

What's Singapore Math?

Parents in the United States often hear (and stress about) how students in other countries perform better than our children in math and science. With that in mind, many schools and homeschoolers are implementing an approach to teaching elementary math that is common practice in Singapore.

Singapore math, which refers to the teaching methods or the actual curriculum used for kindergarten through sixth grade in the small island country, has become popular due to Singapore's consistent top ranking on an international assessment of student math achievement called the Trends in International Mathematics and Science Study (TIMSS). In the latest TIMSS report in 2007, Singapore was ranked in the top three in fourth- and eighth-grade math scores, while the United States ranked ninth and eleventh, respectively.

Mastery, Not Memorization

Supporters of Singapore math credit the Singaporean methods of instruction and curriculum for its students' success. While American math instruction often relies on drilling and memorization of many skills each year, Singapore math focuses on children not just learning but also truly mastering a limited number of concepts each school year. The goal is for children to perform well because they understand the material on a deeper level; they are not just learning it for the test.

"The sequence of topics in Singapore math has been carefully constructed based upon child development theory," says Jeffery Thomas, president of Singapore Math Inc., the primary producer of Singapore math products for the U.S. market. "The means to mastery is problem solving, and the beauty of the approach is that the majority of students are well prepared to tackle increasingly difficult topics, such as fractions and ratio, when they are introduced in the third through fifth grades. Those students are also then typically ready for algebra and geometry in middle school."

Students in the same classroom may learn the concepts at different paces, but ultimately they all learn them and help develop their own solid foundation for further math learning. This prevents the need for reteaching as students move to the next grade.

Thomas and his wife, Dawn, a native Singaporean, helped bring Singapore math to the United States in the late 1990s by adapting Singaporean textbooks and workbooks for the U.S. market through their company. Now Singapore math is part of the core curriculum at schools in 40 states, Thomas says. Many schools have adopted Singapore math as their core, others have brought it in gradually, and still others are using it for gifted and talented students, or for struggling students.

What Type of Students Benefit from Singapore Math?

There is no guarantee that the Singapore method will make your child a math whiz, but teachers who use it believe it can help any child. “Most any child would benefit from this program,” explains Kevin Mahoney, a math curriculum coordinator at a private school in Massachusetts, who also maintains www.singaporemathmentor.com. “That’s because of its reliance on understanding number sense, problem solving and conceptual understanding of what these kids are doing. Singapore math requires children to understand how something works, like long division. But they’re also going to understand why long division works, not just the how but the why.”

Singapore math also relies heavily on visualization, which is often neglected in the American classroom. “In typical American math teaching, you use a concrete-abstract approach. If I’m going to teach about multiplication I will bring out physical objects and demonstrate how to multiply, then move to the abstraction of lining up numbers in a multiplication equation,” Mahoney says. Singapore, on the other hand, introduces a middle step between the concrete and abstract called the pictorial approach. “It asks students and teachers to draw a diagram of the concepts going on. This is not an idea that’s exclusive to Singapore, but it’s so well expressed in a coherent idea in the curriculum in a comprehensive way,” he says.

Students also learn to use model drawing to solve those word problems that many of us remember fondly from elementary school. Instead of trying to picture the problem in their heads, then writing out the equation to solve it, students in Singapore math diagram the elements of the word problem. “Model drawing is really exciting to Americans because they’ve seen never anything like it,” Mahoney says. “It gives American teachers a tool to help students decode those sticky word problems.”

Success Stories

Since Singapore math was added to the core curriculum at Pennacre Country Day School, an independent K-6 school in Wellesley, Mass., there has been a noticeable change in student performance. Mahoney says a recent assessment found 20-percentile gains in standardized testing of third graders compared to previous third-grade classes. The school also determined that 89 percent of parents said their children had a very positive experience with Singapore math, and were more competent in problem solving and arithmetic thinking.

In Hawaii, students and teachers at Shafter Elementary are also taking to Singapore math in a big way. “The students just grab onto it because it makes sense to them,” says Robin Martin, principal of the Honolulu school that is using Singapore math in its K-6 curriculum. “I don’t exaggerate: every day a teacher was coming into my office and saying, ‘Oh my god, the kids are getting this.’ The kids are just so excited about it. When the teachers see the kids excited, the teachers really put effort into it. They see that it’s really having an impact.”