

Tadmore Elementary School (Gainesville, Georgia)

Tadmore Elementary School in Gainesville, Georgia, began working with Math Solutions in January 2005, and school-based instructional support provided by Math Solutions has continued through 2006. Pat Tilson, Assistant Principal at Tadmore, with input from her colleagues Lequita Smith, Shelley Collier, and Staci Wagner, shares her thoughts on the school's outstanding progress to date.

Why Math Solutions?

Tadmore Elementary School is a K–5 Title I school located in Gainesville, Georgia. About 85 percent of our students participate in our free or reduced lunch program. Many of our students receive English for speakers of other languages (ESOL) services; the majority of our kindergarten students, and a large handful of our older students, arrive on the first day of school speaking only Spanish. For several years, as our student population changed to include a more diverse group of students, the primary focus of Tadmore's professional development was on teaching reading and language arts to English language learner (ELL) students. About three years ago, we realized that our students' math scores had leveled out. In researching the "why" behind the low math scores, we found several problems. First, our students did not know the language of math. Second, many of our teachers lacked the strong math foundation necessary to teach students math concepts. And third, no one knew what to do to improve the situation.

Realizing that there was a need to provide teachers with the tools to be effective teachers of mathematics, Tadmore administrative staff began looking for guidance. Math Solutions Professional Development, founded by Marilyn Burns, proved to be the solution to the problem. The work of Math Solutions directly aligns with the National Council of Teachers of Mathematics *Principles and Standards for School Mathematics* as well as the Georgia Performance

Mathematics Standards (GPMS). The fact that Math Solutions directly aligns with the Georgia standards was important to Tadmore because the new GPMS were implemented in kindergarten and first and second grades during the 2006–2007 school year and will be implemented in grades 3, 4, and 5 during the 2007–2008 school year.

The new Georgia mathematics curriculum focuses on actively engaging students in the development of mathematical understanding. Teaching strategies include the use of manipulative materials, working independently and cooperatively to solve problems, estimating and computing efficiently, and conducting investigations and recording findings. There has been a shift toward *applying* mathematical concepts rather than merely following a sequence of procedures. This new method of teaching mathematics required a paradigm shift in teachers. This paradigm shift required professional development. Tadmore wisely chose Math Solutions for its partner in making this change a success.

Building Motivation and Enthusiasm

Lequita Smith, one of Tadmore's Instructional Coaches, worked closely with Paula Snowdy, an on-site instructor from Math Solutions, to design a two-year program of professional development for Tadmore teachers and staff. During the first year, we provided an introduction and rationale for using Math Solutions to all Tadmore staff. Then Math Solutions conducted sessions during which Paula Snowdy worked with teachers and staff, using activities that mirrored lessons participants could use with their students. Teachers were placed in groups of three or four and asked to discuss, solve, and share solutions to problems. As in our classrooms, manipulatives were available as mathematical tools. Through the discussions, teachers learned that there are often several mathematically legitimate and efficient ways to solve the same problem. They

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also learned the value of talking and writing about problems. Within their teacher-as-learner groups, they were able to gather new ideas and insights and broaden their understanding of math.

Our professional learning days on January 11, 12, and 13, 2006, built on the foundation provided in 2005. Paula Snowdy presented classroom strategies designed to improve children's number sense and problem-solving abilities. The mornings were presented in a format similar to the 2005 half-day sessions. The afternoons, however, moved to the classroom, where Paula provided demonstration lessons with our Tadmore children so teachers could see the activities in action. All students, in every group, participated in solving the problems. Children were asked to think, talk, and write about the process of solving a problem. After a brief introduction, the students were provided with manipulatives, paper and pencils, and each other. Students were encouraged to use numbers, words, and drawings to explain their solutions. Because the students were communicating within their groups, the teacher was able to wander the room and question misunderstandings or extend students' thinking—if the others in the group had not already beaten her to it—and encourage further discussion.

