

# Foreword

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People who are engaged in developing standards are concerned with how the standards documents will be received and used by their readers. Whether the standards are national (such as *Principles and Standards for School Mathematics*, National Council of Teachers of Mathematics [NCTM], 2000), state (such as the new grade-by-grade objectives mandated by No Child Left Behind), or district, their authors worry that the majority of such policy documents sit, for the most part, on shelves, displaying their titles on the spine but not lending themselves to use in practice. As the chair of the Writing Group for NCTM's *Principles and Standards for School Mathematics*, I have been deeply interested in how standards are used in different educational domains and by different audiences.

*Principles and Standards for School Mathematics* (NCTM, 2000) explicitly makes the point that one of its intentions is to “stimulate ideas and ongoing conversations at the national, provincial or state, and local levels about how best to help students gain a deep understanding of important mathematics” (p. 6). When given the opportunity to prepare a foreword for *Mathematics Curriculum Topic Study: Bridging the Gap Between Standards and Practice*, I was delighted. I am reassured to see a publication with the premise that the content and organization of standards documents can indeed be central in a framework to guide teachers in professional learning. In an environment where legislation calls for highly qualified teachers in mathematics, where the mathematical content demands of changing workplaces and educational settings continue to escalate, and where the need to educate all students for a productive future through their mathematical preparation is increasingly greater, the pressure for teachers to continue to grow and learn is enormous. This volume provides a very important contribution to the literature and resources that can support such growth and learning.

The National Research Council's 2002 report, *Investigating the Influence of Standards: A Framework for Research in Mathematics, Science, and Technology Education* identified three “channels of influence” through which standards documents might ultimately affect outcomes in the educational system. One of these channels is teacher preparation and development. The report notes that these activities

provide channels through which nationally developed standards might influence how teachers learn to teach initially and throughout their careers. . . . Teachers' continuing professional learning may be enhanced or constrained by the setting within which they work and by the opportunities available to them . . . If nationally developed standards are influencing the preparation

of new teachers, states would require and postsecondary institutions would create systems that enable prospective teachers to gain the knowledge and skills needed to help students meet standards-based learning goals. (p. 7)

Nonetheless, few tools and conceptual frameworks are available that would enable teachers and professional developers to move from standards documents to the day-to-day work of teaching. Research has indeed shown that such translations are not direct and that when teachers work with standards, sometimes the original meanings and intentions of the authors and policymakers are reinterpreted.

The second part of the title of this volume, *Bridging the Gap Between Standards and Practice*, is a simple and elegant description of the real contribution of Curriculum Topic Study. The book accomplishes dual purposes: as a thoughtful and careful interpretation and expansion of standards and as a concrete tool and process from which teachers can learn. The goal of helping teachers develop content knowledge, interact with local standards, examine coherence, consider learning issues, and improve pedagogy and assessment seems ideal for the contemporary educational environment. The design of Curriculum Topic Study accommodates individual teachers and groups and should also serve as a valuable resource to professional development leaders and mathematics teacher educators seeking access to current and useful materials.

A major lesson for all concerned with excellence in mathematics teaching and learning is that the process is one of continual improvement. No single set of standards will ever serve as the definitive and lasting authority for what all students should know and be able to do. Views of what mathematics are most important and of how mathematical ideas can be combined to be coherent and well connected, both mathematically and for students, will continue to evolve. Evidence and practice about effective pedagogical strategies will continue to accumulate. To process this kind of information and to make good use of it requires, at the core, interested and engaged teachers with the capacity to make connections across multiple resources, assemble ideas into forms useable in practice, and engage in serious professional dialogue, debate, and critique of others' efforts to move toward effective teaching that produces student learning for all. The tools that have been assembled in this volume, together with the framework that has been provided, are important and valuable contributions to the field.

I have already been inspired to consider how, in my own professional development work with teachers, the six outcomes that are used in the Curriculum Topic Study framework can be used productively. These are:

- Identify adult content knowledge
- Consider instructional implications
- Identify concepts and specific ideas
- Examine research on student learning
- Examine coherency and articulation
- Clarify state standards and district curriculum

This set of guiding ideas demonstrates how to integrate focus on mathematical content with some of the most current issues in pedagogy and policy.

The conceptual basis and the specific tools in *Mathematics Curriculum Topic Study* are an excellent contribution to the improvement of mathematics education. The

field of mathematics education stands to learn from using this fine model and resource; the developers of standards documents can relax, knowing that creative and forward-looking tools are available to support the influence of standards by ensuring that teachers take them off the shelf.

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