In June 2005, I had the honor to deliver a keynote speech about mathematics assessment at the Inaugural Mathematics Teachers Conference organized by the Association of Mathematics Educators (2005) of Singapore. I still remembered clearly that I was asked by a participating teacher during the panel discussion about what the most effective way, or simply the best way, of teaching mathematics is. Having been aware that the question has been pursued by many researchers and practitioners as well for decades, if not longer, and the answer is normally there is no single best way for teaching mathematics, I replied that the way we used in our classroom teaching was always the best way that we believed or could think of in a given circumstance, but there was no single universal best way that could be applied in all circumstances. For the former, my fundamental reason was and still is, it is the nature of every human being (including teachers) to pursue the best; after all, who wants to act or pursue the second best? And for the latter, one’s best might not be another’s best. Hence, to know what others think is the best or effective teaching will certainly be helpful, and, in some cases, essential in one’s seeking further improvement in teaching 1.

The book under this review provides the readers with such a window to know what classroom teachers in many different countries and regions view as effective teaching in mathematics classroom. These countries and regions include both western countries: Australia, the Czech Republic, Finland, Germany, Switzerland, The Netherlands, and USA, and eastern countries (regions): Mainland China, Hong Kong, Japan, Malaysia, and Philippines. It contains 14 chapters, contributed by 30 researchers and scholars across these countries (regions). Among them, 12 chapters report national or cross-national studies, most through questionnaire survey and interviews.

Chapter 1 presents a study examining 45 experienced mathematics teachers’ beliefs about effective teaching in mathematics with focus on a cross-cultural perspective. Those teachers were from Australia (13), Mainland China (9), Hong Kong (12), and USA (11). Using interview for data collection, the chapter provides rather detailed and substantial findings about teachers’ views on mathematics, mathematics learning, and mathematics teaching. In a large sense, this chapter provides readers with an overall picture of the theme of the book and rightly sets the tone for the whole book.

Chapter 2 is based on the Third International Mathematics and Science Study (TIMSS) 1999 Video Study. It presents a comparative analysis about the judgments of mathematics educators on the videotaped lessons collected from five countries (regions): Australia, the Czech Republic, Hong Kong, Switzerland, and the United States. The focus of the

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1 In general, researchers often use, implicitly or explicitly, the terms of “effective teaching” and “best (ways, practices, or ideas of) teaching” interchangeably (e.g., see Watson, 2004; Stigler & Hiebert, 1999). It appears clear that the two terms essentially refer to the same notion when people use them to discuss or seek the improvement of teaching for students. In fact, just like Krutetskii indicated that “the problem of [students’ mathematical] abilities is a problem of individual differences” (Krutetskii, 1976, p. 3), the problem of effective teaching is also a problem of differences in teaching. In other words, when a teacher talks about an “effective” teaching approach, it implies a comparison of this approach with other possible approaches. More generally, in teachers’ seeking “effective teaching”, they are actually seeking the “most” effective, or the best way of, teaching under certain conditions or contexts. In that sense, effective teaching only exists in a relative sense.
judgments falls on four aspects: teacher’s role, student’s role, content, and climate. Besides the study results, the readers of this chapter can also get a sense about the challenges for conducting such international comparative studies in terms of both the amount of work involved and the complexity of comparison. This chapter itself is an important and value-added extension to the available TIMSS studies and reports.

After the first two “heavy” and longest chapters, readers will likely find the following chapters easier, and indeed, shorter to read.

Chapter 3 compares 52 teachers’ beliefs about what can be considered as good mathematics instruction at the upper secondary level across two neighboring countries, 42 from 11 Germany schools and 10 from 4 Swiss schools (in the German-speaking region). All the teachers were participants of an in-service training project. The study revealed that teaches employed multiple and differing criteria, often showing little specificity and a rather intuitive character, to judge effective teaching, and some central features of good teaching are related to the areas of motivation, interest and classroom ambiance.

Chapter 4 presents data and interpretation from two studies on in-service and pre-service teachers’ beliefs about effective teaching conducted in the US. In the first study, the data were collected through interview from nine in-service high school mathematics teachers who were mentor teachers serving a university teacher training project, and in the second one, the data were collected through a survey distributed to 46 student teachers, 44 mentor teachers, and 11 doctoral students as university teachers in the same teacher training project. The researchers found that significant alignment exists between teachers’ perspectives on effective teaching and what the researchers including professional groups such as NCTM had been advocating, though there are still substantial differences.

