

Title

Evaluating County-Wide Adoption and Implementation of K-5 Singapore Math: A Two-Year Study in 21 Elementary Schools

Abstract

Fourth-grade and eighth-grade Singapore students' first-place ranking in 1995 and 2003 TIMSS (Trends in International Mathematics and Science Study) mathematics test results have not gone unnoticed by educators in the US (e.g., Hoven & Garelick, 2007). The Singapore Math curriculum has been studied and adopted by a growing number of schools in the U.S. (e.g., Mechlinsky & Wolanin, 2003; Leinwald & Ginsburg, 2007).

In 2008, a county in the Southeastern United States adopted Singapore Math in all 21 elementary schools. The county-wide adoption raised a number of questions:

- Has the implementation of Singapore Math resulted in higher student math scores?
- Has the implementation of Singapore Math had a positive impacted on student interest and/or confidence in mathematics?
- Has the implementation of Singapore Math resulted in measurable changes in the teachers' attitudes toward mathematics?
- Is there fidelity in the implementation of the Singapore Math curriculum?
- How do elementary teachers implement the Singapore Math curriculum, and what are their attitudes toward the new curriculum?

This large-scale, longitudinal research study sought answers to these questions through multiple data sources: classroom observations, videotaping of classroom lessons, teacher and student surveys, teacher and administrator interviews, analysis of end-of-year test scores, and journaling from a teacher in each grade level of every elementary school in the county (Muijs, 2006; Menon et al., 2006; O'Donnell, 2008). The same data were collected from elementary math teachers and classrooms in a county with similar demographics but that had not adopted Singapore Math; these classrooms comprised a control group, and classrooms in the county implementing Singapore Math formed the experimental group. Data collected from the two groups were compared to gauge differences in teaching practices, teacher attitudes, student attitudes, and student achievement.

The objectives of this session are to: 1) acquaint participants with how Singapore Math is taught in the K-5 grades; 2) give participants a deeper understanding of how elementary math teachers implement a new curriculum; 3) share research findings about the impact of Singapore Math on teaching practices and teacher attitudes; 4) give insight into Singapore Math teaching practices that may positively impact student achievement and foster positive student attitudes toward mathematics; and 5) discuss implications for improving strategies for curriculum implementation and effective teacher professional development.

(Session activity handout, next page)

Sketch diagrams to illustrate the solution to each scenario below:

1. 12 of Jake's marbles are red, and these make up $\frac{2}{9}$ of his collection. How many marbles in Jake's collection are not red?"
2. Three more than twice a number is eleven. What is the number?
3. The ratio of Clinton's baseball cards to Jesse's baseball cards was 3:4. After Clinton bought another 40 baseball cards, he had twice as many baseball cards as Jesse. How many baseball cards did Clinton have at first?
4. If you mix 1 gal of 40% acid solution with 2 gal of 60% acid solution, what is the resulting acid concentration?
5. In a jar filled with beads, $\frac{2}{5}$ of the beads are blue, $\frac{1}{3}$ of them are red, and the rest are green and yellow. The total number of red, green and yellow beads is 126. There are $\frac{3}{4}$ *as many* green beads as there are yellow beads. How many yellow beads are there?