

Integrating Touch-Enabled and Mobile Devices into Contemporary Mathematics Education

Part of the Advances in Mobile and Distance Learning (AMDL) Book Series

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Description:

Despite increased interest in mobile devices as learning tools, the amount of available primary research studies on their integration into mathematics teaching and learning is still relatively small due to the novelty of these technologies.

Integrating Touch-Enabled and Mobile Devices into Contemporary Mathematics Education presents the best practices in mathematics education research and teaching practice by providing an account of current and future trends and issues in mobile mathematics learning and associated technologies and educational methodologies.

This premier reference source compiles the best practices and recommended processes for effectively utilizing the vast capabilities of mobile technologies in the mathematics classroom through a collection of chapters covering topics including, but not limited to, touch-enabled virtual mapping, perceptual learning technologies, mobile teaching, statistics apps for mobile devices, smartphones for the visually impaired, pedagogical and instructional design, and touch screen interfaces in algebraic instruction.

Readers:

This edited volume approaches a broad audience including researchers and practitioners interested in the exploitation of mobile technologies in mathematics teaching and learning, as well as mathematics teachers at all levels.

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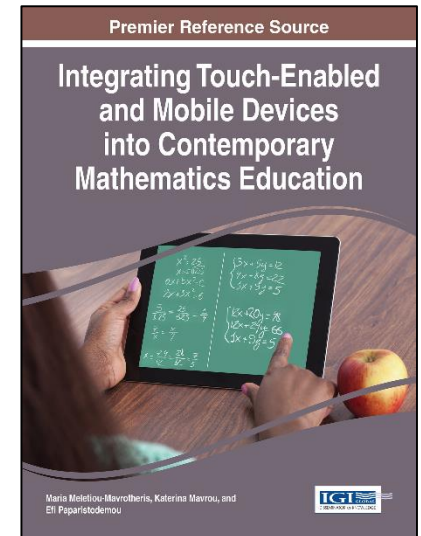
Pages: 330

Topics Covered:

- Assisted Mathematics Learning
- Kinesthetic Interaction
- Learner Support Systems
- Mobile Teaching
- Off-Line Communication
- Perceptual Learning Technologies
- Teacher Training
- Touch Screen Interfaces
- Touch-Enabled Virtual Mapping Tools

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SECTION 1: Learning and Learners Support: Individual, Collaborative, and Situated Mobile-Assisted Mathematics Learning

-Students' kinaesthetic interactions with a touch-enabled virtual mapping tool
Theodosia Prodromou, Maria Meletiou-Mavrotheris & Andreas O. Kyriakides

-Graspable Mathematics: Using Perceptual Learning Technology to Discover Algebraic Notation
Erin Ottmar, David Landy, Erik Weitnauer & Rob Goldstone

-Whatever Be their Number: The Ordinal, the Cardinal and the Tangible
Nathalie Sinclair & David Pimm

-Learning Maths With Mobiles: Experiences in South-Africa and Finland
Teija Vainio & Tanja Walsh

-Investigating the Mathematics of Inaccessible Objects: Algebra Videos with iPads
Susan Staats, David Ernst, Shelley Berken & Douglas Robertson

-Changing children's stance towards mathematics through mobile teaching: The case of robot A.L.E.X
Andreas O. Kyriakides, Maria Meletiou-Mavrotheris & Theodosia Prodromou

SECTION 2: Pedagogical and Instructional Design Considerations

-Off-line communication in mathematics using mobile devices
Pierre Clanché, Antonín Jančařík & Jarmila Novotná

-An Exploration of Developing Mathematics Content for Mobile Learning
Vani Kalloo and Permanand Mohan

SECTION 3: Mobile mathematics and teachers' training

-Introducing iPads into Primary Mathematics Classrooms: Teachers' Experiences and Pedagogies
Catherine Attard

-A multimodal discourse on the use of touch-enabled mobile devices for mathematics education
Jane Lane

SECTION 4: Practical Experiences and Ideas for Mobile Mathematics Learning

-Probability and Statistics: Apps for Mobile Devices – A Review
Howard P Edwards

-Microworlds: Influencing children's approaches to linear equations
Stuart Cork

-Using smartphones for orientation training for the visually impaired
Georgios Stylianou & Katerina Mavrou

Maria Meletiou-Mavrotheris is a Professor of Mathematics Education at the European University Cyprus, and Director of the Research Laboratory in ICT-Enhanced Education. She has a PhD in Mathematics Education (University of Texas at Austin, 2000), an MSc in Statistics (University of Texas at Austin, 1994), an MSc in Engineering (University of Texas at Austin, 1998), an MA in Open and Distance Learning (UK Open University, 2008), a BA in Mathematics (University of Texas at Austin, 1993), and Teacher's Diploma in Elementary Education (Pedagogical Academy of Cyprus, 1990). Her research work focuses on the study of issues related to the teaching and learning of statistics, while at the same time equally contributing to several other areas of mathematics, science, and technology education. She has established a respected research record through numerous publications in scholarly international journals and edited volumes, and has been able to attract considerable funding from national and international sources. Her research record includes the coordination of multiple EU funded projects.

Katerina Mavrou is an Assistant Professor in Inclusive Education and Assistive Technology at the European University Cyprus. She holds a PhD in the area of Technology and Inclusive Education (University of Birmingham, UK, 2007), an M.Ed in Special Needs and Development (University of Manchester, UK, 1999), and a B.Ed in Primary Education (University of Cyprus, 1998), as well as a professional certificate in Assistive Technology (AT) (California State University, Northridge, 2006). She worked as a special primary education teacher and as an AT Coordinator at the Ministry of Education and Culture. Her research interests focus on design of inclusive learning environments, accessibility and the implementation of new technologies, ICT and in education. She is involved in various European and other projects on AT, disability and inclusion. Her research work has been published in scholarly international journals and edited volumes.

Efi Paparistodemou is a mathematics educator. She holds a PhD in Mathematics Education (Institute of Education, University of London), an MA in Mathematics Education (Institute of Education, University of London), a BSc in Mathematics and Statistics (University of Cyprus) and a B.Ed. in Education, (University of Cyprus). She has worked in different positions concerning mathematics education: as a teacher, as a special math educator trainer and as an Assistant Professor in University. Now she is working in Cyprus Pedagogical Institute as a writer of the new pupils' mathematics books and as an advisor for in service educators. She has been involved in European and other projects concerning Mathematics, Statistics Education and Technology. She has published many studies in scholarly international journals and edited volumes in relation to mathematics and statistics education, technology education, prospective teachers and teacher development in mathematics.