

**Editorial Board in English of de Volume 21.1 of the of magazine
Educação Matemática Pesquisa**

PROF. DR. SADDO AG ALMOULOU¹

PROFA. DRA. ANA LUCIA MANRIQUE²

Revista Educação Matemática Pesquisa is releasing another volume. For over 20 years we have shared with our readers the results of scientific research in the field of mathematics education. The articles being published here disseminate results from scientific investigations of researchers from different regions of Brazil, revealing a plurality of national and international research groups and institutions.

Volume 21.1 presents 25 articles on the state of the art and knowledge, conceptions, technologies, digital games, problem solving, combinatorics, integral, geometry, teacher education and training, youth and adult education (EJA), professional identity, communities of practice and curriculum materials.

We understand that the scientific debate favoured by the sharing of these articles contributes to the construction of knowledge in the field of mathematics education. Besides, the articles published in this volume present a plurality of theoretical and methodological references that also strengthen scientific research in our area.

Below, we present briefly the texts that are part of this issue of our journal.

The first article, entitled *Concepções manifestadas por licenciandos em matemática ao lidarem com tarefas envolvendo o conceito de anel* (Conceptions manifested by graduates in mathematics in dealing with tasks involving the concept of ring), by Marcelo Silva de Jesus and Angela Marta Pereira das Dores Savioli, investigates the notions manifested by 11 students of a degree in mathematics when dealing with tasks involving the algebraic ring concept. The conceptions were identified considering the elements action, process, object, scheme, constituents of the APÓS theory.

The article *Cartoons matemáticos com tecnologias digitais* (Mathematical cartoons with digital technologies), written by Rosicacia Florêncio Costa and Daise Lago Pereira Souto, seeks to investigate how the digital technologies used in the production of cartoons can influence the

¹ Programa de Estudos Pós-graduados em Educação Matemática da PUC-SP – Editor da revista

² Programa de Estudos Pós-graduados em Educação Matemática da PUC-SP – Editora da revista

mathematical reasoning. The study is an action research, with workshops held with high school students, based on the theoretical-methodological perspective called humans-with-media system (SS-H-C-M).

The third article is entitled *Estudio de la derivada parcial por medio de las aprehensiones en el registro gráfico de funciones de dos variables con estudiantes de ingeniería* (Study of the partial derivative by means of the apprehensions in the graphic registry of functions of two variables with engineering students), by Katia Vigo Ingar and Maria José Ferreira da Silva. The text discusses a didactic situation from the perspective of visualisation and investigates articulations of apprehension in the graphical register in a computational algebraic system (CAS). The authors used the didactic engineering methodology and the experimental phase was carried out with second-year students of an engineering course.

The article *Um cenário das pesquisas envolvendo resolução de problemas em edições do CIEM* (A scenario of research involving problem solving in CIEM issues), by Cidimar Andreatta and Norma Suely Gomes Allevato, presents a mapping of research involving the question of problem solving. The data were collected in the proceedings of the International Congress of Mathematics Teaching - CIEM, 2013 and 2017 editions.

The fifth article, titled *Iris de Fisher: sus posibilidades para un aprendizaje significativo de la clasificación y discriminación multivariantes* (Fisher's Iris: Its Possibilities for a meaningful learning of the multivariate classification and discrimination), is authored by Laura Beatriz Wagner, Diamela Giselle Titonik, Maria Paula Dieser, Maria Cristina Martín, Érica Schlaps and Lorena Veronica Cavero. The text proposes the introduction of the procedures of both linear discriminant and cluster analysis using the classic Fisher's Iris data set in a course of exploratory multivariate statistical analysis, using software R.

The article entitled *Mobilização de saberes no processo formativo de professoras dos anos iniciais* (Mobilisation of knowledge in the training process of teachers of the initial years), written by Debora Cabral Lima, Maria Elizabete Souza Couto and Eurivalda Ribeiro Dos Santos Santana, seeks to study the knowledge mobilised by a teacher from the initial years of elementary education during a training process on multiplicative structures. This was a qualitative study involving face-to-face and virtual meetings with activities of pedagogic practice.

