

## THE MATHEMATICS SPECIALIST: A PERSONAL VIEW

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What I like best about my job as a Mathematics Specialist is how broad and far reaching my responsibilities are. From meeting with parents, to embedded staff development for teachers, to data analysis, to meeting with our principals, we Mathematics Specialists have our work cut out for us. The trickle-down effect of working with twenty-six teachers over the course of the year means that I have direct responsibility for the math content of almost 600 children. That may sound daunting to some but for me, it's my apple.

Some of the nicest people I know are the teachers and administrators with whom I work. That is not to say that my work is without challenges. I just look at challenges as the problem solving strand of my job. As a Mathematics Specialist, I see teachers with little, some, and a great deal of math content and pedagogy understanding. As a result, my plans for the teachers I work with are highly individualized. My goal is to lead each on a path where all meet at the final destination: a highly qualified math class where student achievement is preeminent.

In our school district, Mathematics Specialists are responsible for spending an entire math unit with a teacher. This helps both of us refine our practice and develop our planning, delivery, and assessment together. The unit begins with a pre-conference. Realistically, it's hard to find time to do this. However, this year I am writing this in my plan book and making it happen by meeting with my principal, and explaining the importance of this step. He is fully supportive and advises me to meet with particular teachers to set up a time for this. I have learned that without this step, too much happens "on the fly," and this is not a comfortable or productive mode. Planning really does need to be planned. This week, I sat down for a pre-conference with a first grade teacher. This is her first year, so she asked me to model a lesson for her next week. She is being observed at the end of the month and feels observing me will better prepare her. I was thrilled to be sought out and looked forward to modeling the lesson on Monday. We looked at the lesson, taking into consideration what materials would be needed and the steps I would follow to teach the lesson. We discussed the math objective and how it would be met. I believe that asking, "What's the math?" in any given lesson is a pivotal question. It allows us to focus on just what we want to impart mathematically to the students. We discussed

informal assessment and how she would be looking for understanding by her students either using slate assessments or anecdotal notes taken on a class list. We ended the fifteen-minute meeting feeling prepared and promised to meet afterward to debrief. This debriefing is the post-conference where we discuss how the lesson went, as well as look over student work. Many times, it is also a kickoff for the next lesson. Some of the teachers I work with teach more than one math class per day so they have a chance to refine the lesson after we meet when they teach it a second time. As I work with teachers, we truly learn from each other which makes us both stronger, and expands my own learning opportunities. Mathematics Specialists provide embedded staff development but for me this is definitely a two-way street.

Here in Alexandria, we have very strong support and guidance from our district curriculum specialist, meeting at least twice per month as a group. There are twelve Mathematics Specialists and we have very good relationships. We fully support each other by helping with materials, teacher concerns, ideas for working with parents, and other issues that come up. Our bimonthly sessions range from sharing sessions to staff development given by university professors. On those days, we are the students with ongoing learning opportunities ranging from math strands to pedagogy. Once a year, Mathematics Specialists meet with the principals, along with all the other Mathematics Specialists and their principals, in order to write goals for the coming year. There is also a presentation for us. Last year, one of the professors spoke to us as a group. She communicated the importance of having students justify their solutions, both verbally and in writing. She emphasized quality over quantity with regard to problem solving in the classroom. Both Mathematics Specialists and principals came away with practical ideas to put into practice. In addition to these types of meetings, our curriculum specialist is always readily available, providing support for us at our respective schools. Just this week, I asked her to meet with my third grade team; they are concerned about their English as a Second Language (ESL) students working with such a language-based math curriculum. We listened and offered suggestions with a promise to get them more resources. At the next meeting of the Mathematics Specialists, the curriculum specialist alluded to this meeting and asked the other Specialists for suggestions to help ESL students. Some very good and specific ideas were offered which I took back to these third grade teachers. I also provided them with some articles on how to help ESL students with the curriculum. Our curriculum specialist will be meeting with the ESL director relating these concerns and will brainstorm to help these very capable students. We introduced these teachers to a new on-line math game reviewing basic facts. We felt that this type of activity would be particularly helpful for ESL students in that it deals with "naked numbers." That way, classroom teachers can truly recognize the aptitude of these students. In addition, I have spoken with the ESL teachers and will provide each of them with the vocabulary list from the particular

grade level Teachers' Guide so they can help these students come to understand the vocabulary rich math curriculum. This is only one example of how broad based a Mathematics Specialist's responsibilities are.

That same morning, our curriculum specialist also observed two teachers at opposite ends of the math spectrum. She provided me with very clear suggestions and followed up by sending e-mail to these teachers, praising one and offering constructive criticism to another. She takes a hands-on approach and is very detail oriented; we are lucky to be working with such a dedicated professional.

This is my second year as a Mathematics Specialist and my second year at this school. Last year, I worked with every teacher in the building who taught math, and navigated among different personalities as the "new kid." I was also learning a newly adopted curriculum along with them. The year was challenging, but extremely rewarding. It was exciting to me to be doing what I love and to be in a position to help so many students. While most of the teachers I worked with were very accepting of me, I had my first encounter with the "resistant teacher," and learned not to take things personally. This experience made me more adept at dealing with such personalities, a skill I found useful during my second year. Despite the occasional resistant teacher, my primary goal is to be a catalyst for the students' success.

As a participant in the National Science Foundation (NSF) Mathematics Specialist Program, I have grown in the content and leadership areas. Before the Institute began, I had already taken Number and Operations. I have to say that the first time I took it, I didn't understand the power of taking numbers apart and putting them back together. Upon completing this course a second time, I finally understood. It was during the summer of 2005 as we made our way through Number and Operations, and Geometry and Measurement that the ideas started to fall into place for me. I saw and understood the value of working flexibly with numbers and how that flexibility can be realized in geometry as well. While we went about taking apart 2- and 3-dimensional figures, I started to see the connectivity of both courses. Leadership responsibilities were also foreign to me. That course helped me see the big picture of how Mathematics Specialists can make a difference in our schools. From working with teachers to meeting with administrators, I now feel equipped to carry out the responsibilities placed on me. This year, we are concentrating on coaching; the Leadership I and II courses have provided me with a blueprint and the tools to begin coaching more effectively. I feel extremely fortunate being a part of the Institute. Our professors are the best; they are supportive and an approachable resource. We are being guided as we put into practice what we're learning. Just last summer, I voiced a concern to

our Leadership professor, which was how to put into practice the pre- and post-conferences with the teachers. She assured me that we weren't expected to follow this practice with each and every teacher. She advised me to start with one and after a period of time, move onto another. I felt much better knowing that her suggestion was practical; mine was unrealistic. That's the kind of support that is readily available at the end of an e-mail or phone call. Institute participants are gaining a wealth of resources to impart to our teachers and students at our schools. The more I learn, the more empowered I feel to make a difference. I expect my learning to continue long after this Institute is over.

This continual learning mindset was sparked as I began my journey into research. I am simply fascinated at how students learn. Now I understand how talking and writing about math increase students' understanding. My job, among other things, is to convince the teachers I work with the value of this. I am already heartened by questions I hear some of the teachers asking their students: "How did you get that answer? Did anyone solve it another way? How did you know where to begin?" As we deal with the obstacles, it is important to reflect on the many successes. Our collaborative efforts and openness to new methods of teaching enable our schools to boast that our success overshadows the challenges. ■