NEW HAVEN INDEPENDENT
IT'S YOUR TOWN. READ ALL ABOUT IT.

Goodbye Flashcards, Hello Singapore

BY **Melissa Bailey** | DEC 16, 2011 11:04 AM
(9) Comments | **Post a Comment** | **E-mail the Author**

Posted to: **Schools**, **Fair Haven**, **School Reform**

Nilexy Conception practices subtraction with colored chips.

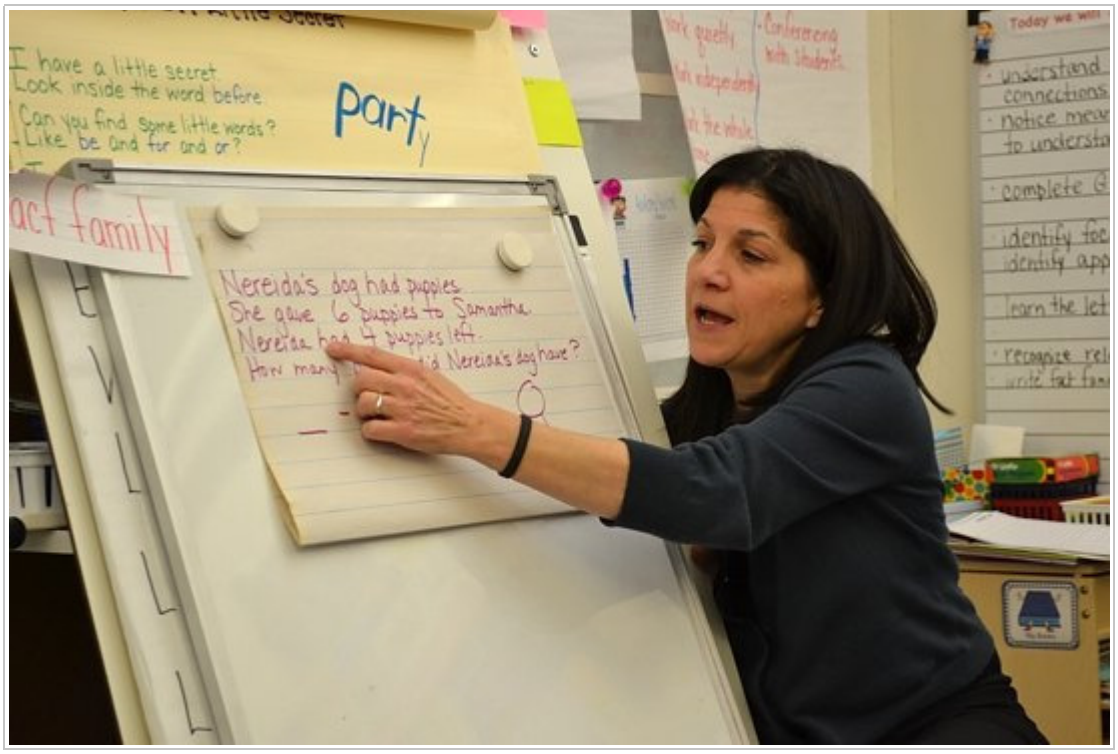
SCHOOL REFORM

When it came time to help her first-graders through a tricky subtraction problem, Rosalie Carr reached for a new arsenal of colored chips, base-10 bars and mighty "number bonds."

The hands-on math problem-solving took place this week in Carr's first-grade classroom at the Fair Haven K-8 School on Grand Avenue.

The new tools emerged as Carr and other elementary teachers try out a new method called Singapore math. In effort to get New Haven kids up to speed with their international counterparts, and in stride with a national Common Core State Standards initiative, the city is rolling out Singapore math to all classrooms in grades K to 5, starting this year with grades K to 2.

The method is based on a curriculum introduced in 1992 in Singapore's public schools. Teachers take a slow pace, focusing on thorough understanding of the fundamentals of math, with multiple approaches to the same problem. After implementing the new curriculum with its half-million public school students, the Southeast Asian country has been the top-performing nation in elementary math for every year since 1995, sending school districts around the world scrambling to replicate their success.



New Haven tried out the method in a few classrooms last year at King-Robinson International Baccalaureate School and Celentano Museum Academy. Now Rosalie Carr is one of about 260 teachers doing Singapore math this year.

