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Singapore math a success so far in Fayette Co.

By Jim Warren

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One recent morning, a class of fifth-graders at Liberty Elementary School in Lexington was gathered in front of a wall calendar, analyzing the day's date: Jan. 15.

Led by probing questions from teacher Polly Anna Cox, the kids soon concluded that 15 was an "odd composite number," meaning it has more than two factors and is not evenly divisible by 2. And they accurately projected that the next odd composite number on the calendar would be Jan. 21.

This sort of calendar math drill — helping young students recognize patterns and relationships in numbers — now goes on every morning at Liberty and eight other Fayette County elementary schools that are trying a new way of teaching math from Singapore.

Participating students are using a textbook called *Math in Focus*, which essentially is identical to the text used by about 80 percent of elementary students in Singapore, a tiny Asian city-state whose kids have been hitting the ball out of the park on international math assessments since the late 1990s. Fayette County is hoping for similar results.

So-called "Singapore math" features problems that often are more complex than American textbooks contain. It demands deep mastery of a few math concepts, rather than an overview of many different ideas. And it aims to give students a basic understanding of how math works, rather than a simple rote system for finding answers.

Because the nine Fayette schools' experiment with Singapore math began only last fall, direct pre- and post-Singapore standardized test results are not yet available. But anecdotally, teachers say early results look promising.

"I know I'm teaching math at a much higher level now than I ever taught it before, and the students are grasping it more quickly," Cox said.

Jessica Alt, another fifth-grade teacher at Liberty who is using the Singapore method, says some students in her class who were two years below grade level on math when school started last fall scored at or above grade level on a recent test.

"That's almost two years of progress in just four or five months," Alt said.

Teachers admit that adjusting to the totally new system has been tough at times, particularly for older students who had already learned to approach math in more traditional ways. But the educators think scores should really take off in the next few years as more students learn the new system.

"I really think Singapore math is the way to go," said Cox, who has been a teacher for 20 years.

Because of Singapore's math success in recent years, more and more American school districts are starting to take a serious look at the nation's math program.

But Fayette County — with about 4,300 students learning Singapore math this year — has the largest-scale experiment in the country, according to Natalee Feese, the Fayette Schools' math coordinator.

It marks a major change in math teaching, she says.

Principally, Singapore math teaches students to tackle tough problems using techniques such as "bar modelling," which involves drawing rectangular shapes or bars that illustrate problems and break them down to basics.

It sounds simple, but it's key to the Singapore approach, Feese says.

"A lot of kids, when they don't know what to do to solve a problem, will just sit and stare at it," she said. "Bar modeling is a tool that gives them the next step to take when they don't know what to do."

Feese notes that Singapore's emphasis on having students deeply learn a few topics, rather than skimming over

many, is expected to fit nicely with new, narrower and deeper math standards that Kentucky education leaders will be adopting soon.

Teachers also like the more in-depth approach.

"Before, we would touch on a math concept, get the kids comfortable with it and then move on to something else," Cox said. "We went so fast that sometimes it could be frustrating. But with *Math in Focus*, we might spend a couple of months on just one concept. The students really understand it before we move on."

Fayette County's Singapore math experiment began more than a year ago, when Superintendent Stu Silberman heard about the program at an education conference.

He then dispatched Feese to learn more. She embraced the concept after meeting with Singapore mathematician and educator Fong Ho Kheong, who wrote the *Math in Focus* system.

(Fong will be in Lexington Feb. 3 to visit the Fayette County Public Schools and meet with math teachers.)

Fayette County invested about \$325,000 last year to buy *Math in Focus* textbooks for nine schools and train teachers in how to use them.

Liberty, Breckinridge, Deep Springs, Garden Springs, Harrison, James Lane Allen, Millcreek, Russell Cave and Yates elementary schools are using the complete Singapore program. An additional 10 Fayette County schools are using "calendar math," one part of the overall program.

More Fayette schools could add Singapore math next year, but it will be up to individual schools to apply, district officials said.

Tammy Drury, who teaches fourth and fifth grade at Deep Springs, says Singapore math challenges students — and teachers.

"I went to a briefing on Singapore math before we adopted it, and the problems they showed us were challenging even for adults," Drury said.

Because the program is so demanding, Fayette County teachers continue to receive training and will get almost 100 hours by the end of the school year, according to the school district.

Many participating teachers also take the same Singapore math tests that their students take, making sure they understand the questions before giving them to the kids.

Teachers think the program is worth the effort.

"It's been a bit of a struggle because it's so new, but I really like the program," said Kaye Ison, a second-grade teacher at James Lane Allen. "I really think our scores are going to increase once the kids have done the program for two or three years."

Drury thinks her students already are gaining a deeper understanding of how math works and the rules behind it. She contrasted the Singapore approach with the way she learned math as a student in the late 1970s.

"It was all drill and rote practice back then," Drury said. "The teacher would say, 'Do it this way.' You would practice with homework and then be tested.

"But with *Math in Focus* there is no set way of doing problems. If you understand the math and the numbers, there are numerous ways you can solve a problem. That's totally opposite what we were taught.

"Now, the students aren't memorizing rules that they're going to forget or following a formula or algorithm. They're actually finding their way to the 'why' behind the problem.

"So many kids hate math. But I really think this program is going to make it more interesting and accessible for students."

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