681.3, Roberts, "Implementing Singapore Math: A Collaborative Effort"
Singapore Math, Inc. Exhibitor Session
Presenter: Johnette Roberts **johnetteroberts@gmail.com**

Singapore Math Project in the City of Baker School System (2008 – 2012)

District Demographics : Small suburban district (5 Title I Schools), typically ranked in the bottom 3 in the state; 93% of students qualifying for free/reduced lunch; 3 elementary schools
School 1 - Grades PK-1; School 2 - Grades 2-3; School 3 - Grades 4-5; Schools were reconfigured in Year 4

Goal: To raise student achievement in mathematics through:

- the use of a highly rated mathematics curriculum,
- innovative professional development
- sustained on-site support during the academic year

Contributors:
National Science Foundation (Dr. Scott Baldridge's Career Award Grant), The Brookhill Foundation, Louisiana Systemic Initiatives Program (LaSIP), The Gabriella and Paul Rosenbaum Foundation, Louisiana State University, Southern University, Yale University

About the Project

The Curriculum – Singapore Math *Primary Mathematics* (Standards Edition)
Site Coordinator – (Johnette Roberts) provided daily on site support for the entire project
Graduate Students - from Louisiana State University and Southern University; each graduate student was paired with two teachers to work in the classroom to observe and assist the teacher
Principal/Co-Principal Investigators – Nell McAnelly and Dr. Scott Baldridge from LSU

Professional Development to Enhance Pedagogical Content Knowledge

- Based on *Elementary Mathematics for Teachers and Elementary Geometry for Teachers* by Tom Parker and Baldridge
- Consists of 60 hours during summer and 36 additional hours distributed throughout the school year, including embedded professional development with graduate students.
- Alignment of topics fosters discussion PD
  Example: Measurement: Since all grades cover measurement around the same time, the PD discussion can be inclusive of all grade levels.
  Teachers in lower grade levels can make note of the issues and change their approach to address current problems in higher levels.
- Two lesson study cycles each school year *(Dr. Patsy Wang-Iverson facilitated first lesson study cycle.)*

Parental Involvement
Parent workshops and family math nights

Why *Earlybird* and *Primary Mathematics?*

- Language based – helps students make connections between pictures, words and numbers
- Accelerated program – driving all ability levels
- Cumulative – revisits concepts covered earlier by connecting strands of mathematics
- Concrete to pictorial to abstract approach
- Topic intensive – with fewer topics covered per grade level
- Smaller textbooks, with skills not re-taught formally
- Mental math strategies embedded in the program
- Highly visual – benefits special needs students and inclusion students
- Key components – mental math, place value, problem solving

Teacher Reflection

"The Singapore Math (professional development) workshops were very beneficial to my students and myself. They taught me to understand **why** instruction and various strategies should be presented in a **sequential** way in order for students to achieve a solid foundation in Mathematics." – G. Walls, 1st grade teacher (2009)

Graduate Student Reflection

"The curriculum is equipped with **excellent textbooks and workbooks**, which I, as graduate student of mathematics, can recognize were created with an **understanding of how children actually learn**. The textbooks are very **concise** and follow a **logical flow**. Every single item on any given page of the textbook has a purpose, as opposed to being packed with formulas and redundant and incoherent information." - S. Dziobiak - LSU (2009)

Sample of Data

Year 1

First Grade Passing Rates

Assessment Test for Primary Math 1A and 1B – Baker Heights Elementary School

	Pre-Test	Post-Test
Fall 2008	16%	88%
Spring 2009	46%	72%

After Year 3 of Implementation
iLEAP Test Results for Bakerfield Elementary School

Percent of Third Grade Students Scoring Proficient (Students scoring "Basic" or Above)				
	2009	2010	2011	Difference 2010 - 2011
ELA	45%	44%	50%	+6%
MATH	38%	29%	55%	+26%
SCIENCE	37%	31%	36%	+5%
SOCIAL STUDIES	44%	41%	46%	+5%

Source: http://www.louisianaschools.net/lde/uploads/18527.pdf

Singapore Math Class Structure:

Average period between 60 and 90 minutes

Lesson Components (Approximate times):

- Mental Math (Fluency) 10 minutes
- Problem Solving (Read, Draw, Write) 15 minutes
- Teacher-Directed Lesson 15-20 minutes
- Activity 20 minutes
- Independent Practice 15-20 minutes
- Lesson Debrief 10 minutes

Key Ingredients for Success:

- **Administrative support** from school and district levels
- **Highly rated curriculum**: Primary Mathematics (Singapore Math)
- **Partnership with mathematicians** from local universities
- Intense and ongoing **professional development** of teachers
- **High expectations** and a "culture for learning mathematics"
- **Collaborative Planning**
- **Well-planned math lessons**
  Components: Fluency, Problem Solving, Main Content, Lesson De-brief
- **Fluency Exercises** (Pattern Box, Sprints)
- **Parental involvement** (sustained learning and practice of math skills at home) – parent workshops/math night
- Partnerships with **community** stakeholders
- **Weekly Quiz Program** (with incentives)
- **Data-driven instruction**
- **Belief!!**