

Preface

Over the past several decades, increasing students' mathematical understanding and proficiency has been a national issue both in the United States and in many other countries, and a growing body of international comparative studies have been conducted to find ways to improve students' mathematics achievement. However, despite growing attention to international comparative studies and continued work in various aspects of education, it is not widely known what research has been done and how it was carried out.

In May 2014, Ji-Won Son approached Tad Watanabe and Jane-Jane Lo about an idea of a book on international comparative studies that would provide multiple perspectives on diverse issues and practices in mathematics education. Drawing from our own cultural backgrounds and expertise, we decided to focus this book on studies that compare data between and among the United States and five high-performing TIMSS education systems: Japan, China, Singapore, South Korea, and Taiwan. After numerous Skype meetings, we identified four main themes: (a) research on curriculum's influence on student learning, (b) research on institutional systems of mathematics teacher education, (c) research on improving teacher knowledge and pedagogical approaches, and (d) research using large-scale data. We then sent invitations to leading researchers in these areas to submit chapter abstracts to be considered for this book. The authors of those abstracts that fit one of the four themes of this book were invited to submit chapter proposals of approximately 3000 words. Detailed feedback on each proposal was provided to help the authors expand their proposals into full-length chapters. Each chapter manuscript was then reviewed by a panel of three reviewers, consisting of two editors and author(s) of another chapters and/or invited external reviewers. One to three rounds of revisions were completed before each manuscript was accepted.

This book includes 16 chapters, contributed by 15 US mathematics education researchers and 13 of their international counterparts from Australia, China, Hong Kong SAR, Japan, South Korea, and Taiwan. They are divided into four main groups. The authors of the chapters in Part I focus on curriculum-level influences on student learning by examining cross-national similarities and differences between

intended and potentially implemented curricula (e.g., what is to be taught and how) and enacted curricula (e.g., student and teacher interactions and teaching approaches) that may contribute to *student achievement gaps* between and/or among educational systems. The authors of the chapters in Part II examine institutional-level influences on student learning by investigating cross-national similarities and differences in teacher education programs and in-service teacher education programs that may contribute to *teaching gaps* between and/or among countries. The authors of the chapters in Part III examine pedagogical approaches supporting preservice teachers' awareness and knowledge development between and/or across countries. While the authors in previous chapters focused, for the most part, on small samples and case studies, the authors in Part IV used large-scale data to examine the factors that explain differences in student mathematics achievement. Various factors are discussed in this section, including student-, teacher-, and school-level factors affecting mathematics achievement. The authors in Part IV also discuss inequality issues and parental influence affecting mathematics achievement, as well as professional development opportunities among different education systems.

While the authors were expanding their proposals to full manuscripts, we began to identify colleagues with research expertise in each of the four main themes to write commentary chapters. Edward Silver, Jeremy Kilpatrick, Sandra Crespo, and Sarah Lubienski accepted our invitations, and each wrote a commentary chapter on one of the four parts. Each commentary contains a brief review of the studies in that particular part, identifies important issues from each paper and across the papers, and provides thoughts on where the field should be going in that particular area of research. Furthermore, two commentaries for the entire book, one by Gabriele Kaiser and Xinrong Yang, and the other one by William Schmidt, establish the context of research in international comparative studies in mathematics education, identify important issues from each paper and across the papers, and provide thoughts on where the field should be going in research on international comparative studies.

Ji-Won Son was the leader of the editorial team. She set up the agenda for each editorial meeting and made sure that all decisions were followed through afterwards. She was also the point person for all author correspondence and promptly reminded authors when they missed a deadline. In addition, she was in charge of the editing for Parts II and III, while Tad Watanabe assumed the lead role for Part I and Jane-Jane Lo for Part IV.

We thank all the authors of this volume for their dedication in meeting the extremely tight deadlines involved in bringing this book together. Thanks also go to a group of external reviewers who took the time to help review many chapters of the book. We also thank John Acker for his attention to technical and stylistic details during the final preparation of the manuscripts, and series editors Jinfa Cai and James Middleton for their support and encouragement. We are pleased to present this volume as a timely and important resource for the mathematics education research community, to explore critical issues in the area of international comparative studies.

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