

Supporting Mentor Teachers: The District Mathematics Substitute Teacher in Pike Township

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Introduction

The Indiana Mathematics Initiative (IMI) joined with the National Science Foundation to educate teachers in mathematics content and applications. Their goal was to reform the mathematics curriculum and instruction in the classroom learning environment. Funding from IMI enabled the Metropolitan School District (MSD) of Pike Township to provide support to classroom teachers by creating a new position titled the “district mathematics substitute teacher” or “math sub.” The math sub position was created to offer extra support to classroom teachers, so they could mentor other teachers and the sub could help alleviate some of the extra work involved in the *Everyday Mathematics* program and other classroom tasks. Thus, along with providing classroom assistance with such things as small group work and materials preparation, the main goal of the extra support was to increase teacher knowledge through the mentoring process.

IMI Mentors

In the fall of 2002 a call went out in Pike Township for fifth- and second-grade teachers who were interested in learning and implementing ways to improve their mathematics instruction by piloting a program called *Everyday Mathematics (EM)*. This call came from IMI, which would fund trainings, workshops, and materials for teachers to use. Over the course of two years, the teachers who responded met quarterly with fifth- and second-grade teachers from eight other districts throughout the state to discuss mathematics content, align state standards to lessons within *EM*, and study in depth the structure and components of the program and how to implement them in the classroom. IMI also took these teachers to other states to observe classrooms that were already using *EM*. This allowed the pilot teachers to ask questions and receive answers from teachers experienced in using the program. During these two years teachers were also asked to reflect upon their weekly lessons in “Learning Logs.” Teachers would login to an online forum and submit their reflections. Teachers were asked to record things they did well, things they thought they could have done better, questions they had, areas in which they needed to grow, and new ideas they developed during or after teaching the lesson. These logs were reviewed by *EM* consultants, who wrote comments to pilot teachers and answered their questions. This form of support offered immediate feedback to teachers and helped them become more confident. Teachers also had access to an online message board, where they could discuss with other teachers common issues, problems, and ideas.

In the fall of 2003, IMI asked third- and fourth-grade teachers to join the experience. IMI asked members from the original pilot group to mentor this new cohort of teachers, in order to offer support within each of the nine districts. With volunteers from the fifth- and second-grade

group, IMI offered specific mentor trainings on how to provide support to teachers new to the *Everyday Math* program. Mentors would be assigned to teachers in their building or district and would meet with them monthly to discuss components of the program, how to structure lessons, how to organize materials, and how to teach math concepts. Through conversations with mentees, mentors were able to offer advice on how much time to spend on each part of the lesson, how to organize lesson materials, and on any other concerns the mentees had. Mentors would observe mentees in the classroom, and mentees could observe mentors as well. For example, mentors might come in and teach a lesson in the mentee's classroom to model how a lesson should look and provide physical and moral support.

Mentor teachers have also helped new teachers learn to use manipulatives in their classrooms. *Everyday Math* uses many hands-on manipulatives that can be overwhelming to new teachers. There are decks of cards that students should be using to play computation games and straws used to model solid shapes and angles, as well as counters, base ten blocks, money, and clocks that students use on a continuous basis. Mentors would offer advice such as coloring the cards or placing small stickers on them so the cards could easily be put back into their original decks, instead of being mixed together. Cards could also be stored in soap dishes, instead of using their original boxes or rubber bands that break with repeated use. Mentors might advise new teachers to use different colored straws that are cut to the sizes required for lessons. Using the different colors allows students to easily identify the different lengths as well as allows teachers to pull the correct straws needed for each lesson. Some lessons may call for the use of twist ties to connect the straws, but mentors going through the IMI program would advise the use of pipe cleaners instead. Mentors might tell their mentees to number each student's manipulatives needed for daily math practice and place them in a box or baggie with the same number. Then, if one manipulative gets lost, it can easily be returned to its owner by checking its identifying number.

In year three of the IMI partnership with the nine districts, kindergarten and first-grade teachers were asked to join the pilot group, and mentors again were trained and asked to support four grade levels within their district. This left the IMI mentors with a lot of responsibilities.