The seventh article, authored by Ewellen Tenorio de Lima and Rute Elizabete de Souza Rosa Borba, is entitled *Articulando os raciocínios combinatório e probabilístico a partir da resolução de problemas na EJA* (Articulating the combinatorics and probability reasoning from the problem solving in the youth and adult education programme - EJA). The authors investigate the relationships that are established between combinatorics and probability knowledge through

exploring problems on the subjects. The study was carried out with students of the youth and adult education programme - EJA.

The article *Abordagem investigativa em aulas de matemática: Uma investigação com casos de ensino na formação de professores* (Investigative approach in mathematics classes: A Teaching-case study in teacher training) is authored by Denise Knorst da Silva and David Antonio Costa. The authors analyse results obtained in a teacher training that used teaching cases as an educational tool. The research, developed in a public elementary school, used narratives elaborated by the participating teachers.

The ninth article is titled *A visão do professor sobre jogos digitais no ensino da matemática para alunos com deficiência intelectual: Estado da arte* (The teacher's view on digital games in mathematics teaching for students with intellectual disabilities: State of the art), and is authored by Simone Venturelli Antunes da Silva and Denise Pereira de Alcântara Ferraz. The authors produced a survey of studies conducted from 2009 to 2018, focusing on the teacher's view on the teaching of mathematical concepts mediated by digital games for students with intellectual disabilities.

The article *Retas que se cortam e dedos que se movem com dispositivos de geometria dinâmica* (Straight lines that intersect and fingers that move with devices of dynamic geometry), written by Marcos Paulo Henrique and Marcelo Almeida Bairral, presents a study on the learning of parallel lines cut by a transversal in GeoGebra. The study involved the development of two tasks with 8th-grade elementary school students, with the capture of smartphones screens presenting the manipulations executed by the students.

The eleventh article is authored by Ilaine da Silva Campos and is entitled *A escolha do tema de um projeto de modelagem e as relações de poder entre os integrantes de um grupo* (The choice of the theme of a modelling project and the power relations among the members of a group). The author seeks to understand the relations of power constituted from the choice of a modelling project theme. The subjects are students of a 3rd-grade class of a technical course on environment integrated to high school. The theoretical references used were the critical mathematics education and the historical-cultural theory of the activity.

The article *Práticas pedagógicas em matemática na EJA e a permanência de estudantes em uma escola da zona rural do Ceará* (Mathematics pedagogical practices in youth and adult education (EJA) and the permanence of students in a school in the rural area of Ceará) is authored by Francisco Josimar Ricardo Xavier and Adriano Vargas Freitas. The study articulates the mathematical pedagogical practices of two teachers who teach in multi-series classes of EJA and

mathematical knowledge of two students identified in their lived experiences in the rural area and the sense of permanence that confer their permanence in school.

The thirteenth article is entitled *Educação matemática: A Articulação de concepções e práticas inclusivas e colaborativas* (Mathematics education: The Articulation of inclusive and collaborative conceptions and practices), and is written by Danielle Aparecida do Nascimento dos Santos, José Eduardo de Oliveira Evangelista Lanuti, Naiara Chierici da Rocha and Denner Dias Barros. The study presents results of three master's studies related to mathematics education from the perspective of inclusion.

The article *O estudo de combinatória no ensino médio: Uma Análise das organizações matemáticas no livro didático* (The study of combinatorics in high school: An Analysis of mathematical organizations in the textbook) is authored by Alan Gustavo Ferreira and Fernando Emílio Leite de Almeida. The authors seek to characterise knowledge related to combinatorics content present in a high school mathematics textbook. The theoretical reference used is the anthropological theory of the didactic.

The fifteenth article, authored by Joice Rejane Pardo Maurell, Celiane Costa Machado and Elaine Corrêa Pereira, is titled *O estado do conhecimento acerca das tendências metodológicas para o ensino da matemática no ensino superior* (The state of knowledge on the methodological trends for mathematics teaching in higher education). The authors carried out a survey in SciELO and in the Sucupira platform with the expressions: “mathematics” and “higher education”. Sixteen articles were selected, in which the authors sought methodological tendencies for mathematics teaching in higher education.

