Transforming School Mathematics Education in the 21st Century

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Ui Hock Cheah
Editors

Southeast Asian Ministers of Education Organisation
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For more information about this book contact:

The Director
SEAMEO RECSAM
Jalan Sultan Azlan Shah
11700 Gelugor
Pulau Pinang, Malaysia

Tel: +604-6522700
Fax: +604-6522737
Email: director@recsam.edu.my
URL: http://www.recsam.edu.my

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Preface

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Allan White & Ui Hock Cheah

This book arose out of the proceedings of the Fourth International Conference on Science and Mathematics Education (CoSMEd 4) held in Penang in November 2011. It was generally agreed at the outset that the importance of the research contained within the selection of papers, after careful revision and editing, deserved greater circulation. The Conference host was the Southeast Asian Ministers of Education Organisation-Regional Centre for Education in Science and Mathematics (SEAMEO-RECSAM). Established by the Southeast Asian Ministers of Education Organisation (SEAMEO) in May 1967, RECSAM is committed to nurturing and enhancing the quality of science and mathematics education in the SEAMEO Member Countries of Brunei Darussalam, Cambodia, Indonesia, Laos PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor Leste and Viet Nam. Australia is an associate member. Thus, RECSAM serves a wide range of countries and this book is aimed at a diverse audience where many of the readers have significantly different cultural roots and perspectives from those of the researchers.

Cultural traditions include among other things the perceived values of individuals and society, the social structures such as the relationship between parents and children, or between teachers and students. The classroom is often viewed as a microcosm of the complexity that exists within the wider society and deserves to be carefully researched.

The Conference sought to confront the issues that educators face today in educating young minds to meet the challenges in a globalizing world. Many countries in Asia and the Australasian region are faced with the challenge of preparing citizens who will be able to address global, national and local problems. In this regard, science and mathematics knowledge have always been essential as they empower people to usefully apply their knowledge more effectively to solve problems. This requires the young be carefully nurtured so that they can fully utilise the power of science and mathematics, and this entails more children to be scientifically and mathematically literate which challenges some of the ways that science and mathematics are taught in schools.

The Conference brought together educators and researchers from all over the region to discuss and address issues towards the improvement of science and mathematics literacy, the development of children's ability to think mathematically and the development of confidence and skills to apply mathematical knowledge for personal as well as for the benefit of the community.

The papers of the Conference that appear in this book were carefully selected after having gone through blind review and careful revision. The book is divided into twenty two chapters grouped under the four themes of:

1. Mathematical Problems: Posing, Solving, Proving and Communicating;
2. Assessment for Mathematics Learning: Diagnosing, Analysing, Communicating, Planning and Implementing;
3. Teachers Learning for Student Success: Before, During And After Class; and
4. Catering for Student Diversity (Of Values, Gender and Anxiety in the Mathematics Classroom).

These four themes provide an organisational structure that is not applied rigidly as some chapters contain significant material to place them in more than one theme or sections. At the beginning of each section or theme there is an introductory statement that situates the chapters and advises the reader of the cultural context underpinning each of the chapters.

There is a lot to be gained by reading about and experiencing different traditions contained within this book, in producing a deeper understanding of various aspects of mathematics and learning and teaching across a range of differing cultural contexts. Reading papers from other countries can assist to develop a process of self-reflection of their traditional ways which are often tacit and unchallenged. Reflecting upon their usual practices and beliefs in comparison to those presented in the chapters, readers may gain a better understanding of their own traditions. In this process readers may share and learn from others' successes and failures. The aim of this book, besides being a celebration of a vibrant and growing regional research culture, is to provide a context for the possibility of the knowledge growth within the readers for within such an environment, conformities enable readers to understand each other and differences present readers with opportunities to enrich and to complete each other.

The International Panel of Reviewers for CoSMEd 2011

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Linda Marshall	Edith Cowan University, Australia
Dr. Peter Gould	NSW Department of Education and Training, New South Wales, Australia
Dr. Cheah Ui Hock	SEAMEO RECSAM, Penang, Malaysia

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- The chapter authors of this book

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