

## FROM SINGAPORE to MONTECITO: Crane's new math program revolutionizes how children learn

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By Nick C. Tonkin · February 3, 2012, The Montecito Messenger  
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The math skills developed by a little country in Asia are having a big effect on students at Crane Country Day School.

The school has embraced the “Singapore method” of teaching mathematics to its Lower School students.

The system adopted by Crane focuses more on teaching students to a “mastery” level of a given area of math before moving on to another topic, and introducing visuals before being given rules and formulas.

Lower School math specialist Peter Glynn said the net result is that students understand how math works in the world outside the classroom.



"I feel that our kids are not only learning the mathematics concepts better but are more effective at applying them to problem solving," Glynn said.

Math is a polarizing subject among students. In a 2005 AP/Ipsos poll of adults, math was both the most hated and the most liked subject, with 22 percent reporting it as their favorite and 31 percent reporting it as their least favorite.

Glynn said distaste for math is often fueled by a lack of understanding. By studying a segment until each student has a firm grasp of the concepts, the Singapore method improves a students' confidence in math and increases their enjoyment of it.

"If a child is successful, then they like it, if they're struggling and feel uncomfortable and don't feel successful, then they don't like it," Glynn said.

Glynn said the Singapore method teaches confidence by having students dive deep into each math topic until they get a strong understanding of it. Introducing visual concepts early on make learning easier for the students than starting off with numbers and symbols on a board.

"It's not just rote mathematics," Glynn said.

The current topic among Crane students is fractions and for that they start off with "bar-model" exercises. They get small wooden bars with the fractions denoted by lines on each side. A teacher asks them what they notice about the lines and what they seem to be doing.

They then move on to bar graphs, boxes, and pie charts. Once students have a visual grasp of the concept, they move on to word problems. A sample word problem might look like:

"Milo has 2 pizzas. He ate  $\frac{1}{3}$  of each then he gave  $\frac{1}{3}$  of each to Connor. How much did he have remaining?"

Students, having done pie charts, know that they can break two whole pizzas into  $\frac{6}{3}$ . One third of that is  $\frac{2}{3}$ , so Milo eats  $\frac{2}{3}$  of a pizza, gives away  $\frac{2}{3}$  of a pizza, leaving him with  $\frac{2}{3}$  of a pizza.

If the students can't do the numbers in their head, or on the paper, they can draw a picture of the problem and cut the pie themselves.

The school hit upon the Singapore method during a periodic curriculum review. A teacher had seen the method a few years before the review and a team of teachers found the method while poring over the various math curriculums that meet California standards.

"It really fit with our philosophy about how math should be taught to children," Glynn said.

The team studied the method more in depth, going to several conferences and even taking a trip to Pasadena Polytechnic to observe the instructors there.

"We kicked the tires pretty well before we took the plunge," Glynn said.



Students learn in a Crane match class / photos by Victor Maccharoli

Though the Singapore method has been gaining some traction in other schools over the last 8—10 years, Glynn noted that implementing it takes good training and coordination with teachers to implement.

“It’s not a cookbook type of math program,” Glynn said. “It really requires a degree of thoughtfulness and analysis when you’re looking at lessons.”

Even though it requires extra training, the Singapore method has proven popular with teachers. Second grade teacher Karen Ohrn said previous teaching involved “spiraling” where topics get introduced, then students move and later come back to the topic.

While this method can work, students that don’t pick up on a concept can find themselves falling behind.

“If you’re never teaching them mastery, then the kids that are struggling fall through the cracks,” Ohrn said.

Fourth grade teacher Stephanie Bagish said the method allows students to study the topic through several layers, including a visual layer, a concrete layer, and an abstract layer.

“They have a really good foundation on what they can learn,” Bagish said.

The Singapore method allows teachers to identify students that are having more difficulties and makes it easier to help get them up to speed on a topic. As students advance, teachers can incorporate previous topics into the word problems which act as a form of review.

The Singapore method hasn’t just benefited the students. Through training and its strategies, Ohrn said the method has helped her become a better mathematician. She admits she never would have considered herself a good math student.

But through the use of bar models, visuals, and always asking, “What do you know?” Ohrn said she’s learned to solve math questions with greater ease.

“It builds my confidence to be able to say, ‘Hey, I can solve that problem,’” Ohrn said.

And that confidence rubs off on the students as they learn to overcome their fear of complex problems. And that helps students prepare for the rest of their life, whether its figuring out how much they spend on food or working on a career in science or technology.

“And that’s what we want for them in this world,” Ohrn said.

The method is also proving to be a hit among parents. Glynn said in the first year there’d been some frustration among parents unfamiliar with this new way of doing math. But after the school performed several outreaches and workshops, parents have adjusted.

“Now that we’re in our second year, I can’t say I’ve had a single parent come in and complain to me,” Glynn said.

Crane School parent Neil Levinson said the Singapore Method has not only helped his children, but in working with them, it’s increased his own knowledge of math.

“I have learned more about math and understanding math from doing the Singapore method with them than I ever did in school,” Levinson said.

Levinson said it’s also made his children more self-sufficient when it comes to doing their homework.

“It’s made it easier for us as parents to get them started and they then can do it themselves,” Levinson said.

But Levinson said that the Singapore method’s greatest achievement is allowing his children to be able to apply their knowledge of numbers to real life situations such as counting numbers on the clock or counting money.

“To me, that’s the most important thing,” Levinson said.