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Nota di contenuto	Foreword -- Acknowledgements -- Part I: Theoretical Perspectives -- Introduction -- Theory and Development of Teaching through Variation in Mathematics in China -- ‘Bianshi’ and the Variation Theory of Learning: Illustrating Two Frameworks of Variation and Invariance in the Teaching of Mathematics -- Variation in Tool-Based Mathematics Pedagogy: The Case of Dynamic Virtual Tool -- Pedagogy of Variations: Synthesis of Various Notions of Variation Pedagogy -- Part II: Variation as a Pedagogical Perspective for Classroom Instruction in China -- Introduction -- Characteristics of Teaching Mathematical Problem Solving in China: Analysis of a Lesson from the Perspective of Variation -- Teaching the Formula of Perfect Square through Bianshi Teaching -- Teaching Geometrical Concepts through Variation: A Case Study of a Shanghai Lesson -- Teaching Geometry Review Lesson through Variation: A Case Study -- Teaching Algebra through Variations: Contrast, Generalization, Fusion, and Separation -- Part III: The Pedagogical Perspective of Variations as a Principle for Curriculum Development and Teacher Professional Development in China -- Introduction: “The Lesson Plan is Only the Teacher’s Hypothesis of Students’ Learning” -- Strategies for Using Variation Tasks in Selected Mathematics Textbooks in China -- An Expert Teacher’s Use of Teaching with Variation to Support a Junior Mathematics Teacher’s Professional Learning -- Teaching and Learning Mathematics through Variation in Lesson Study -- Part IV: Use of the Pedagogy of Variation

Around the World -- Introduction: Putting Variation Theory to Work -- Improving Teaching through Variation: A Japanese Perspective -- Developing Algebraic Reasoning through Variation in the U.S. -- Using Variation of Multiplicity in Highlighting Critical Aspects of Multiple Solution Tasks and Modeling Tasks -- Learning to Teach with Variation: Experiences from Learning Study in Sweden -- Part V: Commentary and Conclusion -- Teaching through Variation: An Asian Perspective – Is the Variation Theory of Learning Varying? -- Teaching through Variation: A European Perspective -- Issues in Variation Theory and How It Could Inform Pedagogical Choices -- About the Authors -- Subject Index.

Sommario/riassunto

"Efforts to improve mathematics teaching and learning globally have led to the ever-increasing interest in searching for alternative and effective instructional approaches from others. Students from East Asia, such as China and Japan, have consistently outperformed their counterparts in the West. Yet, Bianshi Teaching (teaching with variation) practice, which has been commonly used in practice in China, has been hardly shared in the mathematics education community internationally. This book is devoted to theorizing the Chinese mathematical teaching practice, Bianshi teaching, that has demonstrated its effectiveness over half a century; examining its systematic use in classroom instruction, textbooks, and teacher professional development in China; and showcasing of the adaptation of the variation pedagogy in selected education systems including Israel, Japan, Sweden and the US. This book has made significant contributions to not only developing the theories on teaching and learning mathematics through variation, but also providing pathways to putting the variation theory into action in an international context. “This book paints a richly detailed and elaborated picture of both teaching mathematics and learning to teach mathematics with variation. Teaching with variation and variation as a theory of learning are brought together to be theorized and exemplified through analysis of teaching in a wide variety of classrooms and targeting both the content and processes of mathematical thinking. Highly recommended.” – Kaye Stacey, Emeritus Professor of Mathematics Education, University of Melbourne, Australia “Many teachers in England are excited by the concept of teaching with variation and devising variation exercises to support their pupils’ mastery of mathematics. However, fully understanding and becoming proficient in its use takes time. This book provides a valuable resource to deepen understanding through the experiences of other teachers shared within the book and the insightful reflections of those who have researched this important area. – Debbie Morgan, Director for Primary Mathematics, National Centre for Excellence in the Teaching of Mathematics, United Kingdom".