



Transforming School Mathematics Education in the 21st Century

Allan L. White
Ui Hock Cheah
Editors

Southeast Asian Ministers of Education Organisation
Regional Centre for Education in Science and Mathematics

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Preface

Transforming School Mathematics Education in the 21st Century

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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Dr. Cathy Attard	University of Western Sydney, Australia
Prof. M.A. (Ken) Clements	Illinois State University, Normal Illinois, USA
Prof. Bob Perry	Charles Sturt University, Australia
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- The members of the International Panel of Reviewers of CoSMEd 2011. We duly acknowledge the effort and expertise of the reviewers who have in no small way raised the quality of the chapters through their diligent and meticulous reviews of the papers submitted to the Conference which have eventually resulted in the chapters in this volume
- The chapter authors of this book
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Table of Contents

Preface - Transforming School Mathematics Education in the 21st Century	iii
Acknowledgement	vi
The International Panel of Reviewers for CoSMEd 2011	v
SECTION 1: Mathematical Problems: Posing, Solving, Proving and Communicating	1
1. Some Problems with Mathematical Problem Solving <i>Allan Leslie White</i>	3
2. Communicating Understanding of Word Problems <i>Pumadevi Sivasubramaniam & Kogilavani Muniandy</i>	19
3. Introduction of the Bansho Plan to Primary School Mathematics Teachers: A Case Study <i>Leong Chee Kin, Teoh Boon Tat, & Warabhorn Preechaporn</i>	33
4. Writing as a Metacognitive Strategy to Develop Student's Mathematical Problem Solving Skills: A Theoretical Framework <i>Betsy Lee Guat Poh & Lim Chap Sam</i>	45
5. The Effects of Journal Writing in Constructing Proofs among Van Hiele Categorised High School Students <i>Julieta P. Lique & Myrna E. Lahoylahoy</i>	58
6. Teachers' Communication Behaviour Questionnaire: Translation, Validation and Application in Malaysia <i>Sazwani Suhaimi, Noor Shah Saad, & Sazelli Abd Ghani</i>	70
SECTION 2: Assessment for Mathematics Learning: Diagnosing, Analyzing, Communicating, Planning and Implementing	86
7. The Use of Meaningful Tasks in Teaching Fractions to Enhance Students' Engagement <i>Allison Lim, Jaslyn Tan, & Seow Wei Lin</i>	88

8.	Enhancing Academic Achievement of Low and Medium Impulsive Mathematics Students Using Vicarious Reinforcement and Contingency Contracting Techniques in Junior Secondary Schools in Lagos State, Nigeria <i>Omomia Taiwo & Omomia Austin</i>	98
9.	A Descriptive Analysis of Students' Alternative Conceptions in Simplifying Addition and Subtraction of Algebraic Terms <i>Ernest Lim Kok-Seng</i>	110
10.	Mathematics Skill Difficulties: A Study among Students Aged 11 To 14 Years Using an Item-Respondent Mapping in Rasch Modelling <i>Tarzimah Tambychik, Thamby Subahan Mohd Meerah, & Zahara Aziz</i>	125
SECTION 3: Teachers Learning for Student Success: Before, During and After Class		138
11.	The Influence of Pedagogy on Student Engagement with Mathematics during the Middle Years of Schooling <i>Catherine Attard</i>	140
12.	The Effects of Mathematical Manipulatives in Learning Probability <i>Hasbee Hj. Usop, Siti Hajar Ab. Rahman, & Hong Kian Seng</i>	158
13.	Promoting Primary Pupils' Geometric Thinking through Lesson Study <i>Chew Cheng Meng & Lim Chap Sam</i>	176
14.	Explicating Change in Pre-service Mathematics Teachers Education Using the Elements of Lesson Study <i>Levi Esteban Elipane</i>	193
15.	A Framework Synthesizing Learners' Internal and External Representations of Functions <i>Pongchawee Vaiyavutjamai</i>	209

16.	Simple Steps to Teach Mathematics: A Case Analysis of a Stage Six Mathematics Student in a Tutoring Intervention <i>Xiamiao Zeng, Allan Leslie White, & Dacheng Zhao</i>	224
SECTION 4: Catering for Student Diversity (Of Values, Gender and Anxiety in the Mathematics Classroom)		238
17.	Re-categorising the Framework for Describing the Values of Mathematics Student Teachers <i>Chih-Yeuan Wang</i>	240
18.	The Third Wave: Exploring Malaysian Primary Pupils' Preferred Values in an Effective Mathematics Lesson <i>Lim Chap Sam, Chew Cheng Meng, & Tan Saw Fen</i>	251
19.	Characteristics of Mathematics Lessons Valued by Two Excellent Primary Teachers as Effective <i>Tan Saw Fen & Lim Chap Sam</i>	268
20.	Gender Differences in Number Sense and Mental Computation Among Secondary School Students <i>Parmjit Singh & Teoh Sian Hoon</i>	282
21.	An Investigation on Perceived Parental Influences and the Moderating Role of Gender in Attitude towards Mathematics among Rural Secondary Students in Kudat, Sabah <i>Shamila Dewi a/p Davadas & Lay Yoon Fah</i>	298
22.	Bibliotherapy: A Powerful Tool to Address Mathematics Anxiety in Pre-Service Primary Teachers <i>Sue Wilson</i>	317