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MATHEMATICS EDUCATION AND DIGITAL TECHNOLOGIES: REFLECTING ON THE POTENTIAL FOR MATHEMATICS EDUCATIONAL PROCESSES

EDUCAÇÃO MATEMÁTICA E TECNOLOGIAS DIGITAIS: REFLETINDO O POTENCIAL PARA PROCESSOS EDUCACIONAIS DE MATEMÁTICA

EDUCACIÓN MATEMÁTICA Y TECNOLOGÍAS DIGITALES: REFLEXIONANDO SOBRE EL POTENCIAL PARA LOS PROCESOS EDUCATIVOS DE MATEMÁTICAS

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ABSTRACT

The advancement of digital technologies, in various contexts of our society, where individuals operate, influence, and modify human interactions, is directly related to the cultural, political, and economic needs of humanity. Educational spaces/processes are one of these contexts where these technologies are being introduced and expanding their reach. In this context, this paper proposes to reflect on the contributions made possible by digital technologies to mathematics education processes, considering the importance of understanding their use within school spaces as a support tool for mathematics education processes and their potential that emerges from social practices. However, we cannot consider these tools as the complete solution for all mathematics education processes because they may not be developed for educational purposes, but their use can contribute to bringing students closer to social reality from the moment that the didactic-pedagogical planning provides opportunities that stimulate reflections on themes related to society, creativity, autonomy, spatial notions, and the construction of mathematical knowledge.

Keywords: Mathematics Education. Educational Processes in Mathematics. Digital Technologies.

RESUMO

O avanço das tecnologias digitais, em diversos contextos da nossa sociedade, onde os sujeitos operam, influenciam e modificam as interações humanas relaciona-se diretamente às necessidades culturais, políticas e econômicas da humanidade. Os espaços/processos educacionais é um desses contextos em que essas tecnologias estão sendo inseridas e ampliando sua zona de popularização. Nesse contexto, propõe-se refletir sobre as contribuições possibilitadas pelas tecnologias digitais para processos educacionais de matemática na perspectiva de se considerar relevante compreender a importância da sua utilização dentro dos espaços escolares como ferramenta de apoio aos processos educacionais em matemática e o seu potencial que emerge a partir das práticas sociais. No entanto, não podemos depositar nessas ferramentas a solução completa para todos os processos educacionais em matemática porque pode não serem desenvolvidas para fins

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educacionais, mas, seu uso pode contribuir para aproximar a realidade social dos discentes a partir do momento que no planejamento didático-pedagógico oportunize situações que estimulem reflexões sobre temáticas relacionadas à sociedade, criatividade, autonomia, noções espaciais e a construção do conhecimento matemático.

Palavras-chave: Educação Matemática. Processos Educacionais de Matemática. Tecnologias Digitais.

RESUMEN

El avance de las tecnologías digitales en diversos contextos de nuestra sociedad, donde los individuos operan, influyen y modifican las interacciones humanas, está directamente relacionado con las necesidades culturales, políticas y económicas de la humanidad. Los espacios/procesos educativos son uno de esos contextos donde estas tecnologías se están introduciendo y expandiendo su alcance. En este contexto, este artículo propone reflexionar sobre las contribuciones de las tecnologías digitales a los procesos de educación matemática, considerando la importancia de su uso dentro de los espacios escolares como herramienta de apoyo para la educación matemática y su potencial emergente de las prácticas sociales. Sin embargo, no podemos considerar estas herramientas como la solución completa para todos los procesos de educación matemática porque pueden no estar desarrolladas con fines educativos. No obstante, su uso puede contribuir a acercar a los estudiantes a su realidad social, siempre que la planificación didáctico-pedagógica cree oportunidades que estimulen la reflexión sobre temas relacionados con la sociedad, la creatividad, la autonomía, la conciencia espacial y la construcción del conocimiento matemático.

Palabras clave: Educación Matemática. Procesos Educativos en Matemáticas. Tecnologías Digitales.

1 INITIAL CONTRIBUTIONS

Technological development, within the various contexts in which individuals operate daily to enhance their social processes, has always been directly interconnected with their social needs, through the organization of a set of actions relevant to strengthening both individual and collective survival.

This development becomes perceptible from the moment human beings, through their own knowledge, began to create tools capable of enabling activities such as hunting, fishing, navigation, land demarcation, communication and information, agriculture, among others. This process soon became common for addressing an increasing number of individual and collective demands—whether at home, at work, during meals, or on trips—with the potential to assist in performing everyday activities, even optimizing manual tasks in shorter periods of time.

