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Editorial

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This is the fourth issue of the journal *Educação Matemática Pesquisa* published in 2024. We close volume 26 with 14 articles that reflect the diversity and richness of research in mathematics education, presenting contributions that dialogue with the current challenges of teacher education, pedagogical practices, and epistemological reflections in the area.

The articles gathered in this edition explore a wide range of topics, from the production of formative curricular materials to the use of generative artificial intelligence in teaching mathematics, including discussions on inclusion and social justice, continuing teacher education, and epistemological and didactic reflections. These approaches reaffirm the journal's commitment to disseminating studies that contribute to improving mathematics education in its different contexts.

The first article, by Ana Paula Perovano and Gilberto Januario, entitled "Conceptualizing formative curricular materials and discussing their impact on professional teaching knowledge," analyzes the learning opportunities offered by formative curricular materials in mathematics, highlighting the role of these materials in supporting the planning and execution of classes. The results reveal that the materials examined promote learning teachers can use critically and reflectively.

Fernanda Angelo Pereira and Mauren Porciúncula, in the second article, "Inclusion and social justice in a Statistical Literacy Project: Critical statistical education for young people in situations of socioeconomic-environmental vulnerability", present the impacts of the Statistical Multimedia Literacy Project on the mobilization of critical statistical education, promoting

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reflections on equity and social inclusion. The results indicate that the project encouraged collaboration, critical reflection, and the use of statistics to address real problems.

The third article, "A study of the documentary genesis of teachers to introduce the teaching of function in basic education considering the function of a real variable with several mathematical sentences," by Armênio Lannes Xavier Neto, Maria José Ferreira da Silva, and Luc Trouche, investigates how teachers mobilize and create resources to teach the concept of function using specific situations in basic education. The results show that teachers develop documentary schemes throughout the application of the proposed activities.

Next, Elânia Francisca da Silva, Ana Cecília Figueirêdo Leite and Rodrigo Lacerda Carvalho, in "The voice of teaching: Building bridges with dialogues on interdisciplinarity and equity," discuss the challenges and potential of interdisciplinary teaching in promoting equity in mathematics teaching. The results highlight that, despite advances, teacher education and practice still face many challenges.

The fifth article, "Didactic macro-decisions: Analysis of lesson planning from the point of view of the development of algebraic thinking," by Lívia Elaine da Silva Santos and Fernando Emílio Leite de Almeida, analyzes how the teacher's didactic choices can contribute to the development of algebraic thinking in elementary school students. The study revealed that didactic macro-decisions directly influence how students generalize and abstract algebraic concepts.

In "Financial education in textbooks: Transforming mathematical exercises into powerful reflective scenarios," Wellington Moisés de Oliveira and Lucas Carato Mazzi discuss how textbooks can be used to promote a critical approach to financial education in elementary school. The results indicate that transforming exercises into reflective scenarios can foster a more critical understanding of concepts.

The seventh article, "The development of algebraic thinking associated with polynomial operations in Mathigon," by Rúbia Carla Pereira, Alex Jordane and Alex Mofardini Ramo, explores the use of digital resources to teach polynomial operations, highlighting the impact on students' understanding. It was identified that activities in Mathigon promote generalization and abstraction processes.

Gabriele Bonotto Silva and Vera Lúcia Felicetti, in their article "Continuing teacher training: The impact on student learning in mathematics," present the results of a study on continuing education and its impact on student performance. The study revealed statistically significant gains in the performance of students whose teachers participated in the education process.

In the ninth article, “The concept of rational numbers in secondary and higher education: A systematic literature review in Latin America,” Aline Mendes Penteado Farves and Márcia Maria Fusaro Pinto conduct a systematic review that reveals gaps and trends in understanding this fundamental concept. Persistent difficulties were identified, especially in representations and interpretations of rational numbers.

André Ricardo Antunes Ribeiro, Evandro Alberto Zatti, Renata Oliveira Balbino, and Marco Aurélio Kalinke present an innovative investigation in “The creation of an activity aimed at teaching symmetry using generative artificial intelligence,” demonstrating the potential of tools such as Google Gemini and Midjourney in mathematics teaching. The results show that the creation of structured prompts is essential for the accuracy and pedagogical application of the tools.

The article “Elements of knowledge for teaching arithmetic in the manual *Arithmetic in the “New School”*, by Everardo Backheuser,” is written by Rogério dos Santos Carneiro and Neuza Bertoni Pinto, and offers a historical perspective on teaching knowledge in arithmetic. The analysis highlights the relevance of the manual's theoretical foundations in promoting modern methodologies.

In the twelfth article, “Evolution of the notion of continuity and reflections on the relationship between discrete and continuous,” Humberto de Assis Clímaco, Ironei Angelo dos Santos Junior, and Jacqueline Borges de Paula explore epistemological and philosophical implications of this relationship in mathematics teaching. The study shows how the notion of continuity has evolved historically, influencing mathematics education.

Edson Ferreira da Costa Junior and Karly B. Alvarenga, in their article “Reflections about modeling processes: A case of translational motion in a horizontal direction,” reflect on isometric movement modeling processes in the school context. The results indicate that graphical, arithmetic and algebraic approaches were used to model these movements.

Closing this edition, in the article “Translation and validation of the Mathematical Anxiety Scale for Elementary Education-Elementary Form-MARS-E into Brazilian Portuguese,” Marcos Guilherme Moura Silva, Isis Fernanda Alves, Mauro Roberto de Souza Domingues, Felipe Barradas Cordeiro, Tadeu Oliver Gonçalves, Natáli Valim Oliver Bento-Torres et João Bento-Torres presents the results of the validation of a psychometric instrument adapted to the Brazilian context. The scale showed high internal consistency and suitability for large-scale use.

Closing this edition, Jorge Fernandes de Lima Neto and Tiago Emanuel Klüber discuss, in the fifteenth article, “Understanding of derivative concepts by mathematics teaching degree

students from three inland institutions in the state of Paraná," the difficulties the undergraduates face understanding fundamental concepts of mathematical analysis. The study highlighted gaps in understanding that could compromise the prospective teachers' education.

Additionally, this edition features two translations of classic texts that expand theoretical reflections on mathematics education. The article "Epistemology and Didactics," by Michèle Artigue, addresses the links between epistemology and didactics, with an emphasis on the concepts of epistemological obstacles and conceptions, whereas "Mathematical argumentation, a precursor concept of mathematical proof," by Nicolas Balacheff, discusses argumentation as an essential element for understanding and constructing proof in mathematics teaching.

This issue concludes volume 26, reaffirming the commitment of *Educação Matemática Pesquisa* to disseminate relevant knowledge and promote dialogue between research, teacher education, and pedagogical practices in mathematics education.