

# Singapore Math guru touches down at elementary school

By Kris DiLorenzo

A rock star taught at Springhurst Elementary School last Friday — a rock star in the world of mathematics, that is.

Yeap Ban Har, known worldwide for his expertise in the method known as Singapore Math, visited Springhurst's second and fourth grades on Sept. 29, taking students through a lesson using a revolutionary teaching method.

Singapore Math doesn't start with numbers, and doesn't ask students to memorize. Instead, lessons begin with the concrete — a physical object that children can handle — and progress through the pictorial, using diagrams, to abstract concepts. Children are encouraged to question, collaborate with classmates, and approach problem solving in multiple ways.

As guest teacher for Holly Mair's 20 fourth-graders (one student was absent), Ban Har patiently and with humor asked them if they could be mind readers, then coaxed them through predicting the rest of a partial word he wrote on an easel-mounted pad of paper. "Th" became "the" and then "there."

Next, using two same-sized strips of different colored paper to represent an equal number of boys and girls, he asked the students to come up with a scenario to illustrate an unequal number. One boy proposed that more boys than girls went to the Super Bowl; Ban Har tore off a piece of the girls' strip to help the class visualize that situation.

He then randomly assigned a number of boys and girls to each strip, conveying the concepts of more and less. To establish the difference between those numbers, Ban Har drew

two unequal strips on the easel pad to help the students visualize the concept of subtraction.

Learning math visually is a key tenet of the Singapore Math system. So is inquiry: not once during the lesson did Ban Har say "right" or "wrong," "yes" or "no" to any answer a student gave. Instead, he remained neutral, solicited opinions, encouraged discussion, and asked questions: "What kind of questions do you think we can answer?" "What kind of questions can you ask for a friend to answer?" He noted the answers on which some students agreed and answers that other students gave, and allowed them time to sit at tables, confer with classmates, and write solutions in their notebooks.

"One of the things unique to the program is that there are multiple ways of solving a problem," said District Assistant Superintendent Doug Berry, who attended the lesson. "Kids are learning very quickly that with critical thinking and problem-solving skills, there are multiple ways of getting to the answer they're looking for. We're not just assessing them on what the answer is, right or wrong. We're honoring their thinking and multiple ways of getting to those answers."

The first Singapore Math program began developing in 1980 at the Curriculum Development Institute of Singapore, when it revised textbooks to meet the Ministry of Education's new goals. By 2006, textbook content had nearly eliminated material about concepts that relied strictly on recall, were focused on data instead of conceptual understanding, or had no relevance to real-world practicali-



TIM LAMORTE/RIVERTOWNS ENTERPRISE

Yeap Ban Har leads a lesson at Springhurst Elementary School on Sept. 29.

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ty. The new material emphasized problem solving, math language, strategic thinking, and reasoning.

Springhurst math specialist Josh Rosen, who has taught at the school for 12 years, first encountered Singapore Math in 2007 when he and several other teachers attended a conference of the National Council of Teachers of Mathematics in Atlanta, Ga. For the next two years, the Dobbs Ferry School District reviewed its math curriculum, piloted various units, and finally decided to adopt Singapore Math. It is the only one of the four Rivertowns districts to do so.

In the 2009–2010 school year, grades 3, 4, and 5 began using the program; in the 2010–2011 school year it was introduced in grades K, 1, and 2. Rosen invited Ban Har to Springhurst in 2010 to demonstrate the program in first- and fifth-grade classes.

He thought the Singapore method would be a good fit for the school. “I liked its coherence: what happens from grade to grade and unit to unit is very connected,” Rosen explained. “Things build in a very logical way.”

He also likes the use of concrete materials, such as blocks, that students can manipulate with their hands to make visual connections with mathematical concepts. It “hooks a broader range of students when they’re asked to solve problems in their own way rather than having to do what the teacher is showing them,” he said.

Mair, who has taught at Springhurst for five years, is also enthusiastic about the program. “It’s been very successful,” she commented. “I’ve seen the students grow tremendously. They really enjoy it, and I think a lot of it has to do with it starting off so concretely. Then they’re able to talk to their peers and help one another, guide one another through it, and there’s such a community within the classroom.”

A further benefit Mair cited is that students are comfortable explaining their thoughts, and are able to agree or disagree respectfully.

While the Singapore Math curriculum ends at grade 5, its designed to have long-lasting effects. “We are building something the students can carry throughout their educational experience and for a lifetime,” said Springhurst Principal Julia Drake.

Teachers also are learning from Ban Har, attending discussions with him before and after observing the classes. Berry estimated that 40 teachers, representing the elementary and middle schools, took advantage of Ban Har’s visit, a rare opportunity given his global popularity.

Ban Har has master’s degrees in education and in Southeast Asian Studies, and a doctorate in mathematics education. He is currently director of curriculum and professional development at Pathlight School, the first autism-oriented school in Singapore, offering mainstream curriculum and life skills. He is also a principal of Marshall Cavendish Education, publisher of Singapore Math® textbooks and a global professional development institute for teachers.