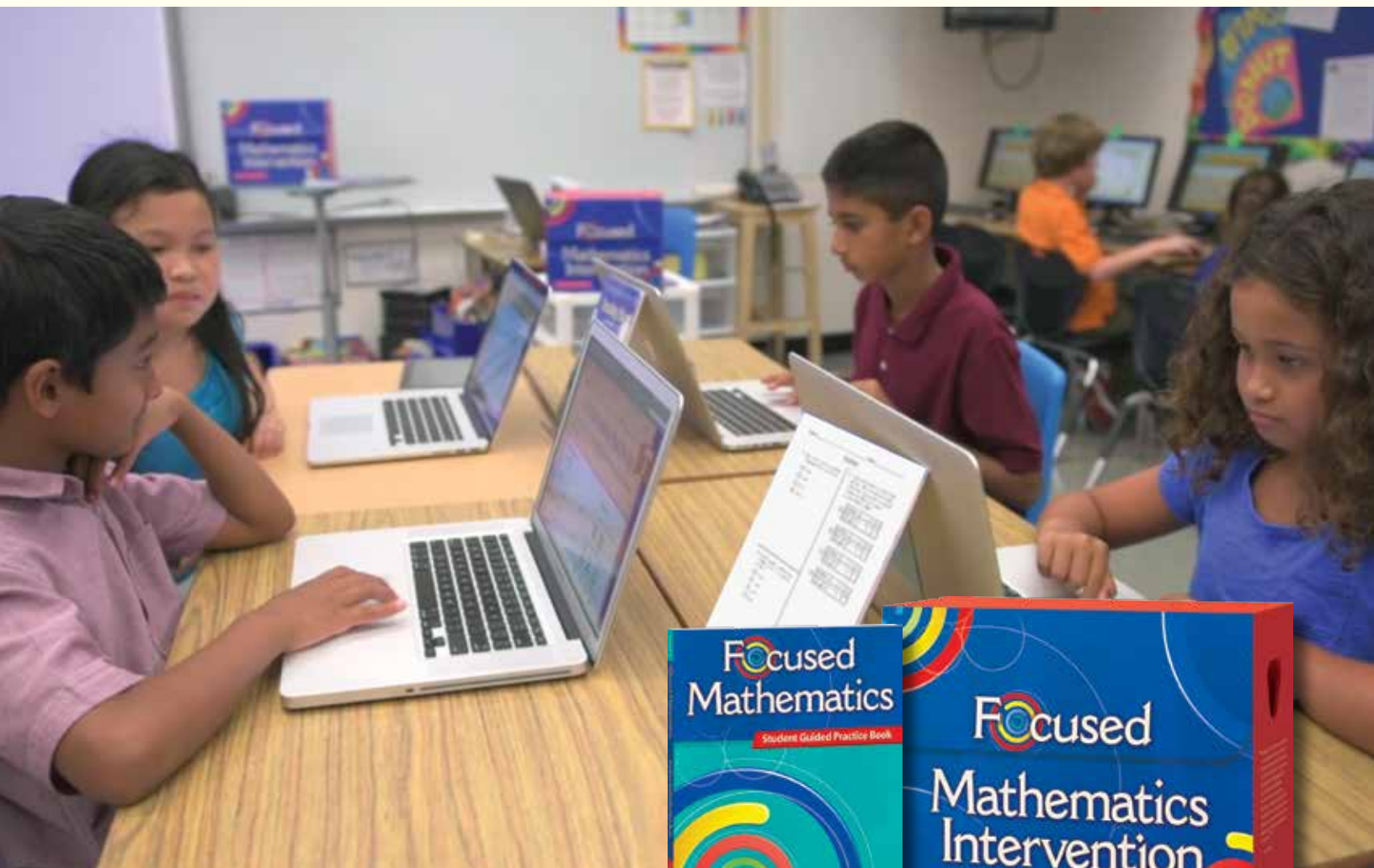


Focused Mathematics Intervention

Data Study





Overview

Purpose and Program Implementation

Teacher Created Materials partnered with Bethune-Bowman Elementary and Middle School, a combined campus in Rowesville, South Carolina during their Mohawk Mania Extended Year Camp from June 2015 through July 2015 to implement *Focused Mathematics Intervention* with the goals of reinforcing key mathematical concepts and building mathematical fluency.

