HOPEWELL, VIRGINIA: HOW DO YOU "HOOK" ELEMENTARY TEACHERS INTO ENJOYING AND SEEING THE BEAUTY OF MATHEMATICS?

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Elementary classrooms are the genesis of learning. Excitement, curiosity, and inquiry-based learning are essential elements in the classroom. As readers, elementary teachers experience success early on and do not fear teaching reading because many of the skills are repetitive and recursive. However, mathematics has often been perceived as an additional component to teach if the reading schedule allows time. It is painful for so many elementary teachers because it was a subject that many of the teachers struggled with as students. They do not feel equipped with the prior knowledge needed to understand mathematics.

Teachers (especially elementary teachers) have mathematics backgrounds that are typically weak and often dismal, and math expertise in elementary school is generally minimal [1]. Therefore, the preparation to teach mathematics becomes a laborious, time consuming task. Not being able to teach elementary mathematics is one of the most infuriating problems afflicting teachers. The cure to this challenge is to debunk the myths and fallacies associated with not being comfortable and confident in teaching elementary mathematics. So, how does one begin to "hook" elementary
teachers on mathematics?

Initially, elementary teachers need a something to capture their interest and motivate their learning that isn't intimidating. The learning atmosphere should be an inviting, stress-free place in which to take risks as well as experience failures. Hopewell Public Schools decided to become proactive and accept this problem as a challenge. An action plan was developed to partner mathematics with reading, thus valuing both subjects as the focal point of the academic day. The birthing of a sustained, continuous staff development plan emerged.

The plan involved learning teaching models, practicing effective teaching strategies, and understanding mathematics. Graduate classes were offered for all elementary teachers in the area of mathematics from Virginia Commonwealth University with Dr. John Van de Walle as the key instructor. Clusters of classes were offered: grades K-2, 3-5, and 6-8. Emphasis was placed on understanding mathematics from a constructivist perspective with the *Principles and Standards* (National Council of Teachers of Mathematics) providing the overarching frame [2]. These courses unveiled the power of the communication strand. Teachers were encouraged to think and

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experiment as individuals and teams. Thus, the teaching environment was busy with chatter as teachers began to verify and justify answers. Many of the assignments were activities directly associated with curriculum. Teachers were afforded the opportunity to try the strategies and discuss their findings during class.

In conjunction with this preparation, another selected group of teachers was studying at the university level to obtain degrees in curriculum and instruction with emphasis in elementary and middle school mathematics. These teachers were given the opportunity to interview for Lead Mathematics Teacher at the elementary level. In the beginning, Lead Mathematics Teachers were classroom teachers with additional assignments and a stipend. From this pool of candidates, lead classroom teachers were given additional responsibilities and became full-time Lead Mathematics Teachers. This change from classroom to Lead Mathematics Teacher was made possible by the school district creatively using various funding sources, such as Title I funds, grants, and the local budget, to transform these positions elementary school by school. A stipend is given for preparation and staff development after contract hours. These Lead Teachers attend conferences, participate in study groups, work with analyzing data, create and dissect assessment items, and provide staff development for their school and the division. The move toward Lead Mathematics Teachers was supported by recent research which acknowledges that the best instructional leaders are teachers with an abundant source of content leadership, and that schools need to restructure to allow this transformation to occur [3]. This type of leadership role is multidimensional.

After previewing data and need assessments, the Lead Mathematics Teachers began to plan, schedule, and teach lessons based on areas in need of improvement. Curriculum areas were developed from weekly team planning sessions with various grade levels. Lessons were correlated with each team's weekly lesson. This model lesson is based on best practices with heavy emphasis on using concrete items to model concepts by using word problems to motivate students into tuning into the lesson. The classroom teacher assists with the lesson being taught by the Lead Mathematics Teacher and extends the lesson throughout the week.

Today, Lead Mathematics Teachers in Hopewell have paved the way in charting the course for elementary mathematics. Lead Mathematics Teachers, building-level administrators and the division level director of mathematics have worked not only to ensure that resources are allocated, data is disaggregated, and strengths and weaknesses are identified, but have also developed coherent action plans to improve instruction. The preparation and experiences of

Hopewell's Lead Teachers have afforded them the confidence and respect of the administration, colleagues, students, parents, and community. This has been transformed into schoolwide efforts with well-prepared and trained classroom teachers and Lead Teachers working toward the same goal of improving the performance of all students. The essential ingredients are to leave no child behind and recognize the pivotal importance and long range impact of understanding mathematics. Having full-time Lead Teachers with the credentials to address the challenges, complexities, and joys of teaching mathematics is imperative. Lead Mathematics Teachers are vital to our strong elementary mathematics program. Lead Mathematics Teachers at each elementary school became the hook that brought the joy and beauty of mathematics back into the elementary school classroom.

What does the data show concerning the success of this program? In 2001-2002, the first elementary school to use a full-time Mathematics Lead Teacher Specialist was fully accredited by the Commonwealth of Virginia. The following school year, 2002-2003, the other elementary schools added full-time Mathematics Lead Teacher Specialists and received full accreditation from the Commonwealth. Perhaps the best answer is contained in a recent news item. At the Virginia School Board meeting on February 23, 2005, Hopewell Public Schools was recognized as the **only division** in the Commonwealth of Virginia to receive the honor of being a "Highly Distinguished Title I School Division." As a K-12 school division, Hopewell made adequate yearly progress (AYP) for two consecutive years by exceeding all annual measurable objectives. Hopewell also closed the achievement gap by maintaining or increasing the performance of all students and by increasing the performance of each subgroup in both reading/language arts and mathematics.

References

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[3] L.O. Pellicer, and L.W. Anderson, "Teacher Leadership: A Promising Paradigm for Improving Instruction in Science and Mathematics," in C.R. Nesbit, J.D. Wallace, D.K. Pugalee, A.C. Miller, and W.J. DiBiase (eds.), *Developing Teacher Leaders: Professional Development in Science and Mathematics*, Columbus, OH, 2001, ERIC Clearinghouse for Science, Mathematics, and Environmental Education.