Contents

Part I The Foundations of PISA Mathematics

1 The Evolution and Key Concepts of the PISA Mathematics Frameworks .......................................... 5
Kaye Stacey and Ross Turner

2 Mathematical Competencies and PISA ................................. 35
Mogens Niss

3 The Real World and the Mathematical World ...................... 57
Kaye Stacey

4 Using Competencies to Explain Mathematical Item Demand: A Work in Progress ..................................... 85
Ross Turner, Werner Blum, and Mogens Niss

5 A Research Mathematician’s View on Mathematical Literacy ... 117
Zbigniew Marciniak

Part II Implementing the PISA Survey: Collaboration, Quality and Complexity

6 From Framework to Survey Data: Inside the PISA Assessment Process .................................................... 127
Ross Turner

7 The Challenges and Complexities of Writing Items to Test Mathematical Literacy ........................................ 145
Dave Tout and Jim Spithill

8 Computer-Based Assessment of Mathematics in PISA 2012 ........ 173
Caroline Bardini
9 Coding Mathematics Items in the PISA Assessment .................. 189
Agnieszka Sułowska

10 The Concept of Opportunity to Learn (OTL) in International
Comparisons of Education ........................................... 207
Leland S. Cogan and William H. Schmidt

Part III PISA’s Impact Around the World: Inspiration and Adaptation

11 Applying PISA Ideas to Classroom Teaching of Mathematical
Modelling .................................................. 221
Toshikazu Ikeda

12 The Impact of PISA on Mathematics Teaching and Learning
in Germany .................................................. 239
Manfred Prenzel, Werner Blum, and Eckhard Klieme

13 The Impact of PISA Studies on the Italian National Assessment
System .................................................. 249
Ferdinando Arzarello, Rossella Garuti, and Roberto Ricci

14 The Effects of PISA in Taiwan: Contemporary
Assessment Reform ...................................... 261
Kai-Lin Yang and Fou-Lai Lin

15 PISA’s Influence on Thought and Action in Mathematics
Education .................................................. 275
Kaye Stacey, Felipe Almuna, Rosa M. Caraballo, Jean-François Chesné,
Sol Garfunkel, Zahra Gooya, Berinderjeet Kaur, Lena Lindenskov,
José Luis Lupiáñez, Kyung Mee Park, Hannah Perl, Abolfazl Rafiepour,
Luis Rico, Franck Salles, and Zulkardi Zulkardi

About the Authors ................................................ 307

Index ............................................................. 315
Assessing Mathematical Literacy
The PISA Experience
Stacey, K.; Turner, R. (Eds.)
2015, XXI, 321 p. 63 illus., Hardcover
ISBN: 978-3-319-10120-0