Focused Mathematics Intervention was used by the teachers in Mohawk Mania as an instructional resource to bring students up to grade level and provide opportunities for academic success in the extended year program. This study reports on the results from the implementation of *Focused Mathematics Intervention* and significant gains in each mathematical concept aligned to South Carolina College and Career Readiness Math Standards.





Challenge

Bethune-Bowman is part of the Orangeburg Consolidated School District, which is a designated Title 1 district. As such, the school strives to make sure every student achieves high levels of academic proficiency. With the goal of ensuring academic success for all students, Bethune-Bowman was selected by an Education Oversight Committee to receive \$500,000 in grant money to enable students to participate in an extended year program. This program, Mohawk Mania Extended Year Camp, was created to enable students to receive an additional six weeks of school to accelerate math skills.

Demographics

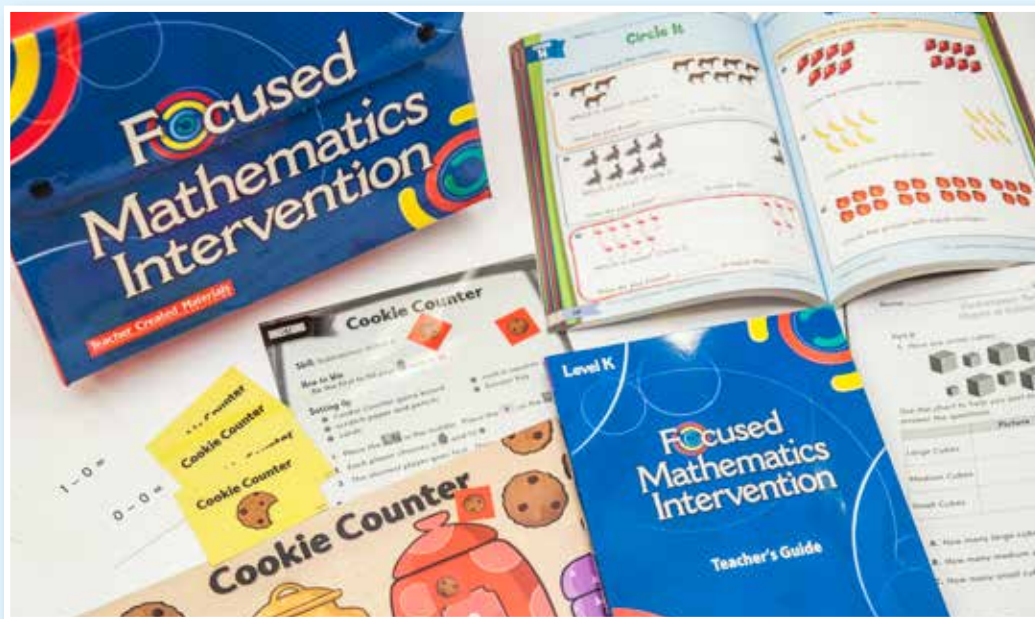
Enrollment

- ⇒ Elementary: 295
- ⇒ Middle/High School: 343

School Population

- | | |
|---------------------------|--------------------------|
| ⇒ African-American | ⇒ Hispanic |
| ✓ Elementary: 85% | ✓ Elementary: 4% |
| ✓ Middle/High School: 90% | ✓ Middle/High School: 2% |
| ⇒ Caucasian | ⇒ 37.3% Poverty Level |
| ✓ Elementary: 11% | |
| ✓ Middle/High School: 8% | ⇒ Title I District |

The ethnic makeup of the student body reflects neighborhood demographics. The majority of students are African-American with a small percent of Caucasian and Hispanic students. Of these school populations, approximately 40% are socioeconomically distressed. Due to the number of households living in poverty, the district qualifies for Title I funding.



Program

“Mathematical literacy is an individual’s capacity to formulate, employ, and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts, and tools to describe, explain, and predict phenomena” (PISA2013, 25).

