

ORIGO'S BOOK AND BOX OF  
FACT STRATEGIES LEADS TO  
IMPRESSIVE MATH IMPROVEMENT

# Case Study

**GRADES 3-8**



# ORIGO's Book and Box of Fact Strategies Significantly Improved Test Scores

More than 80% of Students Saw Gains

## The Challenge

A midsize New England school district (80% minority, 58% economically disadvantaged) realized that even prior to the pandemic that some of their students were not realizing optimal mathematical growth during the school year. The pandemic exacerbated this trend since as Mathematics District Coordinator Peggy Dutton explained, "during the pandemic, our students missed out on a lot of teaching, what we are referring to not as learning loss, but teaching loss." To make up for the fact that many of their students had limited teaching, the district provided an additional teacher and teaching assistant for every building and looked for resources that would help students build fluency and conceptual understanding. Since they had previously used ORIGO products, they turned to **ORIGO's Book and Box of Fact Strategies** to build fluency.

## The Product

**ORIGO's Book and Box of Fact Strategies** helps students develop mathematical thinking strategies for basic facts for all four operations—addition, subtraction, multiplication, and division using ready-made visual aids, activities, and games. Organized into an easy-to-use teaching sequence, the Book and Box of Fact Strategies guides students in connecting procedural fluency to conceptual understanding, number sense, and an efficient set of generalizable strategies.

## The District Team

Mathematics District Coordinator Peggy Dutton; Math Coaches Beverly Wright and Jane Stanton; Teacher Mary Carter; and Teaching Assistant Leslie Dodd.

## Action Plan

The team decided to start with Tier 3 students in grades 3–5 and 6th–7th grades. The students spent 15 minutes five times per week working on fluency using ORIGO's Book and Box of Fact Strategies. The students in grades 3–5 primarily worked on addition and subtraction strategies and the 6th–8th-graders concentrated on multiplication and division.

Teaching assistant Leslie Dodd worked initially on multiplication using a combination of flashcards and games. And Leslie found that using the same game as they progressed from multiplication to division helped her students to progress more quickly. **"Once my kids were fluent in multiplication, they picked up division in a snap.** And I kept reiterating that if you know the multiplication facts, then you already know the division facts. Those missing factor division cards (from the **Book and Box of Fact Strategies**) were so helpful. The kids were doing division leaps and bounds faster than I thought they would. It was awesome!"

Additionally, Leslie found that ORIGO's extend section helped her keep her students engaged. Initially students work with smaller numbers when they first start learning a new math fact, and sometime the kids asked, "Why do I need to know this?" But when Leslie extended the game to include bigger numbers, her students understood why they needed to learn that math fact strategy and why it helped, at first, to work with smaller numbers.



Leslie also reported that when her students were later working on problem-solving with a different teacher, they remarked, "Oh, this is what I learned with Miss Dodd." She says, **"Now they now get that math facts ARE important. And they can refer back to the strategies that they have learned, and apply it to new math learning."**

According to Math Coach Jane Stanton, most of the math programs she has used throughout her career equate fluency with memorization and flashcards. What she finds so powerful about the ORIGO approach is the concentration on using strategies to remember important math facts. **"It's not about memorizing with no meaning. Rather it's about using strategies to understand the math."**

One of the most important outcomes of the work the teachers and students have been doing with **ORIGO's Book and Box of Fact Strategies** is that "we're building mathematicians," says the district math coordinator.

**"We are building student confidence."** In fact, Mathematics District Coordinator Peggy Dutton noted that students in the Tier 3 classrooms are bringing the strategies they have learned back into their regular classrooms and **"teaching their peers how to think about math facts in a more strategic way."**

## Results

As part of their regular assessment, the district asked students in the program to answer 40 questions correctly in five minutes. At year's end:

**82.6%**

of the students working on addition and subtraction skills in grades 3–5, improved their scores by an average of 12.4 questions.

**↑ 47%**

of these 3–5-grade students reached fluency, scoring 100% on the assessment.

**85.6%**

of students working on multiplication and division skills in grades 6–8, improved their scores by an average of 10 questions.

**↑ 38%**

of these grade-6–8 students reached fluency.



## Going Forward

In years two and three, the district plans to expand the use of ORIGO's Book and Box of Fact Strategies into many more math classrooms to help even more students improve before they require Intervention. The teachers who have pioneered the program will become "the mathletes in the building," and throughout the district, Peggy said. Additionally, the district plans to expand their data collection program and is working with a group from Harvard to fine tune the system.