EDITORIAL

Building a Professional Knowledge Base

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The mission statement for *Mathematics Teacher Educator* states that the journal "will contribute to building a professional knowledge base for mathematics teacher educators that stems from, develops, and strengthens practitioner knowledge." In this editorial, I will discuss what this means and how the members of the mathematics education community can contribute to the development of this knowledge base.

Sharing Ideas That Can be Replicated or Modified by Others

Take, for example, the article "Use of Video Analysis to Support Prospective K–8 Teachers' Noticing of Equitable Practices," by Amy Roth McDuffie and her colleagues, which appears in this issue. The authors describe a video analysis activity intended to support prospective teachers in learning to notice equitable instructional practices and examine the decisions made by teacher educators in facilitating the activity. While the article provides the field with useful insights into what these particular teacher educators did and why, building a trustworthy knowledge base for mathematics teacher education requires more than chronicling individual efforts to improve practice. It requires providing sufficient detail about each innovation or intervention to allow for verification, replication in other contexts, or modification by others. It is through this process of verification, replication, and modification that a solid base of knowledge is built. Hence the knowledge base is generated through repeated, well-documented implementations of an idea or method that add weight to the finding of a single study.

There are at least two different ways in which other mathematics educators might build on the work described by Roth McDuffie et al. First, the videos identified in Appendix A and the lenses described in Appendix B could serve as resources for other teacher educators in designing learning experiences for teachers. Replicating or modifying the video activity (e.g., supplying different lenses through which to analyze the videos, changing the discussion prompts, adding additional readings, selecting different videos, replicating the idea with middle or secondary teachers or with inservice teachers) would provide the opportunity to build our knowledge base about the resources that can be used to support teacher learning and the usefulness of particular videos, lenses, and prompts in different contexts. Subsequent articles that describe what teachers learned when the activity was replicated in a new context or modified in some ways and that offer comparisons to the initial report would serve to expand our understanding as a field of the viability of particular interventions or innovations.

Second, the questions that the authors identified at the conclusion of the article (i.e., To what extent should we prompt and probe during small group work? How many reenactments of the activity might be most beneficial during a semester? How can we productively challenge PSTs' views and interpretations when they might be incongruous with our foci and goals?) might be used by other teacher educators to reflect on their planning and the pedagogical moves they make in order to gain insights into effective ways to support PSTs' noticing and development in the profession. Subsequent articles that addressed any of these questions—related to the use of the video activity or other activities—would provide the field with important insights into how to support teaching learning. Over time, the accumulation of such insights gained from empirical work could guide the design and implementation of learning experiences for teachers.

Reporting the Findings From Subsequent Implementations of an Innovation

The *MTE* mission statement claims that "[t]he journal will provide a means for practitioner knowledge related to the preparation and support of teachers of mathematics not only to be public, shared, and stored, but also verified, and improved over time" (Hiebert, Gallimore, & Stigler, 2002). Publication of the articles allows them to be made public, shared, and stored; but they are verified and improved over time when others appropriate the ideas in the articles and report what was learned through the process.

This is not a new idea. For years, mathematics teacher educators have been sharing their practitioner knowledge through a variety of venues (e.g., NCTM practitioner journals and yearbooks, AMTE monographs, presentations at annual meetings of NCTM and AMTE), and they have been adapting the ideas of others that have inspired them to replicate and implement these ideas in their own contexts. For the most part, however, these adaptations are rarely documented and shared in a way that builds

our knowledge base.[1] As Cooney (1994, p. 627) pointed out, "…if we are to move beyond collecting interesting stories, theoretical perspectives need to be developed that allow us to see how those stories begin to tell a larger story. That is, we should be interested in how local theories about teachers can contribute to a more general theory about teacher education." *MTE* provides a unique opportunity for us to share our efforts to implement ideas in our own context and, in so doing, to build a stronger base of knowledge regarding the efficacy of the approach and more general theories about teacher education.

Other Examples of Innovations That Can be Replicated or Modified

Some articles that appear in the journal describe particular innovations that can be replicated or modified. For example, in "The Role of Writing Prompts in a Statistical Knowledge for Teaching Course," Groth describes how writing prompts were used as an integral part of a semester-long undergraduate course focused on building statistical knowledge for teaching. The article provides a list of the particular readings and prompts that were used as well as the rubric used to evaluate the prompts. While the article gives sufficient information to allow the innovation to be replicated in a new context, the author acknowledges that the ideas for designing and assessing writing prompts can be applied more broadly to a variety of content courses for teachers. Goth concludes by encouraging readers to "experiment with the sample prompts and to design their own to elicit various aspects of SKT and MKT. Continuous design, trial, revision, and dissemination of prompts can contribute to a collective set of items to be used by those in the mathematics teacher education community for the purpose of supporting content courses for teachers" (2012, p. 32).

Other articles describe design principles that could be used to create learning experiences beyond the one provided by the authors. For example, Castro Superfine, Li, and Martinze (2013) offer a set of design principles that informed the development of a mathematics content course for elementary preservice teachers and invite the community to begin a dialogue about principled design considerations for content courses for PSTs. At the conclusion of the article the authors are explicit about the work that might come next: "We encourage other math teacher educators to consider applying these principles to the design of content courses for PSTs at their own institutions, and then to communicate the outcomes of that design work to the broader community of math teacher educators. We hope that the specific examples given here as instantiations of the principles help other researchers envision their own or improve ours" (p. 52).

In both of these cases, the authors explicitly suggest how the ideas they put forward could be adapted and used by others—a critical component of articles that appear in *MTE*. It is through replicating, modifying, and reporting the findings from these efforts that a knowledge base is built.

The journal strongly encourages articles that build on previously published work. The electronic nature of the journal makes it possible to link related articles so that readers will be able to move from the original article that reported an innovation to subsequent articles that report on modifications of the innovation and vice versa. The goal is to build knowledge based on empirical evidence gained from design, trial, and revision.

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1 One notable exception to this is the Cognitively Guided Instruction (CGI) Project (Fenema et al., 1996). Work related to CGI has been picked up by other scholars in various ways and replicated to the point where people have confidence in these approaches and their outcomes.