The article titled *A aprendizagem de geometria com foco na desconstrução dimensional das formas* (Learning geometry focusing on the dimensional deconstruction of forms) was written by Roberta Nara Sodr  de Souza, M ricles Thadeu Moretti and Saddo Ag Almouloud. The text discusses the dimensional deconstruction of geometric forms as an important element to be considered for the geometry learning. The authors used principles of didactic engineering to make a semiotic and cognitive analysis of productions of high school students.

The seventeenth article is titled *Estado da arte das pesquisas acad micas brasileiras sobre concep es de Professores que ensinam matem tica (2001-2012)* (State of the art of Brazilian academic research on the conceptions of teachers who teach mathematics) and is authored by Vanessa Am lia da Silva Rocha and Roseli Ara jo Barros. They selected works that investigated conceptions of teachers from a doctorate or an academic master's degree, developed in a degree course in mathematics.

The article *Formação continuada com tecnologias: Metanálise a partir de dissertações e teses (2013-2017)* (Continuing education with technologies: Meta-analysis from dissertations and theses) was written by José Elyton Batista dos Santos and Carlos Alberto Vasconcelos. This is a bibliographical study and was carried out considering 15 dissertations and three theses. The authors sought research works that addressed the continuing education of teachers who teach mathematics in basic education using technologies.

The nineteenth article, written by Douglas da Silva Tinti and Ana Lúcia Manrique, is entitled *Sou professora de matemática tradicional! Análise de traços de identidade de Amanda em relação à constituição profissional* (I am a traditional mathematics teacher! The analysis of Amanda's identity traits in relation to the professional constitution). The text analyses the professional constitution and the understanding about teaching and learning processes of a mathematics teacher participating in a community of practice that was constituted in a project of the Observatory of Education - OBEDUC.

The article entitled *Os conceitos de perpendicularidade e de paralelismo mobilizados em uma atividade com o uso do báculo (1636) de Petrus Ramus* (The concepts of perpendicularity and parallelism mobilised in an activity using Petrus Ramus' baculum) is authored by Ana Carolina Costa Pereira and Fumikazu Saito. The text aims at constructing an interface between history and teaching, which values manipulative constraints, and lists some didactic potentialities of the instrument called "Ramus' baculum".

The twenty-first article is authored by Manfred Borovcnik and is titled *Inferência informal e inferência "informal"* (Informal inference and "informal" inference). The text addresses the didactic potential and drawbacks of "informal" inference, which is a conceptualization of statistical inference by simplifying its complexity in contexts that make the interpretation of the concepts developed meaningful.

The article *O estado do conhecimento sobre as pesquisas brasileiras que focalizam as relações estabelecidas entre professores da educação básica com os materiais curriculares de matemática* (The state of knowledge on Brazilian research that focuses on the relationships established between teachers of basic education and curriculum materials of mathematics) was written by Priscila Bernardo Martins, Edda Curi and Cintia Aparecida Bento dos Santos. The authors carried out a mapping at CAPES thesis database and identified four theses and 11 dissertations that met the objective proposed. The analysis method adopted was content analysis.

The twenty-third article is entitled *Desafios e particularidades narrados pelos docentes da licenciatura em matemática do Instituto Federal de Minas Gerais* (Challenges and peculiarities narrated by the teachers of mathematics degree course of the Federal Institute of Minas Gerais)

and is written by Josâne Geralda Barbosa and Celi Espasandin Lopes. The text discusses the formation of mathematics teachers through memories of teacher trainers about the process of implementation of the courses, the main difficulties faced to create and maintain the courses and their main characteristics.

The article *Um estudo com bolsistas do PIBID sobre concepções de formação docente* (A study with PIBID grantees on conceptions of teacher education) was written by Fabiano dos Santos Souza and Cileda de Queiroz e Silva Coutinho. The study was carried out through the conduction of a questionnaire with 38 students of a degree in mathematics. The data were analysed by the similarity analysis method, with CHIC software.

Finally, the article entitled *Descripción de una experiencia didáctica sobre la integral definida en el marco de un congreso de educación matemática* (Description of a didactic experience on the integral defined in the framework of a mathematics education congress) is written by Patricia Vila Torres, Claudia Mariela Zang Gretel, Alejandrina Fernández von Metzen and María Natalia León. The text analyses a proposal for the reconstruction of the sense of integral defined in high school and non-university higher education teachers participating in a workshop held at the 1st Congress of Mathematics Education in Argentina in 2017.