Carr opened her afternoon math session Wednesday with a word of caution: "You're going to have to use your thinking caps." She was about to dive into a lesson out of Chapter 4 of Houghton Mifflin Harcourt's Math In Focus, the U.S. version of Singapore's approach. The textbook is being used with over 300,000 students across the country, at public, private and charter school schools in almost every state, according to the publisher.

The district bought the textbook for its K to 2 teachers this year at a cost of about $1,000 per classroom.

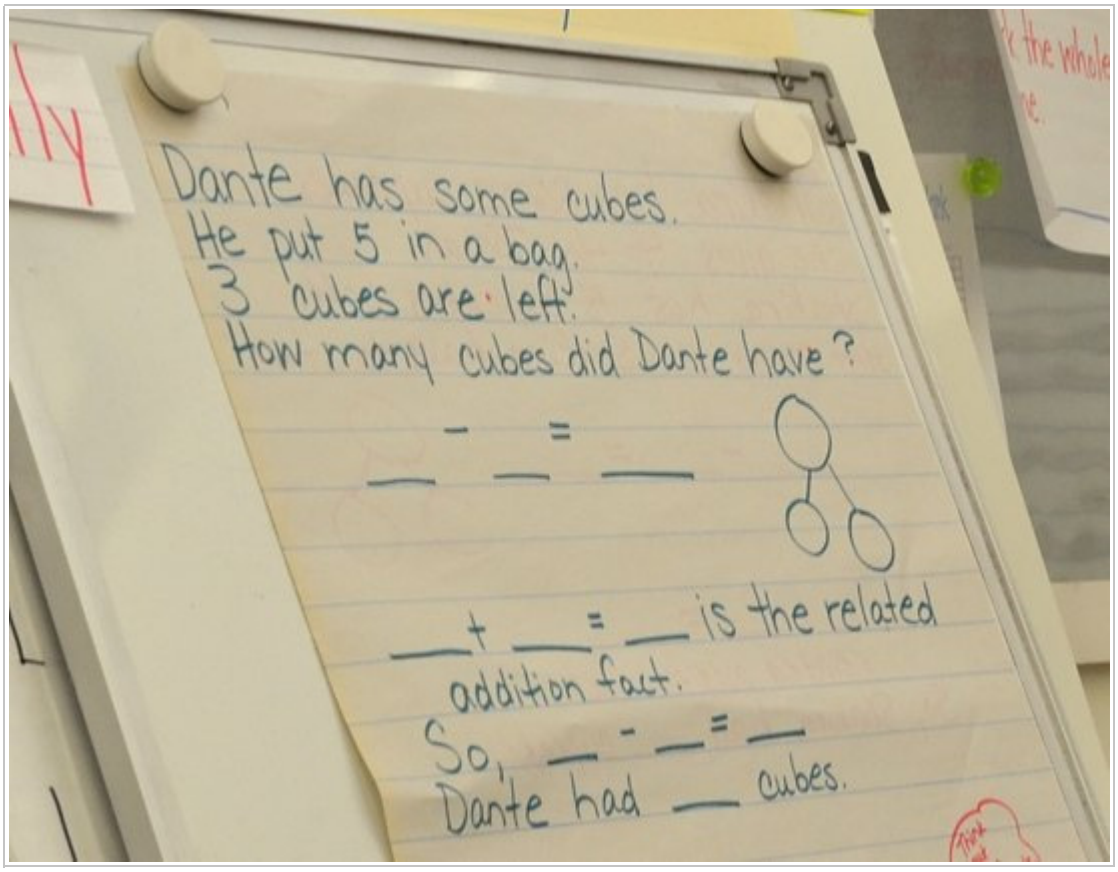
Wednesday's lesson—how to use addition to solve subtraction sentences—can be pretty confusing for kids, Carr said before class. She aimed to clear things up with Singapore math's tri-pronged approach, which combines concrete, pictorial and abstract reasoning.

As 20 students sat on a colorful rug, Carr revealed the first word problem:

"Dante has some cubes.
He put 5 in a bag.
3 cubes are left.
How many cubes did Dante have [to start with]?"

To tackle the problem, Carr reached into her new toolkit. She didn't have kids stare at the textbooks. She started with something kids can touch.

