

Editorial

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This is the third 2023 issue of the *Educação Matemática Pesquisa* journal. This year, we are editing volume 25, sharing with our readers the results of scientific research in the mathematics education field. This volume commemorates 25 years of dedication from the editors and professors of the Postgraduate Program in Mathematics Education at PUC-SP, who have consistently striven for the excellence of this journal. In addition, we are celebrating the award of Qualis A1 in this last evaluation of the Quadrennial 2017-2020, recognizing all the efforts we have made to improve the quality of editing and the quality of the articles published during all these years.

The papers published in this third issue of volume 25 disseminate results from scientific investigations done by researchers from different regions of Brazil and other countries, covering a diversity of national and international research groups and institutions. Moreover, the articles published in this issue bring a plurality of theoretical and methodological references that strengthen scientific research in our area.

Volume 25.3 features 16 articles that discuss mathematics teacher initial education, inclusive mathematics education, the use of the GeoGebra software, algebra, language games, field education, mathematics teacher resources, curriculum, engineering education, artificial intelligence, computational thinking, and more.

Below, we briefly present the texts comprising this third 2023 issue of *Educação Matemática Pesquisa* journal.

The first article, “The curriculum and teacher education: Between lived and hands-on experiences in mathematics teaching”, is authored by André Ricardo Lucas Veira, Fabrício Oliveira da Silva, and Alfrancio Ferreira Dias. The article delves into the lived and hands-on

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experiential learning that emerged from the narratives of four high school mathematics teachers from the Federal Institute of Education, Science, and Technology of Sertão Pernambucano about their mathematics teaching curriculum practice. As a result, the authors showed how the participating teachers' mathematics teaching experiential learning was woven into the formative micro-relationships of the teaching profession in everyday school life.

The article “Construction of the theory/practice relationship through strategies for overcoming the university/school dichotomy” is authored by Neslei Noguez Nogueira and Denise Nascimento Silveira. The authors explore the practices implemented in the Curriculum in Mathematics Education subject focused on inserting prospective teachers from the degree in mathematics at the Federal University of Pelotas into schools. To do this, they reflect on Brazilian public policies, their impact on initial teacher education, and how the socio-political and economic context and school operating mechanisms can adversely affect teachers' well-being.

The third article, by Leandro Mário Lucas, Filomena Maria Gonçalves da Silva Cordeiro Moita, and Lucas Henrique Viana, is called “Computational thinking in the new high school: An analysis of didactic works in the area of mathematics and its technologies”. The authors investigated the impact of including computational thinking in the content of didactic works in mathematics and its technologies in the New High School. As a contribution, they concluded that there was a significant impact on the contents of most works analyzed, considering the frequency with which computational thinking is mentioned, the position it occupies in the work structure, and the importance given to it for mathematical learning.

Viviane Roncaglio, Isabel Koltermann Battisti, and Cátia Maria Nehring are the authors of the article “Engineer training: New needs for an old profession”. They investigated the necessary challenges in engineering training considering the conceptual meaning of vector for a professional performance that contemplates the indicators proposed by the National Curriculum Guidelines. As a result, they point out that educational activity must be restructured and adapted to new market demands, with coordination between the subjects and the proposition of activities that mobilize concepts in professional practice situations.

The fifth article, “Uses of argumentation in mathematics education: A systematic review of literature in higher education”, is authored by Joilma Silva Carneiro, Elder Sales Teixeira, and Andréia Maria Pereira de Oliveira. This study aimed to carry out a systematic review of the literature of empirical studies on the uses of argumentation in mathematics education in higher education. As a result, the authors point out the need to conduct more investigations to evaluate the potential of courses focused on argumentation for mathematics

subjects in higher education, mainly using Perelman's theoretical approach to argumentation, about which have been scarce studies.

The article "ChatGPT and mathematical education" is authored by Marcelo de Carvalho Borba and Valci Rodrigues Balbino Junior. The authors discuss and address issues relevant to the new possibilities and challenges imposed on mathematics education due to the popularization of artificial intelligence. As a result, they suggest that we will still face immense ethical concerns, but it will be imperative to think about problems to be solved for this type of collective.

The seventh article, authored by Gabriel dos Santos e Silva and Francielle Silva Gardin, is entitled "Reflective writing in Vaivém: A study of the productions of prospective mathematics teachers". The authors investigated signs of reflective writing in prospective teachers' written productions in a mathematics degree class at the Instituto Federal do Paraná campus Capanema. They highlight the role of the interventions, which promoted individualized dialogues, allowing future teachers to reflect on aspects of their personal and professional lives.

