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**Research on technology and the teaching and learning of mathematics. Vol. 1: Research syntheses.**

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Publisher's description: According to NCTM's Principles and Standards for School mathematics, "Technology is essential in teaching and learning of mathematics; it influences the mathematics that is taught and it enhances students' learning." How does research inform this clarion call for technology in mathematics teaching and learning? In response to the need to craft appropriate roles for technology in school mathematics new technological approaches have been applied to the teaching and learning of mathematics, and these approaches have been examined by researchers world-wide. The first volume provides insight into what research suggests about the nature of mathematics learning in technological environments. Included in this volume are syntheses of research on technology in the learning of rational number, algebra, elementary and secondary geometry, mathematical modeling, and calculus. Additional chapters synthesize research on technology in the practice of teaching and on equity issues in the use of technology in mathematics instruction. Instead of simply reporting achievement scores of students who use technology in their learning, authors provide thoughtful analyses of bodies of research with the goal of understanding the ways in which technology affects what and how students learn. Each of the chapters in this volume is written by a team of experts whose own research has provided important guidance to the field. Table of contents: Preface. The Learning of Rational Number Concepts Using Technology. John Olive and Joanne Lobato. Technology and the Development of Algebraic Understanding. M. Kathleen Heid and Glendon W. Blume. Learning and Teaching Geometry with Computers in the Elementary and Middle School. Douglas H. Clements, Julie Sarama, Nicola Yelland, and Brad Glass. Technology and the Learning of Geometry at the Secondary Level. Karen Hollebrands, Colette Laborde, and Rudolf Straesser. Technology and Calculus. David Tall, David Smith, and Cynthia Piez. The Learning of Mathematics and Mathematical Modeling. Helen Doerr and Dave Pratt. A Research informed View of the Process of Incorporating Mathematics Technology into Classroom Practice by In-service and Prospective Teachers. Rose Mary Zbiek and Karen Hollebrands. Equity and Use of Educational Technology in Mathematics. Penelope Dunham and Sara Hennessy. Technology and the Teaching and Learning of Mathematics: Cross-content Implications. M. Kathleen Heid and Glendon W. Blume.

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