

Editorial

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We are pleased to present Volume 27, Issue 3 of the journal *Educação Matemática Pesquisa*, comprising 12 original articles and one translated article, which reflect the diversity and richness of research in the field of mathematics education. This edition brings together contributions ranging from innovative pedagogical practices to in-depth theoretical reflections, highlighting the dialogue between research, teacher education, and contemporary challenges in mathematics teaching.

The articles in this issue explore topics such as the integration of mathematics into interdisciplinary and social contexts, initial and continuing teacher education, the use of technological and manipulative resources, and the promotion of inclusive and critical mathematics education. The plurality of methodological approaches—from case studies to documentary research and practical interventions—demonstrates the journal’s commitment to disseminating research that positively impacts educational practice.

Opening this edition, we have the article “Powers of the math classroom: On the plot of a sustainable science fair,” authored by Helena Teixeira Tomaz, Débora Regina Wagner, Cláudia Regina Flores, and Jussara Brigo. The authors analyze mathematics as a critical tool in a sustainable science fair, demonstrating its role in decision-making and organizing interdisciplinary activities. They conclude that the cartographic approach proved effective in charting paths that transform mathematics into a space for the critical exercise of thinking.

In the article entitled “Definite integrals of one variable: A proposal for intervention with exploratory tasks,” the authors Tainá Taiza de Araujo and André Luis Trevisan investigate strategies for teaching definite integrals through exploratory tasks, focusing on students’ conceptual understanding. They conclude that the tasks allowed students to substantially explore the concept of Riemann sum, especially in the product, sum, and limit layers.

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Samuel Ribeiro da Silva and Jadilson Ramos de Almeida are the authors of the article entitled “Exploring the properties of equality: A professional learning task in the initial training of mathematics teachers.” The article presents a discussion on the use of professional learning tasks to develop mathematical and didactic knowledge in pre-service teachers about properties of equality from the perspective of MTSK. They argue that the professional learning task has proven effective in expanding professional knowledge in initial training.

The article “The didactic problem of the decimal numbering system in light of didactic transposition” is authored by Vitoria Pereira Dourado, Gleison de Jesus Marinho Sodré, Raquel Soares do Rêgo Ferreira, and Valéria Risuenho Marques. The authors dwell on the challenges in teaching the decimal system and propose activities using non-decimal numerals to counteract the “naturalization” of this content. In conclusion, they point out that the activity with non-decimal numerals proved to be strategic for (re)signifying students’ relationships with mathematical objects.

The article “Research workshop on sociocultural practices in the education of mathematics teachers” by Iran Abreu Mendes and Carlos Aldemir Farias describes a training experience, known as a training workshop, that integrates mathematics, society, and culture, highlighting the importance of sociocultural practices in teacher training. The authors highlight that participants constructed methods to connect explicit knowledge in sociocultural practices with mathematical representations.

In the article “Resources used by Professor Fabiana to teach affine functions in a field high school,” Ayrton César Borba and Iranete Maria da Silva Lima analyze the material and digital resources used by a teacher in a rural school, relating them to the students’ realities. In their conclusions, they identified the need for teacher training that combines field education and the documentary approach.

Denise Pereira de Alcantara Ferraz, Eliane Matesco Cristovão, and Gabriela Gomes Ribeiro are the authors of the article entitled “Mathematics teacher education from an inclusive perspective: Analyzing practices conceived in a context of collaboration between university and school.” In the text, they explored inclusive formative practices, with an emphasis on collaboration between universities and schools to prepare future teachers. The conclusion was that the practices of planning and narrating inclusive classes contributed to articulating knowledge of, in, and for practice.

The article “The semiotic resources used to produce diagrams by 1st-grade elementary school students when developing a mathematical modeling activity” is authored by Gislaine Ferreira Gomes and Karina Alessandra Pessoa da Silva. They investigate how children utilize

semiotic resources (gestures, drawings) in mathematical modeling activities, revealing insights into their knowledge of counting and number organization. In their conclusions, the authors highlight that the manipulation of materials and the use of gestures naturally revealed knowledge about counting and the multiplicative principle.

Claudia Aparecida Winkelmann, Rita de Cassia Pistóia Mariani, and Maria Arlita da Silveira Soares are the authors of the article: “Interpretations of the rational number as one of the central elements of the development of proportional reasoning: An approach with Frac-Soma.” They analyze the difficulties and progress of 7th-grade students in understanding rational numbers, such as quotients and operations, using the Frac-Soma material. The authors conclude that it was possible to identify advances in the understanding of fair sharing, but challenges remained in the notions of comparison and operator.

In the article entitled “Geometric figure in the book and the PCOC corresponding to the freehand: A code management for the 3D printer,” whose authors are Afonso Henriques, Rosane Leite Funato, and Elisângela Silva Farias, the use of 3D printing is proposed to make geometric figures tangible, facilitating the visualization and teaching of geometry. The authors highlight that the teaching materials, called 3D printed PCOC, proved effective in examining intersections of surfaces and notable geometric elements.

In “Temporal analysis of proficiency in mathematics and factors that impact academic performance: An investigation with data from basic education,” Camila Fernanda Bassetto, Driely Turi Ursini, Álvaro Martim Guedes, and Marco Aurélio Kistemann Junior delve into socioeconomic and academic factors that influence performance in mathematics, based on data found in SARESP. In their conclusions, the authors argue that parental education, family income, and homework completion have a positive impact on performance.

Elcio Milli and Maria Auxiliadora Vilela Paiva are the authors of the article “Impacts of the Pedagogical Residency Program on daily school life and teacher training: Challenges in times of pandemic.” They report the challenges and contributions of the Pedagogical Residency Program during the pandemic, highlighting its importance for teacher training. They conclude that the PR Program strengthened collective knowledge and brought basic and higher education closer together, benefiting students.

This edition also features an article by Nicolas Balacheff, “Notes for a study of the didactic transposition of mathematical proof,” translated by Saddo Ag Almouloud, Marluce Alves dos Santos, and Solange Fernandes Maia Pereira. The work aims to understand the historical and pedagogical process of incorporating proof into mathematics teaching,

highlighting that proof serves as both the foundation and organizer of knowledge; however, its institutionalization depends on a complex social dimension.

Thus, this issue reaffirms the commitment of the *Educação Matemática Pesquisa* journal to disseminating research that combines theoretical rigor and practical relevance. The articles presented here not only reflect on contemporary challenges but also point to ways to transform mathematics education. We thank authors, reviewers, and readers for their contributions to this essential academic dialogue.

We invite the community to explore these contributions, which will undoubtedly inspire new reflections and innovative practices in our classrooms and research.