Josélia Euzébio da Rosa and Ediséia Suethe Faust Hobold are the authors of the article "Commutative and distributive properties in the Davydovian proposition for mathematics teaching". The study seeks to analyze the way of organizing mathematics teaching proposed by Davýdov and collaborators in the specificity of the commutative and distributive properties of multiplication. As a result, the authors show that, for the reorganization of mathematics teaching, the starting point must be the relationship between discrete and continuous quantities in the interrelationship of arithmetic, algebra, and geometry.

The ninth article, "The impact caused by the COVID-19 pandemic on the mathematics teacher's resource system: A case study in Amazonas", is written by Francisco Eteval da Silva Feitosa, Verônica Gitirana, and Roberta dos Santos Rodrigues. The study aimed to analyze the impact of the COVID-19 pandemic scenario on the resource system for mathematics teachers in basic education. The authors showed that the inequalities between public and private schools strongly influenced how the pandemic impacted their teachers regarding technological resources, infrastructure, and institutional support.

The article "Didactics of signs: An archive of mathematics classes", written by Lisete Regina Bampi and Gabriel Dummer Camargo, presents an analysis of the task of translating encounters with the worlds of signs in mathematics classes. The authors reflect that among the discourses and teaching practices analyzed, own discourses that offer visibility to the knowledge of others were produced.

The eleventh article, by Maria Jacqueline da Silva, José Dilson Beserra Cavalcanti, and Rochelande Felipe Rodrigues, is entitled “Multigrade field education in São Caetano-PE: A study of the mathematics curriculum organizer for the initial years”. The authors analyzed the mathematics curriculum organizer of the reference curriculum for teaching this subject in the initial years in the context of multigrade field education in municipal schools of São Caetano-PE. As a result, they point out that the organizer is generic and limited when it comes to including mathematical knowledge, not incorporating knowledge from the specific school context or other cultures.

Ketlin Kroetz is the author of the article “Mathematics education in question: Provocations based on Florence Weber and Wittgenstein”. She seeks to problematize the sociology proposed by Frenchwoman Florence Weber in mathematics education, taking as its main articulating axis her concept of the social scene and the theories of language games defended by Wittgenstein. She concludes that mathematics education should be viewed not as a hard science but as something that transcends exact calculations and can be found in the ways of knowing and doing in different cultures.

The thirteenth article is by Ana Rita Domingues, Ricardo Scucuglia Rodrigues da Silva, and Inocência Fernandes Balieiro Filho, “Aspects of the differential thinking of high school students with GeoGebra”. The authors conducted an exploratory study of aspects of differential thinking and thinking-with-GeoGebra emerging when high school students investigate activities on the calculus of areas and volumes. In the results, the authors highlight the role of visualization and experimentation-with-technology in developing students’ differential thinking.

The fourteenth article is authored by Andrei Luís Berres Hartmann, Lais Cristina Pereira da Silva, and Rosane Rossato Binotto, entitled “Linear Diophantine equations through problem solving: Possibilities for degree in mathematics courses”. The authors present a study on the possibility of working with linear Diophantine equations through the mathematics teaching-learning-assessment methodology through problem solving. As a contribution, the authors point out that this methodology allows students to develop autonomy and group work.

The article “The division algorithm in the initial education of mathematics teachers”, by Carlos Ian Bezerra de Melo and João Luzeilton de Oliveira, presents a reflection on issues relating to Euclidean division, more specifically, the division algorithm within the scope of initial education. The results reveal that an approach focused on the meanings of calculations and their implications, rather than memorization and execution of algorithms, is necessary to qualify prospective mathematics teachers in elementary number theory.

The sixteenth article, “Promoting the specialized knowledge of prospective mathematics teachers about the Euclidean division algorithm”, is by Marieli Vanessa Rediske de Almeida and Rian Lopes. The authors investigated the knowledge the teacher educator mobilizes and the knowledge students demonstrate when the teacher educator addresses an algebraic result, in this case, the Euclidean division algorithm theorem. They highlight that the teacher educator’s mathematical and pedagogical knowledge, combined with the effective education of prospective mathematics teachers, has the potential to promote specialized knowledge in undergraduate students.