She pulled out a basket of base-10 bars, which can be broken up into cubes for counting. Carr put five cubes in a bag and three on a white plate. How many did she have in total?



Carr, who's been teaching in New Haven for nine years, then then pulled out something that's new to her practice: A "number bond." That's the term for a trio of numbers, depicted like a molecule of H2O, with two arms extending from one body. The figure represents how two numbers add up to a third.

It's a simple concept. Carr said it has helped her students master quick addition facts—and get at the meaning behind addition and subtraction. In this case, kids filled in a number bond to show how 3 and 5 relate to 8.

As a final step, Carr went to the abstract: "__ - __ = __." Kids stepped to the board and filled in the sentence as it related to Dante and his cubes.

At first blush, kids appeared to get the concept.

Zxavier Ortiz and Zabian Nieves work out the problem with their hands.

Carr then distributed the blocks, which look like outsized Legos, so her students could try a problem on their own.

Some were ready to blurt out the answer before touching the blocks. Others shuffled the blocks on their plates, then pushed their hands high in the sky.

With Singapore math, kids are encouraged not to just spit out answers, but to talk about which strategies they use to arrive at the solution.

Da'Roena Moore (at right in photo) used a method called "counting on." To get from 5 to 8, she held one hand to her head and counted up on the fingers of her other hand. The "counting on" method is part of the Singapore approach, Carr said. Putting your hand on your head is an extra flourish she devised to make it more fun.

After the class solved three word problems, Carr breathed a sigh of relief.

"They just get it," she declared to the two adults in the room. "That would have been head-banging before."

Before Singapore math, Carr said, she relied much more heavily on flashcards. Singapore math aims to have kids understand the relationship between numbers instead of just memorizing fast facts.

In her nine years at New Haven public schools, this is the fourth math initiative Carr has tried out. She said it's the best, so far. The pages of the textbook are cleaner, with more real-life images. And the pace of the year is a blessing, she said.

In the past, the district's elementary math curriculum ran "a mile wide and inch deep," said district math coordinator Ken Mathews in an interview. Teachers had to rush through a range of topics. "Now we're putting on the brakes," he said: Teachers are instructed not to move on from a unit until "everybody masters it."

Mathews said 45 teachers received training in Singapore math, and have in turned trained other teachers. All teachers get a half-day of professional development on the topic each month.

The new method represents a "paradigm shift for teachers," Mathews said: Students cover less material, but with a deeper understanding.

For example, 2nd-graders are learning less about probability and statistics this year compared to years past. However, "we think the students will perform as well or better in those topics," Mathews argued, because "they get the whole big picture."

The shift to Singapore math comes as the New Haven takes part in the Common Core State Standards Initiative, whereby districts and states are aligning assessments and curriculae to a new national standard. Connecticut is one of 45 states that have pledged to do so, with the hopes of being more competitive internationally. New Haven plans to overhaul its math and literacy curriculae by the 2014-15 school year, including the full implementation of Singapore math. The district chose the Singapore approach because it "matches so well" with the Common Core effort, Mathews said.

There's no official measure yet of whether students have gotten better at math under the new approach. The quarterly district assessments have changed to adapt to the new curriculum, so year-to-year comparisons don't make sense, Mathews said.

Mathews said so far, the initiative is "going beautifully." Anecdotally, he said, teachers are reporting that students have better mastery of the basics and are better problem-solvers.

"We're seeing kids think in ways they've never had to think before."

Carr and her fellow teacher Alexis Vetre agreed.

Fair Haven 1st-grade teachers Alexis Vetre and Rosalie Carr.

Carr and Vetre teach in adjoining first-grade classrooms, a prime position they've occupied for two years. They work so closely that they speak in synchronicity and finish each other's sentences.

The duo got wind of Singapore math last year, when their school was supposed to be trying out a different method called Go Math. Convinced that Singapore's was a better approach, they made some calls, begged for some free textbooks from the publisher, took a crash course, and got official permission to roll out the method last November. This year, they're fully implementing Singapore Math in their classrooms, with gusto.

They plan math lessons together and debrief afterwards. On Wednesday, they agreed to review the same lesson on Thursday to make sure students weren't just following a pattern, but were understanding the word problem they were tasked to solve.

Vetre, who's in her third year of teaching, said she loves the focus on critical thinking. And she likes having extra time to reteach a concept.

