basis for a very orderly and systematic conceptual understanding of arithmetic and mathematics."

The textbooks seemingly have found a way to reconcile feuding schools of thought. They focus on instilling basic knowledge, but without being repetitious. And they instill basic math concepts very quickly, but in a way that doesn't overwhelm kids.

As for actual lessons, the books use specific examples and reinforces them with clear, simple graphics, while at the same time quietly introducing fundamental concepts.

Students are expected to master one topic, then move on to the next, with a more intense focus on a smaller number of topics than is typical in U.S. textbooks. The payoff is that the Singapore method provides a better foundation, so that other topics can be more easily mastered later.

Other differences also contribute. "They do math word problems super well and super

clearly," Jerome Dancis, an associate professor emeritus of mathematics at the University of Maryland, said of the Singapore method. Dancis spoke to the Daily Herald last week.

Another key, he said, is that the books are written "in simple English with a minimum of jargon."

"American textbooks have too many words, too many photos, too many distractions," he said. "Singapore math cuts out the camouflage."

This method allows impressive progress on essentials. For instance, he said, by the fifth grade, arithmetic problems essentially teach algebra. Here's a problem from a fifth-grade Singapore textbook:

"Mrs. Chen made some tarts. She sold 3/5 of them in the morning and 1/4 of the remainder in the afternoon. If she sold 200 more tarts in the morning than in the afternoon, how many tarts did she make?"

The answer, by the way, is 400. Don't feel bad if you couldn't figure it out. A lot of kids and adults couldn't solve it. But this is fifth grade in Singapore!

Sadly, many U.S. elementary school teachers also can't solve problems of this caliber, either. That makes professional development a key requirement for Singapore math, Dancis told the Herald. And the teacher training cannot be on mere pedagogy but must be on content, he said.

Some observers think the method asks too much of parents. Actually, that's one of the hidden lessons of Singapore math: Math isn't only for the Einsteins of the world. The basic assumption is that most students can master relatively advanced skills and concepts if they focus and work hard -- and if they're taught properly.

The U.S. educational establishment, however, is like most establishments in that it is slow to adopt new ideas. Utah educators and lawmakers should give Singapore math serious consideration and serious support. There is no reason that Utah students in the next generation cannot lead the world.