

Looking East for Math Techniques

Approach Initiated In Japan, Singapore Guides U.S. Pupils

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It's lunchtime at the District's Hardy Middle School, and Alex Liew, 14, walks into a quiet classroom where three other students, heads down, are scribbling intently at a table. None of them is there to eat. They are attacking one multiplication problem after another--drilling just as children do in Japan.

In Baltimore, 25 students at Robert Poole Middle School are in a pilot program learning math from textbooks filled with old-fashioned drawings. The books were chosen for one reason: They are the same ones used by schools in Singapore.

While the United States may be the envy of the world in many things, math education is not one of them. An extensive international study in the late 1990s confirmed that in that subject, U.S. students are well behind the world's leaders: Singapore, Korea and Japan.

Since then, a growing number of American educators have started looking to Asia to help rescue this country from its math doldrums. After battles over old, new and new-new math, some U.S. teachers and school officials are convinced that borrowing from Asia's curriculum is the key to improving American students' performance.

Singapore math and the Japanese math curriculum known as "Kumon"--the method being used at the lunch-hour session at Hardy--are the two Asian approaches that have made the most inroads in U.S. schools.

The main distributor for Singapore math textbooks in the United States--a store in Portland, Ore.--said sales of the books have increased more than sevenfold in the past few years. Professors in Wisconsin and Illinois are training math teachers in the Singapore approach. And on the heels of the two-year-old Baltimore experiment, Montgomery County Superintendent Jerry D. Weast has approved a \$50,000 pilot program for next fall at five elementary schools.

"I am familiar with almost every math program there is, and I really do believe in my heart of hearts it is far and above any other textbook math program," Nora Flood, director of Madison Country Day School in Wisconsin, said of the Singapore books, which her school began using three years ago.

The Kumon method, used as a supplemental curriculum, has spread to nearly 3,000 students at 45 Kumon Math and Reading Centers in the Washington area and more than 109,000 students in North America.

Both approaches have their share of critics. The notion that importing a foreign curriculum can cure America's math ills ignores the cultural factors that play a role in student performance, some

educators say. They also note that Asian math teachers generally are better trained than their American counterparts--most elementary school math instructors in Asia teach only math. And they warn that if these new approaches are forced on U.S. teachers without an adequate training program--as so often happens with education fads in America--math scores will fall even lower.

Proponents of Singapore math agree that American teachers must be trained in the technique, but they view much of the criticism as little more than whining.

"It's just good solid mathematics," said Richard Askey, professor of math at the University of Wisconsin at Madison. "It's done in a quite responsible way."

The Singapore and Kumon curricula promote a versatility in basic math skills that makes it easier for students to venture later into more difficult problem-solving, advocates say. The curriculum used in most U.S. schools, they contend, pays superficial attention to a wide range of math concepts but fails to delve too deeply into any of them--or to carefully connect one concept to the next.

Teachers who have taught from the Singapore textbook say they are struck by the way it moves from basic to more advanced math concepts in a logical sequence. An instructor can tell the best students to jump ahead to the next chapter, while teachers using a U.S. math textbook often move through the sections in an order that's unpredictable.

The Baltimore pilot program, which covers four classes at three middle schools, has drawn rave reviews from students and teachers.

"These books are just rich with really neat problems that keep the kids motivated," said Felicity Ross, a teacher at Poole. Her seventh-grade math class just finished a unit introducing algebra.

Still, Keith R. Jones, coordinator of Montgomery's elementary math program--and the official responsible for setting up the pilot program Weast has ordered--has some concerns about the Singapore curriculum. "It is not a fix-it," Jones said. "It is not a be-all and end-all."

He worries, for example, that the Singapore books use British English and foreign names (Minglei and Maila instead of Jimmy and Bobby) that American students could stumble over. And he points out that the books aren't aligned with the state's math curriculum or its tests--the Maryland School Performance Assessment Program, or MSPAP.

But others say that if students learn solid, basic math, they should be able to pass any standardized test. Students in Taiwan, for example, were given the MSPAP math and science exams in 1998 and outscored Maryland children--even though the Taiwanese instructors didn't teach to that test.

The aim of Kumon, like that of Singapore math, is to ensure mastery over basic skills so that the student will have a foundation for creative thinking. Its sequencing, too, is praised as being more logical than that found in U.S. textbooks. Students do their Kumon drills either before or after school.

Kumon program director Anna Hitri conducts the daily sessions at Hardy. Students work on their own and repeat problems until they achieve "mastery"--no errors within a certain time period. Hitri also oversees a program at Whittier Elementary School in the District in which 100 youngsters arrive at 8 a.m. every day for math drills.

Anna Yuwen, 8, a third-grader at Montgomery's Rock Creek Valley Elementary School, loves her after-school sessions at the Kumon Math and Reading Center in Rockville. "I learn more [at Kumon] than my school teaches me, and I feel good about it," she said.

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