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Mathematics Teacher Educators Engaging in Scholarly Practices and Inquiry

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Scholarship is foundational to all fields of study in order to push the boundaries of our professional knowledge. In many fields, those who engage in the practice of the discipline and those who produce scholarship in the discipline are different groups of people. However, in mathematics teacher education we have a rare opportunity to play both roles. Our practice produces researchable questions, and the results of our scholarship feed back into our practice, thus producing different questions in a repeating cycle. When we harness the combined efforts of multiple scholars in the field, we can begin to gain a critical mass of information that moves the field, and not just our individual practices, forward. Mathematics teacher education is a field in which the scholarship of teaching can be played out in its truest sense.

The scholarship of teaching is a relatively new conception in higher education, stemming largely from the work of Boyer (1990), and there has been much discussion and debate about the scope, intent, and purpose of this type of work. As illustrated by Reed and Mathews (2008), mathematics teacher educators practicing within institutions of higher education are engaging in conversations and debates within their institutions about what are considered “scholarly” contributions to the field of mathematics education and mathematics teacher education. Richlin (2001)

helped to distinguish between scholarly teaching practices and scholarship of teaching by offering that

the purpose of scholarly teaching is to impact the activity of teaching and the resulting learning, whereas the scholarship of teaching results in a formal, peer-reviewed communication in the appropriate media or venue, which then becomes part of the knowledge base of teaching and learning in higher education. (p. 58)

The scholarship of mathematics teacher education focuses on the issues and processes involved in the education of mathematics teachers at all levels. Examples of contemporary issues of interest include:

- the structure of teacher education programs (e.g., the number, type, focus, and sequencing of courses) and professional development programs and their impact on teachers' learning (and subsequent students' learning);
- recruitment and retention of mathematics teachers; or
- the role of classroom based mentors and university supervisors in field-based teaching experiences.

Processes of interest often include how teachers:

- develop mathematical knowledge for teaching;
- learn to examine and make sense of students' mathematical work;
- develop strategies for classroom discourse; or
- learn to create and implement mathematical tasks with a high cognitive demand.

Research questions focused on these issues and processes have emerged from our practices as mathematics teacher educators, and insights into these questions have informed our practices and are beginning to help shape the professional knowledge base of our field (see for example Sowder, 2007).

Monograph IV: Contributions to the Professional Knowledge Base

In the prior AMTE monograph, Arbaugh and Taylor (2008) advocated that the field of mathematics teacher education needed to look toward building a research program that could help coordinate the knowledge base in our field. They discussed the difference between practical knowledge (based on experiences and reflections) and professional knowledge (based on empirical research) and presented a framework adapted from Borko (2004) that could be used to help frame the research in mathematics teacher education and establish “a deeper, more connected professional knowledge base” (Arbaugh & Taylor, 2008, p. 5).

This current monograph contributes to that call by highlighting examples of the scholarship of mathematics teacher education. Some of this scholarship takes the form of reports of those who have engaged in *scholarly practices* in mathematics teacher education—practices adapted from empirical studies of the teaching and learning of mathematics and the preparation of mathematics teachers. The manuscripts that report on these scholarly practices provide evidence of the purposeful synthesis and application of professional knowledge in experiences designed for mathematics teachers (preservice or inservice) and critical reflection on the impact of these experiences on teachers’ learning.

Other manuscripts in this monograph illustrate *scholarly inquiry* into issues and practices through systematic data collection and analysis that yields theoretically grounded and empirically based findings. Some of these findings are most important at the local level as they can inform the design of learning opportunities for teachers by the researchers as well as by others. However, some of the findings, when considered along with other research in mathematics teacher education, can contribute on a more global level to the professional knowledge base in our field.

Looking to the Future: Outlets for Scholarly Inquiry in Mathematics Teacher Education

One of the challenges faced by our field is the lack of publication outlets for manuscripts based on the scholarship of teaching. Manuscripts that take the scholarly inquiry approach noted above can be submitted to the *Journal of Mathematics Teacher Education* or a number of other journals in the field that, while not exclusively devoted to issues of mathematics teacher education, publish research in the broader fields of teacher education or mathematics education. However, there are few outlets for manuscripts that report on scholarly practices in mathematics teacher education. Such a journal would be akin to the practitioner journals that exist for mathematics teachers at various levels. At present the only options for these types of manuscripts are this monograph and journals outside the field of teacher education that focus on the scholarship of teaching (e.g., *The Journal of Scholarship of Teaching and Learning*). While it is beneficial to publish work in mathematics teacher education outside the field, doing so makes it more difficult for other mathematics teacher educators to be aware of this work and to develop a coordinated knowledge base.

Given that the investigation of scholarly practices often spurs subsequent scholarly inquiry, it seems important to have an outlet in our field for reports of scholarly practices. As more doctoral programs place an emphasis on the preparation of mathematics teacher educators, both as practitioners and scholars (as recommended by Association of Mathematics Teacher Educators, 2002 and Wilson & Franke, 2008), and as the field continues to grow and develop, the need for such an outlet will become more acute. With the upcoming hiatus of the AMTE monograph, it is imperative that the field seek ways to meet this need. AMTE is leading the way with a task force to develop a plan for a practitioner-oriented mathematics teacher education journal.

We are pleased to have had the opportunity to help shape the sixth AMTE monograph and hope that readers will be inspired in their own practice and scholarship by what they find in these

pages. We thank the authors for sharing their ideas with the field and for working diligently with us on editorial revisions. We appreciate the work of our editorial review panel members who provided valuable critiques and insights into each manuscript reviewed for possible inclusion and thank Marilyn Strutchens as our series editor for all her work in compiling and polishing the chapters to prepare them for publication. A great deal of behind the scenes work goes into crafting an edited volume, and we particularly wish to thank Allyson Hallman and Eric Gold, doctoral students at the University of Georgia for their help during the review process. Allyson continued to work with the manuscripts during the editing process as well, lending a careful eye and thoughtful analysis to each manuscript.

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