

Editorial

The second themed issue of the *Educação Matemática Pesquisa (Mathematics Education Research)* journal - the third of three volumes in 2010 - is organized around the research line of *Information Technology and Mathematics Education*, a field of study that highlights the important role of technology in the teaching and learning of mathematics. From this point of view, the main subject in the call for articles was *Technologies in Mathematics Education: contributions, reflexions and strategies*. The presented papers aim to discuss different possibilities and ways in which this issue can be investigated, and also demonstrate the need for dissemination of new studies to allow researchers and teachers to find, in high quality publications, the support for their work.

Eleven articles comprise this issue and are organized so that the reader can follow a path through which he understands the theories that support the subject and, at the same time, gets familiar with the diversity of mathematical content that can be researched with the use of technologies.

The first article *Algumas reflexões sobre a Teoria de Van Hiele* is a translation of the lecture *Some reflections on the Van Hiele Theory* delivered by Michael de Villiers in the 4th. Congress of Mathematics Teachers in Zagreb, from June 30 to July 2, 2010, and organized by the Croatian Mathematical Society. The translation of the article, authorized by the author and written by Celina A. A. Abar, presents a review of researches on the Van Hiele theory in the last thirty years along with theoretical implications, and suggests further research topics that can be developed.

In the second article *O conhecimento tecnológico, pedagógico e do conteúdo do professor de Matemática (The technological, pedagogical and content knowledge of the mathematics teacher)*, the author Gilda de La Rocque Palis shares a theoretical framework which has been used to discuss the required knowledge that educators must have to efficiently integrate digital technology to mathematics teaching, which may ground the design of learning experiences towards the development of this knowledge.

In this line of thought, the authors Marília Lidiane C. Costa e Abigail Fregni Lins present in the article *Trabalho colaborativo e utilização das tecnologias da informação e comunicação na formação do professor de Matemática (Collaborative work and the use of information and communication technologies in Mathematics teacher education)*

a theoretical essay that points out the importance of the contact with technologies for mathematics teachers while on formation.

The authors Rúbia Barcelos Amaral Zulatto e Ricardo Neves Biazzi present in the article *Diferentes naturezas de recursos multimídia sob a perspectiva de professores de Matemática (Different natures of multimedia resources from the perspective of Mathematics teachers)* an analysis, based on the perspective of educators, on how two media resources used in the classroom may affect the production of knowledge. The resources were explored at a workshop of the Project M³ Multimedia Mathematics which aim was to produce didactic material in digital format.

In the article *Developing competencies to teach exponential and logarithmic functions using GeoGebra from a holistic approach*, the authors Ines Maria Gomez-Chacon e Nuria Joglar Prieto propose the study of the development of four components (cognitive, didactic, technical and affective) and of their interactions in the process of Mathematics teaching, working with prospective teachers and selected students through learning scenarios developed in GeoGebra in order to explore exponential and logarithmic functions.

In the article *Pensamiento variacional: seres-humanos-con-GeoGebra en la visualización de nociones variacionales (Variational thinking: human-with-GeoGebra in the visualization of variational notions)*, the authors Jhony Alexander Villa-Ochoa e Mauricio Ruiz Vahos examine two episodes of interactive experience between researches which allowed, through the study and demonstration of some mathematical concepts, the creation of tools in the GeoGebra software.

The authors Méricles Thadeu Moretti e Learcino dos Santos Luiz discuss in the article *O procedimento informático de interpretação global no esboço de curvas no ensino universitário (The informatics conversion procedure of global interpretation of curve sketching in higher education)* an informatics procedure to convert graphical and symbolic forms of functions, that approaches the one proposed by Raymond Duval for curve sketching.

The results of the research conducted by the authors Gerson Pastre de Oliveira e Ricardo Uchoa Fernandes, presented in the article *O uso de tecnologias para ensino de trigonometria: estratégias pedagógicas com tecnologias para a construção significativa da aprendizagem (The use of technologies to teach trigonometry: teaching strategies for*

meaningful learning construction), indicate that the use of a broad pedagogical strategy, supported by technologies, can result in important cognitive advances in the teaching of trigonometry.

In the article *(Res)Significando gráficos estatísticos no ensino fundamental com o software SuperLogo3.0 - (Re)Meaning statistical graphs in Elementary Education with software SuperLogo 3.0*, the authors Everton José Goldoni Estevam e Monica Fürkötter present the characteristics and contributions of SuperLogo 3.0 software in the assignment of meaning to the construction, reading and interpretation of data represented by graphs.

The authors Pedro R. Landim e Ernesto Sánchez tackle in the article *Niveles de razonamiento probabilístico de estudiantes de bachillerato frente a tareas de distribución binomial (Probabilistic reasoning levels of high school students facing binomial distribution tasks)* a hierarchy of reasoning used to evaluate the responses of high school students to a questionnaire containing tasks related to binomial distribution. With the support of the software Fathom, the authors indicate some of the implications of the findings for research and teaching of probability.

In the last article *Aplicando modelos Matemáticos para decidir a viabilidade da instalação de um aquecedor solar de baixo custo (Applying mathematical models to determine the viability of a low cost solar heating installation)*, the authors Júlio César Penereiro, Denise Helena Lombardo Ferreira e Maria Beatriz Ferreira Leite present an interdisciplinary approach involving the exploitation of energy sources. Mathematical models involving elementary functions were applied in a real context for the construction of a solar hot-water heater with low cost material to replace the use of a conventional electric shower.

The volume also includes abstracts and keywords of dissertations and theses in the Program of Post Graduate Studies in Mathematics Education at the Pontifical Catholic University of São Paulo in the third quadrimester of 2010.

We express our gratitude to all reviewers, internal and external, that contributed to the realization of this volume of the magazine and therefore to the academic production of Mathematics Education.

The editors