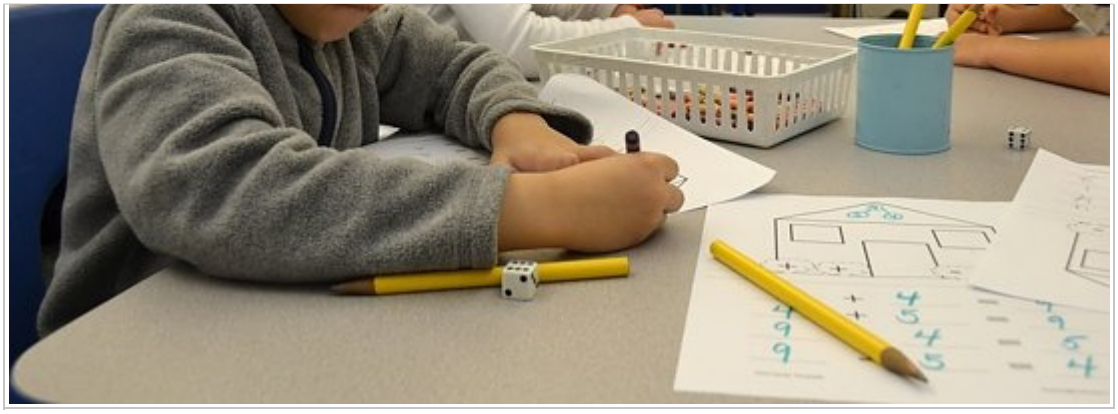
"We have time to go deeper into a topic," said Vetre. She said her students have a more solid understanding beyond "just memorizing."

"We're totally immersed right now in addition and subtraction," Carr said. Her students are "more engaged," she said, and have more tools to approach problem-solving.

After the word problems, Carr broke the class up into small groups, where they did hands-on activities to reinforce the concept. Depending on their level, kids filled out "number bonds," matched pictures to numbers, filled out addition worksheets, or played a Santa-themed game with two-colored chips (pictured at the top of this story).

"I thought today would be more painful," Carr reflected after the class.

The number bonds make it a lot easier for kids to grasp the fundamentals of addition, she said. Thinking back to her own education, she said, "Gee, I wish someone had this for me."



Zabian Nieves and Ivanaliz Zayas work on addition.

Zabian Nieves (pictured), who's 6, called the day's lesson "easy."

"Some people get subtraction wrong, but it's OK—you can keep trying," he advised. Zabian said he's doing his homework and enjoying the class.

"Do you know why we love to do math?" he asked. "Because it's so fun."

Comments

posted by: **Threefifths** on December 16, 2011 11:45am

Don't drink the kool-Aid.This is why this system works.

How Do Asian Students Get to the Top of the Class?
Why do many Asian students excel? The secret is parenting, say the authors of the provocative book Top of the Class: How Asian Parents Raise High Achievers - and How You Can Too.
By Dr. Soo Kim Abboud, Jane Kim

http://www.greatschools.org/parenting/teaching-values/481-parenting-students-to-the-top.gs

And you can bet most parents here will not do this.

posted by: **Kristina Torre** on December 16, 2011 1:34pm

Both Ms. Carr and Ms. Vetre are masters of their trade. Our first grade students are responding to Math In Focus because of these teachers' ongoing dedication to the program in its conrete-to-abstract approach to learning. As a math coach here at Fair Haven, it is refreshing to see a program at work that both teachers and students are excited about!

posted by: **Ms.Mary** on December 16, 2011 3:47pm

How exciting to see the kids having fun learning.Carr and Vetre are great teachers and the Math coach Torre makes math fun.Go Fair Haven keep doing the great job you are doing!!!!

posted by: **Kris** on December 16, 2011 7:12pm

It's wonderful to see the city moving towards a deeper understanding of fewer concepts each year. Memorization of facts does not work for everyone. Great job, ladies!

posted by: **LOL** on December 16, 2011 8:12pm

There are some very good components to Singapore math, lots of hands-on learning opportunities among them.

However, three-fifths also is correct in noting that PARENTING is a key component to any student's success.

