

## **BREAKING THE CYCLE: INTEGRATING THE MATHEMATICS SPECIALIST**

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### **Background**

As a math student, I really struggled. To myself and most of my teachers, math was all about memorizing procedures and facts, and as a result, I ended up with a limited mathematical foundation of the concepts. I always knew I wanted to be a teacher, but when it came time for student teaching, I was scared to death of teaching mathematics.

In my senior year, however, I was accepted into a program where I student taught every day during the school year. At night, I had classes in the school's library for three or four hours. My cooperating teacher and my math professor had partnered together for three years, and studied mathematics best teaching practices. At night, I was learning how to teach math conceptually while during the day, I was seeing the practice modeled within the classroom. Throughout the year, things started to click. I now understood the meanings behind the concepts and the procedures. I was learning the content as well as watching, observing, and learning about Mathematics Specialists and their technique of teaching mathematics with understanding.

The following year, I began teaching a fifth grade class (the same grade I had student taught the year before). I modeled my mathematics community after my cooperative teacher's classroom; everything I had learned from her and my professor was being implemented in my own classroom. New to the school and county, and having a new passion to teach mathematics, I involved myself in every possible area of mathematics. I took a math course and became a Mathematics Lead Teacher in my school the first year. I wrote mathematics curriculum for the school district that summer, and became a mathematics coach for summer school the following year. I gained experience working with primary grades and working with teachers during this time. Over the course of the ensuing two school years, I took several mathematics courses, and assumed various mathematics leadership roles in my school. If the teachers or administrators in the building had mathematics questions, they came to me even though I was not considered a Mathematics Specialist at the time. The following summer, I joined a Mathematics Specialist master's program, and became a Mathematics Specialist in a new Title I school in the fall.

Currently, I am now a part-time Mathematics Specialist in an elementary school. The other half of my time is spent as a math coach, coaching other Mathematics Specialists who work in Title I schools. Although titled a Mathematics Specialist, I am learning from other teachers and students every day, refining my teaching skills as I continue my journey seeking out mathematical best teaching practices.

### **On the Job**

Most elementary teachers receive little or no training in the area of mathematics; much of their training is in language arts. Teachers teach mathematics the way they were taught, which has in turn caused a cycle of teaching isolated skills with little emphasis on conceptual meaning. Implementing Mathematics Specialists into schools as a means of breaking the cycle is ultimately necessary for systematic changes to occur in our educational system. Coincidentally, this has proven to be successful in changing the way many teachers teach language arts. Most elementary schools have a Reading Specialist who works with teachers on using best practices since there has been a recent shift in how language arts are taught. In order for this to occur in mathematics, a Mathematics Specialist is needed in every school. Typically, professional development has meant having an expert standing at the front of the room telling teachers the best way to teach a particular subject area. Changing the face of professional development where teachers are working together by planning, team teaching, and observing best practices at work will allow them to learn from one another.

As a Mathematics Specialist, I have seen the positive effects of teaming with teachers. After working closely with a first grade teacher, she thought that her students had learned more from our recent work together than from her teaching methods during the previous three years. She was open to using a curriculum that promoted conceptual understanding, really observing her students, and guiding her instruction based on their needs. Her students benefited greatly when she had began to learn the technique to “good questioning.” By the end of the school year, her first grade students were moving into the second grade with a tremendous number sense foundation. I also began to work with a more experienced kindergarten teacher. At first, she just wanted me to pull small groups of students out of her classroom for remedial instruction. I offered instead to plan and team teach with her. After several sessions, she claimed to have been very nervous about team teaching with me, but after ten minutes, she felt very comfortable, and was excited about planning and team teaching again. She later stated that she considered herself a good teacher who has been teaching for many years, but was surprised at how much she learned working together over the course of the year.

## Challenges

As with most jobs, there are challenges, such as learning to work with the various personalities that reside within a school. Each teacher has a unique teaching style that coaches must learn, respect, and guide toward the desired mathematics philosophy. Some teachers can't wait to have an expert help them refine their practice, while others resist the idea. Many simply want a group of struggling students removed from class for remedial instruction. The Mathematics Specialist is not there to criticize, mandate, or tell teachers what they should or should not be doing; rather, the Mathematics Specialist is an equal-level coach in whom teachers can confide and trust. Remedial instruction only targets a small population of students, but if the Mathematics Specialist team teaches and works closely with the teacher, then both teacher and students benefit. Maintaining good rapport and strong relationships will allow teachers the opportunity to trust the Specialist they are working with, and will provide a place where risks can be taken.

Yet another challenge is the need for change. Each school, led by its administrator, has a vision for the various subject areas, and the most likely person with the best mathematics vision would be the Mathematics Specialist. There also seems to be continuous controversy regarding the standards and curricula that are used in school mathematics programs; many changes have already been made to them, but much progress is still needed. A school or district may have good standards and a great curriculum, but change cannot occur if teachers don't know how to implement them. As a result, other factors, such as a strong administrator and a Mathematics Specialist, need to be in place. The administrator lends support to the Specialist who then, in turn, provides teachers with the knowledge of how to best use the standards and curriculum. A strong administrator is essential to the Mathematics Specialist, and their role as a teacher leader and coach, if the desired vision is to be achieved.

## Conclusion

I feel that I have brought about positive changes, both in my district and in my base school, as a Mathematics Specialist. As a lifelong learner, I seek out opportunities to learn best practices and share my knowledge with teachers and students. There is an art to teaching mathematics which I continue to work at each day. ■