Chapter 5 presents findings from one-time in-depth interviews with eight experienced teachers who were pursuing postgraduate degrees and two novice teachers in Malaysia. The results highlighted the constraints (particularly time constraint), challenges and dilemma these teachers faced in pursuing effective teaching in mathematics. Similarly, Chapter 6 reports a qualitative study of beliefs held by 40 teachers from different kinds of schools in Germany (20 from Gymnasium and 20 from Hauptschule schools) about effective teaching in mathematics. The data were also collected through interviews. The results showed although teachers’ beliefs about effective teaching can be very different, the majority seemed to have very similar beliefs about effective teaching, which were all related to transmission teaching.

In China, master teacher is the highest honorary title given by the government after a series of strict evaluation and selection to school teachers and is widely deemed as an assurance of teaching effectiveness (e.g., see Fan & Sheng, 2008), therefore, it has particular value to study their perceptions about classroom teaching. Chapter 7 presents a study which examined 10 master teachers’ beliefs about effective mathematics teaching by analyzing their evaluation of video-taped lessons. The study revealed that there were five aspects used, though with different emphases, by the Chinese master teachers in their evaluating mathematics lessons: instructional objectives, instructional design, instructional procedure, learning environment and teacher quality. In particular, Chinese master teachers emphasized the importance of good learning environment and teacher quality, which specially refers to teachers’ subject knowledge and pedagogical skills as observed in the video-taped lessons. The authors reminded that the ways of teachers’ evaluating specific lessons might not be closely related to their beliefs about effective lessons in general, implying the complexity of research in this area.

Another chapter focusing on China is Chapter 10, which compares the similarities and differences of teachers’ views about effective teaching with those of students and the school (management). The data were collected through an open-ended essay about “what is a good mathematics lesson”, from 11 mathematics teachers and 86 students at Grade 6 from one average-performing school, and lesson evaluation sheet was collected from the school management. The results showed more differences than similarities in students and teachers’ view about what elements constitute effective teaching in mathematics.

Unlike the previous chapters which report individual and specific empirical studies, Chapter 8 is a synthesis of the Philippine experiences based on results from relevant studies. It highlights the importance of achieving higher scores in national and international assessment in Philippine teachers’ belief about measuring effective teaching in mathematics and the dilemma they faced between their belief systems and the school reality.

Finnish case is presented in Chapter 9, with the data drawn from three earlier research projects concerning pre-service elementary school teachers’ conceptions about teaching and learning of mathematics. In total, 157 such teachers were studied through a variety of methods including questionnaire surveys, interviews and classroom observation. The chapter concluded with seven features for effective mathematics teaching: goal-orientedness, listening to and understanding pupil’s thinking, flexibility, a mixture of different elements, problem-centeredness, connections to everyday experiences, and assessment.

Comparing to other chapters, Chapter 11 presents a unique feature in that it reports a study not only investigating teachers’ beliefs about effective mathematics teaching, but also their beliefs about mathematics, and how
they actually taught in classrooms. The data were collected from seven primary teachers in Hong Kong through interviews and classroom observations. The study revealed that teachers’ beliefs about mathematics played a crucial role in their views about effective teaching in mathematics. The authors also emphasized the importance of using multiple ways to unfold and triangulate teachers’ beliefs.

Chapter 12 is about Australia mathematics teachers. It offers a fairly detailed discussion about the work of the Australia Association of Mathematics Teachers over the past decade in response to promoting effective mathematics teaching in Australia. The chapter highlights the challenge and complexity of seeking change in education and argued that the process of change can be slow, though it is worth striving for.

Chapter 13 presents a comparison of mathematics teachers in the United States with an intention to illustrate the extent to which mathematics teaching has made progress in terms of teaching for understanding. The large-scale comparison revealed notable differences between the exemplary teachers who received the US Presidential Award for Excellence and their peers in their professional background, involvement, instructional objectives and teaching methods.

The book ends with the final chapter that provides readers with a concise as well as informative summary.

To conclude, the book reflects a commendable and concerted effort in research for pursuing effective teaching in mathematics classrooms. Not only does it contain a variety of original and important national and cross-national studies from a comparative perspective, but also it can help the readers gain insights into the challenges and complexity of conducting research in this area, especially in terms of conceptualization, research design and data collection. In this sense, it is an important resource in an important area. It is this reviewer’s view that all mathematics educators and teachers who are looking for effective ways, or interested in pursuing the so-called “the best way”, of teaching mathematics, and particularly researchers and students in this area, must read this book, though not necessarily all the chapters. In connection to this, it would be more convenient if an abstract could be included for each chapter.

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