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Soggetti	Mathematics - Study and teaching Teachers - Training of Learning, Psychology of Study skills International education Comparative education Mathematics Education Teaching and Teacher Education Instructional Psychology Study and Learning Skills International and Comparative Education
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Preface -- Theme 1: Epistemological Issues Related to Proof and Proving -- Chapter 1. Reflections on proof as explanation -- Chapter 2. Working on proofs as contributing to conceptualization - The case of IR completeness -- Chapter 3. Types of epistemological justifications, with particular reference to complex numbers,- Chapter 4. Mathematical argumentation in elementary teacher education: The key role of the cultural analysis of the content -- Chapter 5. Toward an evolving theory of mathematical practice informing pedagogy: What standards for this research paradigm should we adopt? -- Theme 2:

Classroom-Based Issues Related to Proof and Proving -- Chapter 6. Constructing and validating the solution to a mathematical problem: The teacher's prompt -- Chapter 7. Addressing key and persistent problems of students' learning: The case of proof -- Chapter 8. How can a teacher support students in constructing a proof? -- Chapter 9. Proof validation and modification by example generation: A classroom-based intervention in secondary school geometry -- Chapter 10. Classroom-based issues related to proofs and proving -- Theme 3: Cognitive and Curricular Issues Related to Proof and Proving -- Chapter 11. Mathematical argumentation in pupils' written dialogues -- Chapter 12. The need for "linearity" of deductive logic: An examination of expert and novice proving processes -- Chapter 13. Reasoning-and-proving in algebra in school mathematics textbooks in Hong Kong -- Chapter 14. Irish teachers' perceptions of reasoning-and-proving amidst a national educational reform -- Chapter 15. About the teaching and learning of proof and proving: Cognitive issues, curricular issues and beyond -- Theme 4: Issues Related to The Use of Examples in Proof and Proving -- Chapter 16. How do pre-service teachers rate the conviction, verification and explanatory power of different kinds of proofs? -- Chapter 17. When is a generic argument a proof? -- Chapter 18. Systematic exploration of examples as proof: Analysis with four theoretical frameworks -- Chapter 19. Using examples of unsuccessful arguments to facilitate students' reflection on their processes of proving -- Chapter 20. Genericity, conviction, and conventions: Examples that prove and examples that don't prove.

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#### Sommario/riassunto

This book explores new trends and developments in mathematics education research related to proof and proving, the implications of these trends and developments for theory and practice, and directions for future research. With contributions from researchers working in twelve different countries, the book brings also an international perspective to the discussion and debate of the state of the art in this important area. The book is organized around the following four themes, which reflect the breadth of issues addressed in the book: • Theme 1: Epistemological issues related to proof and proving; • Theme 2: Classroom-based issues related to proof and proving; • Theme 3: Cognitive and curricular issues related to proof and proving; and • Theme 4: Issues related to the use of examples in proof and proving. Under each theme there are four main chapters and a concluding chapter offering a commentary on the theme overall.

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