In recent years, researchers have focused their efforts on identifying essential elements of effective mathematical interventions. These include explicit, systematic, problem-based instruction in developing proficiency in number sense with whole and rational numbers, building accuracy and fluency in arithmetic combinations, building conceptual knowledge and procedural understanding, and problem solving. (Gersten et al. 2009). All of these key elements are found in *Focused Mathematics Intervention*.

Focused Mathematics Intervention is a **versatile program that incorporates effective, research-based intervention strategies** while emphasizing mathematical literacy at each grade level.

Focused Mathematics Intervention is designed to support students as they work to make sense of concepts and procedures through the use of specific mathematical tools and models. *Focused Mathematics Intervention* helps students **make sense of mathematical concepts by connecting models to conceptual understandings and connecting conceptual understandings to procedures.**

Easy-to-Use Components in Each Focused Mathematics Intervention Kit K-8

- ✓ Teacher’s Guide with **30 standards-driven intervention lessons**
- ✓ One full-color **Student Guided Practice Book**
- ✓ Six interactive **Math Fluency Games** in print and digital formats
- ✓ **Assessment Guide** with formative and summative assessments and progress-monitoring opportunities for each lesson
- ✓ **Digital Resources** including electronic assessment options, student reproducibles, and **30 digital Refocus lessons**

Implementation

The purpose of the implementation of *Focused Mathematics Intervention* was to reinforce mathematical concepts and assist teachers in building mathematical fluency in students. *Focused Mathematics Intervention* was implemented during Mohawk Mania Extended Year Camp from June 2015 through July 2015.

This program was open to all students whether they were struggling in mathematics or not. Parents of students within both Bethune-Bowman's Elementary and Middle/High School campuses were encouraged to submit applications for their children to attend this program. The extended year program consisted of 2½ hours of instructional time per day, four days a week for twenty-five days.

Each level of *Focused Mathematics Intervention* provided teachers with numerous opportunities for assessing their students.

- ✓ Pretest: Provided teacher with information necessary to develop a customized program of instruction for students. The pretest also determined which lessons the teachers taught based upon the students' needs. A pretest was administered to the students participating in Mohawk Mania as follows:
 - June 15th: Grades 3–8
 - June 22nd: Grades 1 and 2
- ✓ Progress Monitoring: Each lesson included a Quick Check that was used for ongoing progress monitoring.
- ✓ Posttest: Students' progress was measured once all selected lessons were complete. This test provided students the opportunity to demonstrate mastery of the concepts taught. A posttest was administered to all students on July 21st.

<p>Name: _____ Date: _____</p> <p style="text-align: center;">Pretest</p> <p>1. Which of the following describes this equation: $4 \times 9 = 36$?</p> <p>(A) Nine times as many as four is 36.</p> <p>(B) Nine more than four is 36.</p> <p>(C) Thirty-six is nine times fewer than four.</p> <p>(D) Nine times as many as 36 is four.</p> <p>2. Which situation can be modeled by the equation $8 \times 7 = 56$?</p> <p>(A) Jan has 8 dolls. Sarah has 7.</p> <p>(B) Jan has 8 dolls. Sarah has 7 times fewer dolls than Jan.</p> <p>(C) Sarah has 8 dolls. Jan has 7 dolls more than Sarah.</p> <p>(D) Jan has 8 dolls. Sarah has 7 times as many dolls as Jan.</p>	<p>Name: _____ Date: _____</p> <p style="text-align: center;">Posttest</p> <p>1. Which of the following describes this equation: $7 \times 5 = 35$?</p> <p>(A) Thirty-five is five times fewer than seven.</p> <p>(B) Five times as many as seven is 35.</p> <p>(C) Five times as many as 35 is seven.</p> <p>(D) Five more than seven is 35.</p> <p>2. Which best describes the equation $6 \times 4 = 24$?</p> <p>(A) John has four times as many hats as Bill. Bill has 24 hats.</p> <p>(B) Pedro has six goldfish and four guppies. Pedro has 24 fish in all.</p> <p>(C) Laurie has 24 flowers. This is four times as many as Sue has. Sue has six flowers.</p> <p>(D) Flora has 24 flowers. This is 10 times as many as Beth and Jill.</p>
<p>3. What equation can you use to solve this problem?</p> <p>A fishing pole costs \$30. That is three times more than a fishing net. How much does the fishing net cost?</p> <p>(A) $30 \times 3 = \\$90$</p> <p>(B) $5 \times 6 = \\$30$</p> <p>(C) $30 \div 3 = \\$10$</p> <p>(D) $30 \div 10 = \\$4$</p> <p>4. The fourth graders are going on an all-day field trip. They need 120 bottles of water. James brought two cases of 24 bottles each and Ming brought four cases of 12 bottles each. How many more bottles of water are needed?</p> <p>(A) 24 bottles</p> <p>(B) 48 bottles</p> <p>(C) 14 bottles</p> <p>(D) 96 bottles</p>	<p>3. What equation can you use to solve this problem?</p> <p>Tomas made \$56 walking dogs on Saturday. That is eight times as much as his little brother made doing chores. How much did his little brother make?</p> <p>(A) $56 \div 14 = 4$</p> <p>(B) $8 \times 56 = 448$</p> <p>(C) $56 - 8 = 48$</p> <p>(D) $56 \div 8 = 7$</p> <p>4. Ted bought two journals for \$3 each, a backpack for \$34, and four packs of pencils for \$2 each. He gave the clerk \$50. How much change did he get back?</p> <p>(A) \$2</p> <p>(B) \$10</p> <p>(C) \$5</p> <p>(D) \$36</p>
<p>© Teacher Created Materials 22202—Focused Mathematics—Assessment Guide 30</p>	<p>© Teacher Created Materials 22202—Focused Mathematics—Assessment Guide </p>



