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A Sabbatical Experience: Nurturing a Partnership

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One might ask why any professor of mathematics education would return to the elementary school classroom after earning a doctoral degree. The appropriate question should really be why would she or he not return to where the action in mathematics education really is!

It has been almost twenty-five years since I have taught elementary school children concepts and skills in mathematics for any extended period of time. During my career as a mathematics educator, I have conducted numerous workshops involving students of all ages (grades K-11), but not at the intense level as a classroom teacher. The NCTM *Professional Standards for Teaching Mathematics* document advocates that mathematics educators at the university and college levels should spend time in schools working with teachers and children (NCTM 1991). Not only should these educators spend time in the schools, but they should also cultivate and nurture partnerships between LEA's (local educational agencies) and universities (Curcio, Perez, and Stewart 1994). I chose to take this proactive challenge to heart and applied for and was awarded a sabbatical leave at a local elementary school for the 1998 spring semester.

Prior to my sabbatical, I enjoyed a strong relationship with the faculty and administration at a local elementary school (grades K-5). This relationship was primarily due to establishing and conducting a mathematics teaching practicum at this school for my preservice elementary school teachers. The relationship evolved so well that I wanted to establish more of a partnership with the school than just mentoring my preservice teachers; hence, the sabbatical leave.

During the sabbatical, I decided (after consulting with the teachers and principal of the school) to establish a mathematics club for a select number of gifted-and-talented students (sixteen students in grades K-2 and sixteen students in grades 3-5, per semester), to act as a mathematics consultant to the faculty, tutor students

(individually and in small groups), teach students in a classroom setting, conduct some qualitative research, and perform other school-related duties and functions. The two most demanding, yet most rewarding, of these activities were administering the mathematics club and teaching mathematics concepts and skills to the children.

The mathematics club met before school twice per month, once for the K-2 group and once for the 3-5 group. Presenters consisted of teachers from the school (including both the instrumental music and the physical education teachers), my preservice elementary school teachers (from the practicum course), one of my secondary mathematics education majors, and mathematics and science education professors from Towson University. According to research, the use of cooperative groups (Thornton and Wilson 1993) and the appropriate use of physical materials (Dougherty and Scott 1993) can help students develop a stronger foundation for acquiring mathematical concepts and skills. Therefore, the focus of these sessions was the effective use of cooperative groups and manipulative materials to enhance the learning of interesting and challenging mathematics and science concepts and skills. The activities that were presented challenged students to construct their own understanding of the mathematics or science concepts and / or skills. In this way, the children would acquire and "own" the knowledge on their own terms and be more able to apply the concepts and skills in different contexts.

As a consultant, teachers would approach me during the school day and solicit my opinion about teaching a particular mathematical concept or skill. However, after about two weeks, the teachers not only wanted my advice, they wanted me to model my teaching style with their students. After agreeing to do this, I was extremely busy for the remainder of my time at the school! Teaching children mathematics on a daily basis has been one of the most rewarding experiences of my professional life as a mathematics educator.

Regardless of their level of mathematical sophistication or age, the students were almost always enthusiastic, attentive and willing to work hard at the activities that were presented. These students enjoyed working in cooperative groups, using physical materials and technology, and applying their knowledge to novel situations. Using activities which apply mathematics to other content areas is advocated by many professional education organizations, such as the National Council of Teachers of Mathematics and the National Research Council (NCTM 1989, NRC 1996). With the type of activities I used and still use with children, I always try to empower them mathematically by acting as a "facilitator of active learning," not just a "dispenser of knowledge," and by connecting mathematics to other disciplines. For example, in a graphing activity which analyzes the forces affecting a falling parachute, I used plastic grocery bags, small plastic soldier figures, a ladder, a graphing calculator and a CBL (calculator-based laboratory) unit with a regular class of fourth grade students. The students were asked to explain the forces that might act upon the parachute as it descends to the ground and to select which of three graphs might best illustrate the relationship between height and time. After a lively discussion of these issues (led by the students), the students actually made the parachutes and conducted the experiment. Most students were amazed that the linear graph was the one that best reflected the data from the experiment. After a few minutes of deliberation (without any input from me), the students were able to accurately describe why the graph of this data should be linear in nature.

With respect to my preservice elementary school teachers and other professional colleagues, the sabbatical experience lends credibility to my career as a professor of mathematics education. It provides evidence to my peers and students that I am cognizant of current issues in elementary school mathematics education from a first-hand perspective and that I am a believer in and a practitioner of learning as a lifelong pursuit.

Based on the research conducted during my sabbatical, it is my opinion that a strong and long-lasting partnership, with an LEA, can be established and fostered by university-based mathematics educators by performing a few, if not all, of the following activities:

- providing a cohort of preservice elementary school teachers as mathematics teaching interns (establishing a field-based practicum),
- conducting mathematics content staff development workshops for teachers,
- consulting with teachers and administrators concerning mathematics content, pedagogy, and assessment,
- establishing a mathematics club for gifted-and-talented children,
- providing tutoring sessions for all children (sessions conducted by the professor and/or preservice teachers),
- modeling effective mathematics teaching strategies for classroom teachers (in front of actual children!), and
- collaborating with classroom teachers and/or administrators in writing staff development and/or technology grants.

Most importantly, it is my opinion that a carefully planned sabbatical experience can make an enormous contribution to an increased level of a mutually beneficial partnership between a local public elementary school and a university department of mathematics, which is a need shared by both school-based and university-based educators.

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