Students did not always find the solution the first time—or even the second time. As students persevered to understand a problem, important mathematical ideas were uncovered and students were motivated to continue. Each lesson ended with a "What if?" question to extend the learning. Paula often told the students, "I knew you were smart and could figure that out. But that isn't all that I want to know. What I really want to know is . . ." She then presented the students with another related problem for them to solve. This allowed the teacher to see if the students really understood the concept and could apply the knowledge learned to a new situation. Wonderful!

The excitement that was generated when the students solved a problem was contagious! (One fourth-grade student was called to the office to check out before his group had determined a solution to a problem they were working on. His reaction was "I don't want to leave yet." This, on a Friday afternoon at 2:00!) The surprise on students' faces when they realized that others had solved a problem differently, and had the correct solution, was priceless.

At the end of each day, teachers met again as a group and Paula facilitated discussion on what the teachers and staff had practiced and observed. They also discussed ways of implementing what they had learned in their classrooms on a daily basis. The Math Solutions approach helped our teachers become more comfortable with math. The more comfortable they are with teaching the concepts of math, the better they will be able to reach the students.

Paradigm Shift

We have seen a tremendous paradigm shift in our continuing staff members. Our staff now looks at math instruction differently and is implementing Math Solutions lessons and menu activities at all grade levels. In the process, many teacher leaders are emerging. Staci Wagner, fourth-grade teacher (and 2006 Teacher of the Year), stated, "As a result of using Math Solutions, student attitudes towards math have improved. This approach to teaching math allows multiple entry points for students. All students can see a different piece of the mathematics puzzle in the lessons and have a different contribution to add to classroom discussions. Most lessons allow for cooperative learning, which aids ELL students in hearing and using mathematical language. These students will sometimes go back and forth from English to Spanish to explain their solution to peers."

Lori Watts, a Tadmore third-grade teacher, added, "The Math Solutions approach to teaching is effective in meeting the needs of my early intervention

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program (EIP) and ELL students. I have found that beginning activities as a whole class, where I can model correct language, then breaking into small groups, where I can monitor students, provides time for students to use that language in a context that connects it to the mathematical concept.”

Leslie Powell, a Tadmore second-grade teacher, began using Math Solutions resource books before Tadmore began its relationship with Paula Snowdy. Leslie played the role of cheerleader in building enthusiasm for involving Math Solutions in the School Improvement Plan. “After five years of teaching lessons from Math Solutions resources to second graders, I’ve built a strong instructional program that supports our state standards for students. In each new Math Solutions resource, I find lessons that push my students’ understanding of important math concepts,” stated Leslie. “The books are very teacher friendly and easy to follow.”

Shelley Collier, a former second-grade teacher and now a Tadmore Academic Coach, also has many years’ experience with Math Solutions. She stated, “Math Solutions is awesome in its sensible approach to instruction that is student driven, rather than teacher driven. It allows students opportunities to explore and discover for themselves the processes of our math system.”

Our new staff members are fortunate to have these wonderful “continuing” staff members to support and encourage them as they begin teaching math the Math Solutions way!

A Tiered Approach at Tadmore

At Tadmore, our School Improvement Plan drives our instructional focus. Professional development is an ongoing process. Our coaches, who have received training from Paula Snowdy for the past two years, have designed a professional learning program for our new staff that applies an approach similar to that taught during our first year with Math Solutions. These new staff members will attend a half-day training session provided by our coaches, Lequita Smith and Shelley Collier. During the half-day session, these new staff members will be provided the foundation that our continuing staff had in 2005. Lequita Smith will then hold weekly meetings with these staff members, modeling activities they can use with students. Lessons will be demonstrated in the classrooms so teachers can see Math Solutions in action.

In January 2007, the Math Solutions staff returned to Tadmore to continue our learning experiences with the entire staff (new and continuing). Math Solutions has given us the framework and the tools to change the way we teach math. Our math coaches and teacher leaders have provided a multilayered effect that encourages the momentum of change in the pedagogy of math instruction.

Math Solutions has helped teachers realize that children learn in different ways. It has also helped teachers realize the importance of engaging all students in real-life experiences that challenge them to use higher-level processing skills. Math Solutions has shown teachers how children can combine math and literacy skills to explain the mathematical processes used to solve problems. At Tadmore Elementary, thinking, reasoning, and communicating understanding are here to stay!