Results

Upon comparing the data from *Focused Mathematics Intervention* pretest scores against posttest scores, evidence showed that the students who participated in the program made overall significant gains in each mathematical concept aligned to the South Carolina College and Career Readiness Math Standards. Statistical analysis was conducted from 13 test groups across grades 1–8. Each test group consisted of approximately 13 students.

Students showed an average gain across grades 1–8 of 23.8% (see Figure A). When compared to the rest of the test groups, test scores for grade 5 showed the highest average gain of 48.7% (see Figure B). In addition, every test group that participated in the program showed an increase in test scores (see Figure C).

Figure A

The total average pre- and post-test scores across Grades 1–8 in Concept Mastery with *Focused Mathematics Intervention*

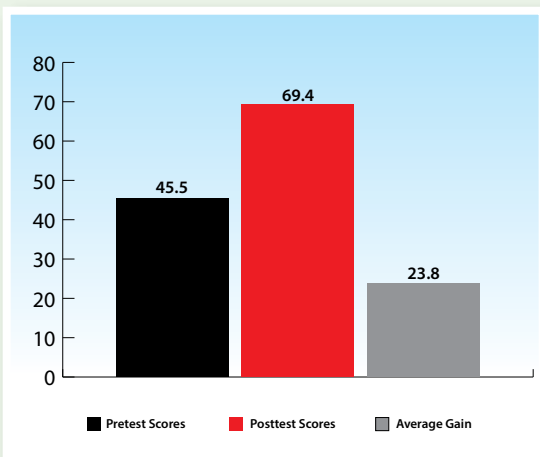


Figure B

Highest average gain in pre- and post-test scores in Grade 5 with *Focused Mathematics Intervention*

