

Contents

1	Introduction: An ICMI Study on Language Diversity in Mathematics Education	1
	Richard Barwell, Philip Clarkson, Anjum Halai, Mercy Kazima, Judit Moschkovich, Núria Planas, Mamokgethi Setati Phakeng, Paola Valero, and Martha Villavicencio Ubillús	
2	Impact of Differing Grammatical Structures in Mathematics Teaching and Learning	23
	Cris Edmonds-Wathen, Tony Trinick, and Viviane Durand-Guerrier	
3	Making Use of Multiple (Non-shared) First Languages: State of and Need for Research and Development in the European Language Context.....	47
	Michael Meyer, Susanne Prediger, Margarida César, and Eva Norén	
4	Mathematics Education in Multilingual Contexts for the Indigenous Population in Latin America	67
	Aldo Parra, Jackeline Rodrigues Mendes, Paola Valero, and Martha Villavicencio Ubillús	
5	Challenges and Opportunities for Second Language Learners in Undergraduate Mathematics	85
	Viviane Durand-Guerrier, Mercy Kazima, Paul Libbrecht, Judith Njomgang Ngansop, Leila Salekhova, Nail Tuktamyshev, and Carl Winsløw	
6	Language Diversity in Mathematics Teacher Education: Challenges Across Three Countries	103
	Anthony A. Essien, Nancy Chitera, and Núria Planas	
7	Addressing Multi-language Diversity in Mathematics Teacher Education Programs.....	121
	Denisse R. Thompson, Gladis Kersaint, Hannatjie Vorster, Lyn Webb, and Marthie S. Van der Walt	

8 Mathematics in the Hands of Deaf Learners and Blind Learners: Visual–Gestural–Somatic Means of Doing and Expressing Mathematics.....	141
Lulu Healy, Elizabeth Becerra Ramos, Solange Hassan Ahmad Ali Fernandes, and Jurema Lindote Botelho Peixoto	
9 Student Agency and Counter-Narratives in Diverse Multilingual Mathematics Classrooms: Challenging Deficit Perspectives	163
Jennifer M. Langer-Osuna, Judit Moschkovich, Eva Norén, Arthur B. Powell, and Sumaia Vazquez	
10 Tensions in Teaching Mathematics in Contexts of Language Diversity	175
Richard Barwell, Lim Chapsam, Thulisile Nkambule, and Mamokgethi Setati Phakeng	
11 Purposefully Relating Multilingual Registers: Building Theory and Teaching Strategies for Bilingual Learners Based on an Integration of Three Traditions.....	193
Susanne Prediger, Philip Clarkson, and Arindam Bose	
12 Using ICTs to Facilitate Multilingual Mathematics Teaching and Learning	217
Paul Libbrecht and Leila Goosen	
13 Language Diversity and New Media: Issues of Multimodality and Performance	237
George Gadanidis, Marcelo Borba, and Ricardo Scucuglia	
14 Language Diversity in Research on Language Diversity in Mathematics Education	263
Faïza Chellougui, Hien Nguyen Thi Thu, and Carl Winsløw	
15 Research Rationalities and the Construction of the Deficient Multilingual Mathematics Learner	279
Anjum Halai, Irfan Muzaffar, and Paola Valero	
ICMI Study 21 Discussion Document: Mathematics Education and Language Diversity	297
Index.....	309

Mathematics Education and Language Diversity

The 21st ICMI Study

Barwell, R.; Clarkson, P.; Halai, A.; Kazima, M.;

Moschkovich, J.N.; Planas, N.; Phakeng, M.; Valero, P.;

Villavicencio Ubillús, M. (Eds.)

2016, XV, 321 p. 57 illus., 46 illus. in color., Hardcover

ISBN: 978-3-319-14510-5