

**ZMATH 2010e.00102****Leikin, Roza (ed.); Zazkis, Rina (ed.)****Learning through teaching mathematics. Development of teachers' knowledge and expertise in practice.**

Mathematics Teacher Education 5. Berlin: Springer (ISBN 978-90-481-3989-7/hbk; 978-90-481-3990-3/ebook). xii, 300 p. (2010).

Publisher's description: This volume explores how and when teachers' knowledge develops through teaching. The book presents international views on teachers' learning from their practice; the chapters are written by mathematicians or mathematics educators from Brazil, Canada, Israel, Mexico, UK, and USA. They address diverse content – numerical literacy, geometry, algebra, and real analysis – and a variety of levels – elementary school, secondary school, undergraduate mathematics, and teacher education courses. The authors employ different methodological tools and different theoretical perspectives as they consider teaching in different learning environments: lecturing, small group work on problems and tasks, mathematical explorations with the support of technological software, or e-learning. Despite these differences, the authors exemplify and analyze teachers' learning that occurred and address the question: "What kinds of knowledge are developed as a result of teaching mathematics and what are the factors that support or impede such development?" Further, the chapters explore interactions and interrelationships between the enhancement of mathematical and pedagogical knowledge. The important and original contribution of this book is that it ties together the notions of teachers' knowledge and complexity of teacher's work, while presenting them from a relatively unexplored perspective – learning through teaching mathematics. Table of contents: Introduction Part I: Theoretical and Methodological Perspectives on Teachers' Learning through Teaching Chapter 1 (Roza Leikin and Rina Zazkis): Teachers' opportunities to learn mathematics through teaching. Chapter 2 (John Mason): Attention and intention: Learning about teaching through teaching. Chapter 3 (Ron Tzur): What and How might mathematics teachers learn via teaching: Contributions to closing an unspoken gap. Chapter 4 (Rosa Leikin): Learning through teaching though the lens of multiple solution tasks. Part II: Examples of Learning through teaching: Pedagogical mathematics Interlude 1 Chapter 5 (Rina Zazkis): What have I learned: Mathematical insights and pedagogical implication. Chapter 6 (Marcelo Borba and R bia B. A. Zulatto): Dialogical education and learning mathematics online from teachers. Chapter 7 (Carolyn Kieran and Jos  Guzm n): Role of task and technology in provoking teacher change: A case of proofs and proving in high school Algebra. Chapter 8 (Nick Jackiw and Nathalie Sinclair): Learning through teaching when teaching machines: Discursive interaction design in Sketchpad. Chapter 13 (Robin Marcus and Daniel Chazan): What experienced teachers have learned from helping students think about solving equations in the one-variable-first algebra curriculum. Part III: Examples of Learning through teaching: Mathematical pedagogy Interlude 2 Chapter 9 (Michal Yerushalmy and Shulamit Elikan): Exploring reform ideas of teaching Algebra: Analysis of videotaped episodes and conversations about them. Chapter 10 (Peter Liljedahl): On rapid professional growth: cases of learning through teaching. Chapter 11 (Lara Alcock): Interactions between teaching and research: Developing pedagogical content knowledge for Real Analysis. Chapter 12 (Helen Doerr and Stephen Lerman): Teachers learning from their teaching: The case of communicative practices. Chapter 14 (Dave Hewitt): Feedback: Expanding a repertoire and making choices. Conclusion. - The articles of this volume will be reviewed individually in MathEduc.

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