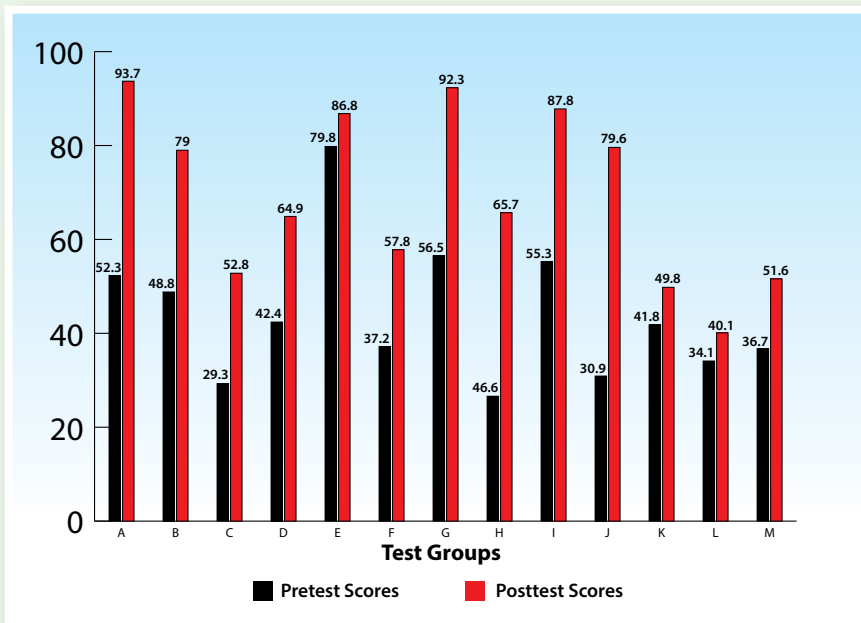
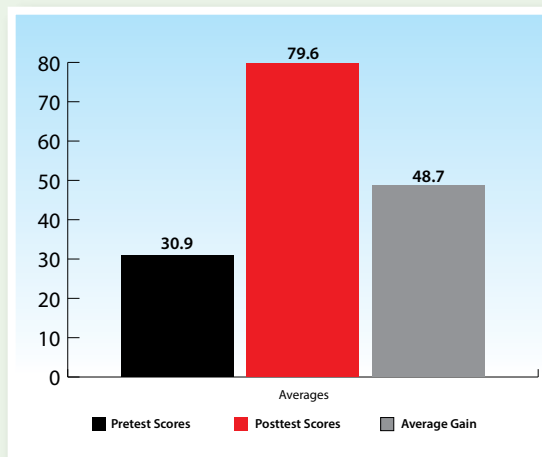


Figure C

Total average pre- and post-test scores by test group (A–M) across Grades 1–8

FOCUS ON Differentiation:

Students come to the classroom with different learning styles, various levels of mathematical proficiency, language barriers, communication issues, and diverse backgrounds. Teachers must understand the development of mathematics, considering the progression of concepts, strategies, and models that can be powerful forms of representation and tools to think with (Fosnot and Hudson 2010).

Two factors influence a teacher's ability to use a program: instructional options that meet the needs of diverse students, and having the confidence and skill to modify instruction based on those needs.

Focused Mathematics Intervention takes these factors into account.

Based on the fact that parents chose to send their children to the Mohawk Mania Extended Year Camp program whether they were struggling in mathematics or not, differentiating instruction was necessary throughout the program.

Each lesson plan includes a variety of instructional strategies to reach students who are not yet achieving their potential, those who are performing on or above level, and English language learners (ELLs).

Testimonials

What Teachers have to say about *Focused Mathematics Intervention*

"The information, tools, and materials were accessible and made things a lot smoother in the classroom for our summer program. The lesson outlines and quick checks provided an awesome foundation for my students. Also, it was great have a layout plan according to the number of weeks we would be in session. The layout gave me the opportunity to go out of sequence if needed to meet the needs of my students individually and as a class. Thank you so much for the resources!"

–1st Grade Teacher

"The goal of raising expectations and achievement gains for what students should learn and be able to do academically makes it increasingly important to use the precise instructional materials in math and reading that are effective at improving student achievement. Teacher Created Materials' math and reading kits are just the right fit. The curricular process begins with a shared experience, which is an activity, task, or game that is open-ended; lesson focus; word work; language and vocabulary; written response; challenge question; and quick checks and can be a stand-alone experience or one built on students' life experiences. As a teacher, I appreciated that I didn't have to pull materials for reading and math intervention time blocks for my students, therefore leaving more time to plan for the mini-lessons."

–2nd Grade Teacher

"Teacher Created Materials made it easy to prepare for lessons. I really appreciated the Quick Check for checking for student understanding. The Fluency Games were engaging and fun! "

–8th Grade Teacher



Our Mission

Teacher Created Materials develops innovative and imaginative educational materials and services for students, worldwide. Everything we do is created *by teachers for teachers and students* to make teaching more effective and learning more fun.

To Create a World ⁱⁿ which
Children Love to Learn!

Contact Us

For more information on *Focused Mathematics Intervention* and any of our standards- and research-based products, please visit us at www.tcmpub.com.

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