Once the pilot years were finished and statewide math adoption had occurred, the focus shifted to "How can IMI teachers support all teachers—not just the IMI cohorts of pilot teachers—within their district with this new program?" This is how the IMI "Select Cadre" was born. Teachers who had once been mentors were asked if they would like to continue with the IMI project and work to support other teachers within their districts. IMI asked these mentors to meet together as a group to discuss ideas, tips, and trainings that their districts needed and to institute them. The topics varied with each meeting. A few examples of these meeting topics were: ideas for individual building family math nights, how to organize math materials, how to organize a lesson, and classroom management. Mentor teachers, now renamed select cadre members, planned and facilitated these meetings and then invited any teachers who had participated in IMI pilots to attend. As the popularity of the meetings grew, they were opened up to any teacher within the district, not just IMI-affiliated teachers.

Along with the development of the select cadre of elementary teachers, middle and high school "secondary liaisons" were formed as part of the IMI project. Part of their role was to bridge the communication gap between elementary school methods and middle and high school expectations in math.

Math Substitutes

From a need of extra support in the classroom and a need to provide trained IMI mentor teachers time to support the other teachers in their building, the math sub position was born. The math sub is a person who has substitute teaching certification or is a certified teacher. He or she supports classroom teachers with math, as an extra assistant who floats to all buildings in our district. Pike Township created this position to help the mentor teachers carry out their responsibilities and duties within the district. The math sub gave classroom teachers participating in the IMI mentor program a chance to work with other teachers within their building and offer coaching opportunities within each building. The math sub would go into the mentor classroom and either substitute for them, so they could go work with their mentee or help the mentor and mentee with math-related work.

The use of the district math sub was implemented in the fall of 2005. The MSD of Pike Township had extra substitute money from IMI to provide support to classroom teachers who had participated in the program.

Initially, one math sub was hired to provide support for the IMI mentors and mentees and the IMI secondary liaison teachers. The sub rotated through all nine elementary schools, three middle schools, and the high school. However, he was so well received that eventually he began to support more teachers within the district, and his responsibilities grew to include other math-related activities in the classroom. Not having the math sub for enough time in the teachers' classrooms became a major dilemma. To solve this problem, more math subs were hired to help support all teachers throughout the district.

The math coach in Pike Township schedules dates for the math sub to come to each building or takes requests from teachers wanting to schedule the math sub on a particular day. The math coach also interviews and hires the math sub and addresses any problems or concerns. IMI participants became building liaisons, who were to schedule the sub for their buildings and make teachers aware of the extra help that could be provided. It is this person's responsibility to make sure the needs of the teachers in his or her building are met and that the sub is aware of his or her responsibilities.

Duties of the Math Subs

Classroom teachers are either assigned days to utilize the district math subs, or they can request specific days for a sub to come into their classrooms. The sub can do anything math-related for teachers. This might include: subbing in the classroom while a teacher mentors or coaches other teachers, taking a small group of students for enrichment or remediation, making math games, or putting together other math supplies. Teachers have supplies and materials ready for the math sub to use.

The math sub can also come in and help new teachers by color coding their card decks, cutting straws and pipe cleaners for lessons, or sorting and numbering manipulatives. This allows teachers to focus on their instruction instead of preparing materials. Additionally, teachers have had the math sub make games from the *Everyday Math* program for a particular grade level or for individual classes, make materials for parent math nights, copy homework and worksheets for units, and work with small groups of students on enrichment or remediation activities, so that all math standards and components of the *Everyday Math* program can be implemented.

The math sub can take the lessons or games prepared by the teacher and work with a designated small group of students. She or he re-teaches a concept, helps students as they practice, or works on enrichment. The sub might work with students who have not finished work

and need help completing it. The sub has copied, cut, glued, and laminated games from the *Everyday Math* program for teachers to use in the classroom, for students to take home, or for use at family math nights.

Conclusion

As a result of having the district math sub, Pike Township has been able to strengthen the math curriculum taught within the district by providing assistance for mentor teachers as they educate and support other classroom teachers.

Teachers have also been very excited to have an extra pair of hands to help in the classroom. Help with remediation has also been greatly appreciated, as well as help provided with material preparation. Having math subs has allowed teachers to focus more on their instruction and the application of the curriculum by being freed up from preparation work, which is invaluable to the math program, but time consuming. The result of preparing games and manipulatives has also given more math tools to the students within Pike Township.

The math sub has been able to provide support to small groups of both struggling and excelling learners, allowing teachers to reach a wider range of students with remediation and enrichment. Struggling learners have been given the extra attention they need, and excelling students have been able to further their own knowledge and understanding of concepts.

Thus, the math sub has become a valuable resource for Pike Township. The number of contacts the math sub has made within the district has risen each year that this service has been offered. Without the support and funding of IMI, this service would not have been available.

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