Editorial: Teacher Research

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Calls for classroom-based studies conducted by teachers date back to the early 1900s. In spite of early references to the great need for teachers to investigate their classrooms, there have been few research studies of this type. It is in the area of language arts that we find the longest history of teacher research. A look at the work done by teachers as they study their students' learning of reading and writing reveals the many benefits of practitioner research. Benefits of classroom-based research include the following: teachers come to better understand their classrooms; they are in a better position to make decisions about their classroom practice and environment; they come to better understand each child by listening to their students in ways they have never listened before; they model and foster an inquisitive disposition in their classrooms by redefining learning as research.

If learning is understood as a constructive process as is advocated in many current reform initiatives then the parallels between the act of learning and the act of researching are remarkable. In fact, one might venture to claim that learning is a research process. Thus, teachers' pursuit of research studies in their classrooms may lead to their learning about students' understanding of mathematics, mathematics itself, and themselves as teachers.

Creating an environment that encourages students to construct mathematical ideas requires teachers to understand what students bring to the learning experience. Classroom activities must capitalize on students' prior understandings of mathematics and allow them to construct new meanings to solve problems. The analysis of what each student brings to mathematics experiences becomes central to the successful planning of activities appropriate for a particular group of students. Thus, teachers must assess students' understanding of mathematical ideas prior to planning experiences. They must also devise means of assessing students' growth in knowledge during the activities. By learning more about students' thinking and understanding of mathematics, teachers can enhance their own understanding of students' thinking, as well as play an active part in the mathematics education research community by providing insight into the understanding of students' learning of mathematics.

As students work in groups and solve problems, teachers are in a position to listen to the students' interactions and extract from the discussions information about the students' growth in understanding of mathematics as well as their growth as learners of mathematics. Teachers are encouraged to assess more than

students' knowledge of mathematics. The *Curriculum and Evaluation Standards for School Mathematics* (1989) recommends that teachers assess students' willingness to pursue an investigation, perseverance, flexibility of use of heuristics, decision-making processes and other process skills that enhance their participation in the community of learners of mathematics, in this case, the mathematics classroom. The research disposition of teachers is essential for their successful assessment of the many dimensions of students' thinking.

In order to successfully plan investigative activities for students, teachers must understand mathematics as an inquiry-based discipline. This requires teachers to actively investigate mathematics. For many teachers, this is a totally new perception of the nature of mathematics; thus their understanding of the act of learning mathematics must be reconstructed. Many teachers perceive mathematical research as an activity restricted to research mathematicians. It is critical, if changes in the nature of classroom activities are to occur, that teachers believe that they too can investigate mathematics and pursue research in that field of inquiry, as can their students. Encouraging teachers to see themselves and their students as researchers of mathematics can be facilitated through professional development experiences. These experiences would consist of research activities in mathematics, similar to the research activities they would engage in with their students as they participate together in the community of mathematics learners.

Teachers' reflection on their practice and the consequent learning of their students has potential to stimulate teachers to reconsider their perception of what constitutes successful teaching. Moreover, it is important for teachers to systematically plan innovations and analyze the successes and difficulties encountered during the implementation of these innovations. Hence, classroom-based research on curriculum development and innovations can become an important activity of classroom teachers.

In conclusion, classroom-based research provokes teachers to analyze their classrooms, their practice, and their students' learning to depths that are difficult to reach with other types of professional development activities. Also, it provides the larger mathematics education community with greater insight on aspects of successful teaching. The great challenge to teachers is finding ways to make research feasible given the complexity of their day in a classroom.

Reference

National Council of Teachers of Mathematics. (1989). ***Curriculum and Evaluation Standards for School Mathematics.*** **Reston, VA: Author.**

Dr. D'Ambrosio will be joining the faculty at The University of Georgia in September of 1992. She is interested in teacher education, particularly in the use of teacher research as a means of stimulating change in classroom

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