Good teachers—and Carr is definitely one—only have the kids for maybe 30 hours per week. Parents MUST do their part.

posted by: Just a question? on December 17, 2011 9:47pm

The BOE should really use Fair Haven as the model school in the district, things operate so well there and there is a clear vision apparent in the building. What a shame that all this money is going into Clemente, Domus etc. & Fair Haven is soaring!

posted by: teach on December 18, 2011 2:23am

Fair Haven is indeed a haven for its students. A safe, positive environment is a prerequisite for real learning in any school, and Fair Haven staff actively work towards this goal every day. Ms. Gethings is continuing the mission Ms. Johnsky began, making school a great place to be all day, every day in spite of huge challenges.

posted by: trainspotter on December 19, 2011 5:34am

This is really nothing more than going back to basics. 10 years ago, public schools jumped on the "Chicago Math" curriculum which is also known as spiral math. They touch on something, move away from it, come back around and touch on it again. This was supposed to teach critical thinking. Now they see that experiment was a miserable failure (after 10 years of students were pushed through it) and they jump on the next trend, which is more like the traditional layered math that was taught back in the day, with each new concept building on the previous one. Sound familiar? Parents shouldn't be afraid to question the methods being used to teach their children. Sometimes it turns out that the children are nothing more than lab rats in a grand experiment.

posted by: Josiah Brown on December 19, 2011 1:57pm

Thanks for this look at the efforts of colleagues teaching at Fair Haven, as well as their students. Both as a parent, and in my role with an academic partnership working with New Haven educators across subjects and grade levels, I will be interested to follow the transition to Common Core standards, including in math.

A first-grade teacher at New Haven's Edgewood School, Carol Boynton, explicitly considered Singapore math in one of the curriculum units she developed in recent years. Here is that unit, on "Teaching Place Value to First Graders":
http://www.teachers.yale.edu/curriculum/search/viewer.php?skin=h&id=initiative_08.05.01_g

She prepared that unit in a 2008 seminar on "Estimation," led by Roger E. Howe, the William R. Kenan Jr. Professor of Mathematics at Yale. In another seminar Roger Howe led, Carol Boynton wrote a unit to introduce young students to geometry and patterns:
http://www.teachers.yale.edu/curriculum/search/viewer.php?skin=h&id=initiative_10.04.02_g

Below are a few other examples of units that New Haven teachers developed as Fellows in math seminars that Roger Howe led.

*Susan Gudas, then of Troup and now an instructional coach:
http://www.yale.edu/ynhti/curriculum/guides/2004/5/04.05.09.x.html

*Huwerl Thornton of Jepson:
http://teachers.yale.edu/curriculum/search/viewer.php?skin=h&id=initiative_07.06.02_g

*Anthony Wight of Career H.S.:
http://www.yale.edu/ynhti/curriculum/guides/2004/5/04.05.10.x.html

Through the Yale-New Haven Teachers Institute, Roger Howe has led five (New Haven or national) seminars since 2004. These seminars have addressed word problems, as well as estimation and

symmetry. Most recently, he led a seminar on “Great Ideas of Primary Mathematics”: http://www.teachers.yale.edu/curriculum/index.php?url=http://www.yale.edu/ynhti/nationalcurriculum/units/2011/6/

Beyond such math-centered seminars, teachers of math at all grade levels often participate in Institute science seminars through which they develop interdisciplinary units. For example, three of the Institute’s current school Representatives teach math in New Haven’s high schools and have participated as Fellows in science seminars.

*William McKinney of Wilbur Cross developed a unit integrating algebra, energy, and the environment: http://www.yale.edu/ynhti/curriculum/guides/2010/4/10.04.06.x.html

*Octavia Oliver of Hillhouse similarly integrated math with issues of resource consumption, as well as nutrition and health: http://www.yale.edu/ynhti/curriculum/guides/2011/4/11.04.03.x.html

*Kathleen Rooney of Career H.S. has participated as a Fellow in each of her first three years of teaching in New Haven, developing math units on such matters as asthma and environmental health, as well as the epidemiology of West Nile virus and Lyme disease, in order to teach algebra, statistics, and science: http://www.yale.edu/ynhti/curriculum/guides/2011/4/11.04.04.x.html http://www.yale.edu/ynhti/curriculum/guides/2009/5/09.05.06.x.html

These and all other curricular resources that public school teachers have developed, as Yale-New Haven Teachers Institute Fellows, are available for non-commercial, educational purposes.