

Advances in Mathematics Education is a monograph series which continues the tradition of the international journal *ZDM – The International Journal of Mathematics Education*. The series presents an overall picture of relevant topics for the recent debate on mathematics education by integrating, synthesizing and looking towards the future state of the art. The monographs include invited chapters and commentaries from renowned international experts in which ideas are pushed to new frontiers. The series aims mainly at producing monographs based on important ZDM topics of the past, but is open to proposals from the community on other issues of interest to the field.

Bharath Sriraman · Lyn English
Theories of mathematics education: Seeking New Frontiers

The inaugural monograph is based on the two highly acclaimed ZDM special issues on theories of mathematics education (issue 6/2005 and issue 1/2006), which stemmed from the revival of the *Theories of Mathematics Education* (TME group) organized by the editors. This monograph consists of articles with prefaces and commentaries from leading thinkers who have worked on theory building. It is as much summative as forward-looking by highlighting theories from psychology, philosophy and social sciences that continue to influence theory building, as well as providing new developments regarding feminist, complexity and critical theories of mathematics education. New chapters focus on neuroscience research and complexity theory for mathematics education.

This book's cast of authors include Paul Ernest, Stephen Lerman, Frank Lester, David Tall, John Pegg, Richard Lesh, Gerald Goldin, Luis Moreno Armella, Bharath Sriraman, Lyn English, Angelika Bikner-Ahsbabs, Guenter Toerner, Gabriele Kaiser and Guershon Harel, among others.

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ADVANCES IN MATHEMATICS EDUCATION

Theories of mathematics education: Seeking New Frontiers

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Theories of Mathematics Education: Seeking new Frontiers

Edited by

Bharath Sriraman & Lyn English

Chapter 0

Preface by Series Editors Gabriele Kaiser & Bharath Sriraman

[Introducing the readers to the series]

Chapter 1

Advancing Mathematics Education – Seeking new frontiers (NEW)

Bharath Sriraman & Lyn English

Commentary [Jeremy Kilpatrick]

Chapter 2

Preface [Nathalie Sinclair/David Pimm]

Theories and philosophies of mathematics education (NEW)

Lyn English & Bharath Sriraman

Commentary [David Pimm /Nathalie Sinclair?]

Chapter 3

Preface (Bharath Sriraman)

Reflections on Theories of Learning (Paul Ernest) [original article] [New Preface and Commentary]

Commentary (Simon Goodchild)

Chapter 4

Preface (Lyn English)

On theoretical, conceptual and philosophical foundations for research in mathematics education (Frank Lester) [original article] [New Preface and Commentary]

Commentary (Guershon Harel)

Chapter 5

Preface (Luis Moreno-Armella)

Appreciating *Scientificity* in Qualitative Research (NEW)

Stephen Hegedus

Commentary (Bharath Sriraman)

Chapter 6

Preface (Norma Presmeg)

Theories of mathematics education: Is plurality a problem? (Stephen Lerman) [revised article] [2 reviews solicited] [New Preface and Commentary]

Commentary (Helen Forgasz)

Chapter 7

Preface(Luis Moreno-Armella)

DNR-Based Instruction in Mathematics as a Conceptual Framework (NEW)

Guershon Harel

Commentary (Hillary van Spronsen & Bharath Sriraman)

Chapter 8

Preface (Gabriele Kaiser)

Feminist pedagogy and mathematics (Judith E Jacobs) [original article] [New Preface and Commentary]

Commentary (Gilah Leder)

Chapter 9

Preface (Stephen Hegedus)

The fundamental cycle of concept construction underlying various theoretical frameworks (John Pegg & David Tall) [revised article] [2 reviews solicited] [New Preface and Commentary]

Commentary (Bettina Dahl Sondergaard)

Chapter 10 & Chapter 11

Preface (Stephen Hegedus)

Problem solving, heuristics, affect and discrete mathematics (Gerald Goldin) [original article] [New common Preface and Commentary]

Symbols and mediation in mathematics education (Luis Moreno-Armella and Bharath Sriraman) [revised article] [2 reviews solicited] [New common Preface and Commentary]

Commentary (Gerald Goldin)

Commentary (Jinfa Cai)

Chapter 12

Preface [Victor Cifarelli?]

Problem solving for the 21st century- An archaic construct or of prescient relevance (NEW)

Lyn English, Richard Lesh, Bharath Sriraman

Commentary (Jinfa Cai)

Chapter 13

Preface (Lyn English)

Mathematics education as a design science (Richard Lesh & Bharath Sriraman) [original article] [New Preface and Commentary]

Commentary (David Boote)

Chapter 14

Preface (Richard Lesh)

Complexity theories and theories of learning (Andy Hurford) [NEW article]

Commentary (TBD)

Chapter 15

Preface (TBD)

On the internal structure of goals and beliefs (Toerner et al) [NEW article]

Commentary (Gerald Goldin)

Chapter 16

Preface (Tommy Dreyfus)

Networking theories, an approach for exploiting the diversity of theoretical approaches [Angelika Bikner-Ahsbals & Susanne Prediger] [Revised Article]

Commentary (Christer Bergsten)

Chapter 17

Zooming in and out- An Interplay of theories

Helga Jungwirth

Chapter 18

Integrating different perspectives to see the front and the back- The case of explicitness (New)

Uwe Gellert

Chapter 19

Preface (TBD)

Neurosciences and mathematics education (Stephen Campbell) (New)

Commentary (TBD)

Chapter 20

Preface [Gutstein?]

Politicizing mathematics education: Has Politics gone to far? Or not far enough? (New)

Bharath Sriraman & Lyn English

Commentary [Brian Greer]