

BRIDGES —MATHEMATICS SUPPORT FOR THIRD-GRADE GIRLS

J. M. JARRELL

Charlottesville Public Schools, Charlottesville, Virginia

The Idea

“I’m no good at math.” These are words that we never want to hear from a female student at Venable School in Charlottesville, Virginia. This feeling of not being successful in math and science can start early. In spring 1997, the Venable School standardized test results for the third grade showed that female students scored, on average, 13 percentile points below the third-grade male students on the math subtest of the Stanford 9 Achievement Test.

The goal of BRIDGES is to break this cycle of lower performance. In academic year 1999-2000, funds from a Virginia Power grant (available for the past two years) enabled eight female, third-grade students to receive additional mathematics instruction through an extended-day program. The girls were selected by their teachers as needing additional math instruction in order to meet third-grade objectives. Once the students were identified, their parents were invited to a meeting to learn more about BRIDGES and to sign the contract if they wanted their daughters to participate. All who attended the meeting signed up for the program.

So that the girls might become comfortable using mathematical concepts, instruction was embedded in practical, everyday situations, like preparing a meal, eating dinner at a local restaurant, performing a community service project, and starting a small business. These types of projects demonstrated to the girls that math is not simply a paper-and-pencil activity; it is something we all use on a daily basis.

Students were required to stay after school from 3:00 p.m. to 4:30 p.m. two days each week. We also involved parents as partners throughout the school year. They participated in at least one evening activity for each project. To develop a home support system, parents assisted with and monitored their child’s nightly mathematics homework assignments.

The Context

Venable is a public, urban elementary school that serves grades K-4 with an enrollment of approximately 300. One-third of the students qualify for free or reduced-price school meals. Approximately one-third of the students are members of minority groups, with African-American students representing the largest part of this group. Some students live close enough to walk, but

the majority is bused from their neighborhoods to Venable. Our school's goal is for all students to be successful and to meet the high achievement standards set in the Virginia Standards of Learning. To meet this goal, each student's academic needs have to be analyzed and an instruction and support program put in place. BRIDGES is one-piece of a comprehensive support system for students.

The Project Activities

"A Candlelight Dinner" was the focus of instruction for October. Students used addition, subtraction, multiplication, estimation, measurement, and working with fractions to prepare a budget, shop for supplies, and modify recipes to prepare for their parents. In addition to purchasing the supplies and preparing the food, students were responsible for renting the tablecloths, china, and flatware to set a formal table. Related topics covered included nutrition and the social skills of manners and proper behavior at a formal table.

"Night on the Town" was the focus for November and December. Students continued to use addition, subtraction, and multiplication skills. They also began to calculate percentages, estimate costs, and learn to handle money as they planned a dinner for their family at a local restaurant. The culminating activity was for each student to treat her family to dinner at a local restaurant. The students were responsible for calculating the bill (food, beverage, gratuity, and sales tax) and counting out the cash to pay the bill.

"Developing Entrepreneurship" was the focus for January, February, and March. After surveying consumers to determine the need for a product, they decided to start a small T-shirt business around the theme of the Earth Day celebration. A local businesswoman spoke to the students about how to start a business. Students developed a business plan, sought a loan for the start-up costs, and developed a marketing strategy. Mathematics was used to determine interest payments, pricing of the product, and profit/loss margins.

"Community Service" in April and May allowed the students to take some of the profits from the T-shirt enterprise and return these to the school community. Venable has a schoolyard wildlife habitat of plants to attract birds to our grounds. The community service project goal was to build birdhouses to be placed on the school grounds. Students researched the types of birdhouses that would attract the desired birds. They used measurement, geometry, and knowledge of hand tools to plan and build the houses. Parents were included in the cooperative effort of installation in the schoolyard.

Evaluation

The BRIDGES students attended the extended-day sessions regularly—rarely missing even one afternoon. They approached each task with enthusiasm and a positive attitude. The girls came to think of BRIDGES as a special club. They spoke fondly of others in the group and proudly identified themselves as BRIDGES girls. And word about the program's success has gotten out to the community. In fact, BRIDGES has such a good reputation that, since the first year, parents have been requesting that their daughters be allowed to take part.

The chart below shows that, of the eight girls who participated, seven passed the third-grade mathematics SOL test; these same seven also were graded "good" or "outstanding" on their final nine-week report card.

Student	SOL Score (400 Needed to Pass)	Report Card Grade for the Final 9 Weeks
T.B.	452	G+ (good)
S.E.	434	O (outstanding)
L.J.	273	N (needs improvement)
A.P.	512	O
S.P.	426	G
J.R.	417	G
A.S.	463	O
R.S.	443	O

The Budget

Equipment

Tableware rental (cloths, china, crystal, utensils)	\$ 95
Hand tools (hammers, nails, saws)	\$ 75
Raw materials (food, beverage, lumber, posts)	\$ 280
Total	\$ 450

Supplies

Restaurant (\$15 per person)	\$ 360
School (pencils, paper, calculators, etc.)	\$ 90
Snacks	\$ 150
Total	\$ 600

Personnel

All volunteer	\$ 0
Total	\$ 0

Total	\$1,050
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INTERVIEW WITH MALCOLM JARRELL

Q: What career path did you follow to reach your present position? Is this what you originally aimed for, or were there twists that brought you here?

A: I have been involved with public elementary schools in the City of Charlottesville for 23 years as a classroom teacher, reading specialist, and coordinator. Similar to most people right out of college with an undergraduate degree, I thought I knew everything or at least everything that was worth knowing. After teaching for a while and reflecting on my practices, I started seeing a pattern—students who entered the classroom at the beginning of the year academically behind their peers ended the year still behind. I started looking for reasons why. It wasn't until graduate course work that I realized how little I did know. With each class I took, many questions were answered; however, even more questions were raised in my mind. The more I learned, the more I realized I had still to learn.

Q: Have you been involved in similar programs before? Was there a particular moment or stimulus that caused you to begin this project?

A: Upon starting my present job as Instructional Coordinator at Venable School, the school's principal, Ron Broadbent, shared some standardized achievement data from the previous year that showed female students scoring thirteen points less than male students in mathematics. Edie Wheeler, the Gifted Specialist, and I came up with the idea for an after school program for third-grade girls that would give them additional mathematics instruction, and opportunities to apply the mathematics learned to real life situations—preparing a meal for family, eating in a restaurant, starting a small business, and performing community service. Both Edie and I had been involved in pieces of each of these activities before as classroom teachers, but nothing as intensive and comprehensive.

Q: Have there been any unique or unexpected consequences for you resulting from your project?

A: The unexpected outcomes were:

- the amount of parental involvement. We had parental involvement as a requirement for students to participate. However, in most cases parents went above and beyond the program expectations.

- the girls came to see BRIDGES as a club. For the most part, the participants were average to below average students. They had not been involved in "remediation" programs in the past. They quickly developed a group identity and took pride in being part of the after school activities.
- most girls made significant growth in their understanding of mathematics and developed a positive attitude about their abilities as math students.

Q: Are you able to identify the greatest lesson you have learned and the rewards you have gained through working on BRIDGES? What is the greatest benefit you see coming to students—and teachers—through their engagement with this project?

A: The lesson—all students can learn and be successful. The ability is there; the part that is variable is the time. Some get there quickly with little or no support from others, while there are some who need additional instruction and opportunities to practice to get there.