INVESTIGATING MATHEMATICS TEACHERS' PROFESSIONAL GROWTH: A DISCUSSION GROUP ON INSERVICE TEACHER EDUCATION

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The focus of this discussion group is on frameworks for studying inservice mathematics teacher professional development. Building on work done in the 2003 PME-NA discussion group, participants will continue to discuss research questions and available data collection instruments. We will further our discussion by dedicating a large portion of meeting time to examining viable frameworks for guiding research on professional development.

A Brief History of the Group

At the 2001 NCTM Research Presession, the facilitators of this discussion group led a session titled "Studying Professional Development is Messy Work. What are the research issues?" Approximately 50 people attended. At the 2002 PME-NA meeting in Georgia, the same facilitators began a PME-NA-based discussion group to address continued interest in the issues surrounding research on professional development for teachers of mathematics (Arbaugh, Brown, & McGraw, 2002). Approximately 70 people attended the discussion group, which met twice during the conference.

The 2003 PME/PME-NA discussion group picked up where the 2002 group left off (Arbaugh, Brown, & McGraw, 2003). We continued to focus on our goals of productive conversation and products. Over the two days that this discussion group met, approximately 30 people engaged in a lively exchange of ideas that focused on issues that are central to studying professional development for mathematics teachers. In the end, the group generated information about three important components of studying professional development: essential questions for understanding teacher learning and change in practice; instruments to use while undertaking investigations; and research designs that would support addressing questions of importance.

Focus for the PME-NA 27 Discussion Group: Frameworks for Studying Mathematics Teacher Professional Development

What do we mean by "Frameworks"? Building on the work begun in prior discussion groups, the focus of the 2005 discussion group is on frameworks for studying mathematics teacher professional development. For our work in this discussion group, we "define" frameworks as guiding lenses through which we study teacher development. We adopt this definition from Eisenhart (1991), who argues that educational researchers need to consider a specific framework that guides their research efforts for any particular study. She perceives of research as having three steps that require thoughtful planning. First is the identification of the problem to be studied. Second is the choice of perspective through which to study that problem. The third step begins with data analysis. Eisenhart argues that a framework is critically important beginning with the second step, for it is here that the adopted perspective or framework begins to guide decisions concerning data collection. In the third step, data analysis, the framework maintains its importance in helping the researcher "decide how to reduce the empirical data collected into meaningful categories, how relationships among categories of findings will be specified, and

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what form the explanation for the empirical data will take" (p. 204). Ultimately, a framework provides "a coherent way of thinking about how to organize and interpret the data" (p. 204).

Eisenhart calls these types of frameworks "conceptual frameworks":

> a conceptual framework is an argument including different points of view and culminating in a series of reasons for adopting some points—i.e., some ideas or concepts—and not others. The adopted ideas or concepts then serve as guides: to collecting data in a particular study, and/or ways in which the data from a particular study will be analyzed and explained. Crucially, a conceptual framework is an argument that the concepts chosen for investigation or interpretation, and any anticipated relationships among them, will be appropriate and useful, given the research problem under investigation. (p. 209)

Stein and Brown (1997) provide a useful example of studying teacher learning through two frameworks:

1. Lave and Wenger's (1991) theory of learning through legitimate peripheral participation in communities of practice; and
2. Tharp and Gallimore's (1988) model of learning as movement from assisted performance to unassisted performance through a Zone of Proximal Development (ZPD). (p. 155)

Both of these frameworks are grounded in a sociocultural perspective (we call this the "theoretical perspective" or "theoretical framework") as opposed to a psychological perspective.

The 2005 Discussion Group Agenda

Over the course of the 2005 PME-NA meeting, we intend to address the following:

1. What additional essential questions need to be added to the list generated at the 2003 meeting?
2. What frameworks exist that are useful in addressing the "Essential Questions" generated at the 2003 PME-NA discussion group? Do we have questions about teacher learning and change in practice that cannot be addressed using existing frameworks?
3. What instruments, from the list generated at the 2003 PME-NA discussion group, are appropriate data sources for each framework?
4. What instruments are missing from this list? What needs to be developed?

The Discussion Group's Future

At the end of the PME-NA 27 discussion group session, we will spend time planning for future working groups. This work includes:

1. Setting goals for future meetings.
2. Generating possible products that can come from our work.
3. Committing to participation at future meetings.

An important long-term goal for the group will be to develop and support leadership in the area of research on mathematics teacher professional development. Individuals who are beginning work in this field should benefit from engaging with a community of researchers and examining and discussing the usefulness and limitations of various frameworks and research methods. In addition, this working group will provide a much-needed arena for cross-pollination of ideas among both senior and junior researchers and encourage movement toward a coherent and conceptually rich research base in mathematics teacher professional development.

References

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