

Columbus schools import Singapore method to improve math education

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Third-grader Abby Sabatino reacts to her teacher's two-minute warning during a Singapore-style math exercise. Students found answers using methods that made the most sense to them.

Tom Dodge | DISPATCH

By Jennifer Smith Richards, The Columbus Dispatch

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"It's the easiest way for us," said 8-year-old Abby Sabatino, who with her partner was using the block-counting method.

There is one word problem on the board. But Meagan Erwin's third-graders are solving it in lots of different ways.

The problem: If Gigi has eight bags with 94 stickers each, how many does she have in all?

Some of the Gables Elementary students have drawn diagrams to find the answer. Others have "branched," or factored, their numbers into easier-to-compute numerals. A few wrote equations, and several made eight piles and started placing blocks representing numbers into the piles.

Erwin never showed them the "easiest" or "best" way to find the answer (752 stickers).

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This year, the Columbus school district is using a new math curriculum for kindergarten through second grade that is influenced by teaching in Singapore -- a country that regularly scores at or near the top in international math tests. The U.S. ranked ninth in average scores for eighth-graders and 11th for fourth-graders on the most-recent international exams in 2007.

Solving problems -- and a deeper understanding of *why* the answer can be found with a certain method instead of only *how* -- is a key principle of Singapore's methods. The country's national math curriculum is slower-paced than many American methods and insists on laying a strong foundation in understanding numbers and place value.

Singapore's math curriculum moves students through phases, from the concrete to pictorial to abstract. The district chose to move away from so-called reform math, which relies more heavily on learning abstract mathematic concepts at the outset, in part because students who didn't have a strong foundation in number sense weren't as successful.

"If you understand how a number is made up, there's no stopping you," Erwin said.

About two decades ago, many central Ohio school districts shunned memorizing math facts in favor of focusing on more abstract understanding. Many still use the abstract-first approach, which includes playing games to reinforce concepts.

But a national math group and the new Common Core standards now favor a balanced approach to teaching math. Ohio last year adopted the new standards, and school districts will have to adjust their curricula to match them in the next couple of years.

Some Reynoldsburg teachers use Singapore strategies, too. And Dublin schools, where a group of parents led an assault against the district's "reform math" approach several years ago, now use a textbook and approach that includes some Singapore concepts.

Dublin officials agreed the last approach didn't work as well as they'd hoped.

"For many, many students, mathematics is a really abstract concept. They don't emerge from those early years of development with a firm understanding of what numbers represent," said Marge Mulcahy, who oversees Dublin's math program.

Singapore methods appear to do that, Mulcahy said.

Few Ohio districts have adopted the same textbooks that Singapore uses, although they are available and have been used in other states, said Brad Findell, a Columbus-based math consultant who works with districts as they write curricula.

In the Columbus district, Singapore textbooks are not being used, but the strategies are -- including to intervene with students who need additional help. Math specialists trained in Singapore methods now are working in 10 elementary schools and in low-performing schools using federal School Improvement Grants.

"Teachers are seeing great gains in their students because they're starting to see relationships and the patterns that numbers have," said Twana Young, who oversees math and science teaching in the district. "We've balanced the 'procedural way' and 'conceptual way.' That's what Singapore does really well."

The district is revamping the math curriculum for grades three to five and expects to bring it to classrooms next school year.

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