Given this potential, technological advances have enabled the development of humanity. However, we cannot overlook the behavioral shifts that emerge when individuals perceive the growing presence of technology across social contexts. Such behaviors are shaped by society itself, which views technological progress as a major novelty—one that requires reflection on the necessary precautions regarding the most appropriate ways to integrate it into human interactions. These same considerations must be extended to educational processes, given the need to educate individuals technologically so that they may enhance their critical participation in everyday dynamics.

It becomes necessary to consider an educational process because various segments of our society are increasingly influenced by the presence of digital technologies that emerge daily among individuals and within educational spaces. This presence is also clearly observed in schools. It becomes evident not only in the relationships/interactions among students and teachers but also in the school environment itself, when it provides technological infrastructure capable of being pedagogically explored.

Digital technologies, linked to different social contexts, are present in educational processes—particularly in mathematics—with the potential to engage learners through various computer-based environments. However, didactic–pedagogical contexts must be created in which students become protagonists of their own learning and enhance their collaborative actions to prevent inappropriate use.

Considering society's deep involvement with different digital environments, it becomes necessary to reflect upon whether the presence of digital environments ensures solutions to educational problems.

From a technical standpoint, one might assume there is no real need for concern as long as individuals can manipulate machine-based tools (Lima Jr., 2005). However, the relationship between individuals and machines must be understood beyond manipulative and technicist processes. This means providing educational contexts in which individuals can function technologically.

Functioning technologically does not imply denying the place of machines and their potential contributions to enabling new dynamics within educational processes. Instead, it means fostering educational contexts where individuals exercise their autonomy, acting and thinking mathematically, and contributing to the development of knowledge—especially mathematical knowledge.

In this perspective, Freire (2021) argues that, like education itself, the presence of technology in society also carries a political dimension that benefits certain social groups while excluding others. Therefore, individuals must remain attentive to the political character that accompanies the incorporation of technology into educational spaces. This political dimension must be considered during discussions and use, particularly of digital technologies. Although their potential is acknowledged by the political system, investments in integrating such resources into schools remain insufficient, and when they occur, their functionality is often limited, serving mostly hegemonic state interests.

This perspective becomes especially clear in reports from the National Telecommunications Agency (Anatel), which indicate that by the end of 2022, 3,400 schools in Brazil had no access to electricity, 9,500 had no Internet access, and 46,100 lacked computer labs. These data call for reflection on the neglect of public policies concerning digital technology integration into educational processes, especially when compared to economic investments.

Society perceives this neglect when public investments prioritize boosting the productive sector of the economy, favoring the development of machine-based devices such as tablets, smartphones, video-call applications, Internet platforms, Google Maps, and social networks—built with the understanding that such devices would support and satisfy the ideals of a hegemonic, capitalist society.

In this perspective, Santos, Freitas, Queiroz, and Santos (2025, p. 3) challenge these assumptions, asserting that:

> "technological resources should not—and cannot—remain restricted to ideas that solely strengthen industrial production, expanding machine-based devices with exclusive objectives of industrial growth, comfort, economic empowerment, or other desires tied to a capitalist, hegemonic society supported by consumerist principles." (Santos, Freitas, Queiroz & Santos, 2025, p. 3)

Even acknowledging the incentives for technological production, we cannot ignore the advancement of digital technologies and their relevance in decision-making across different social contexts. These contexts justify the importance of educational spaces providing continual training for individuals so that they are prepared to use such technologies according to their personal and professional needs.

These needs are also evident in the field of Mathematics Education, which draws upon knowledge from both Mathematics and Education to enable individuals to act and think mathematically—not only within scientific knowledge, but also in their ability to intervene when necessary in their social contexts. In other words, we must establish foundations that allow us to advance in the use of technologies not merely as machine-based devices but as resources through which individuals can function technologically.

Whether in academic or professional spheres, Education must help individuals advance within their social contexts without fostering dependence on digital technologies. This can be achieved by exploring the tools available. To do so, it is necessary to redesign didactic–pedagogical objectives for activities in educational processes, promoting an education characterized by opportunities for autonomous mathematical thinking within digital contexts and enabling individuals to become protagonists in their social contexts in response to real-life needs.

Such educational development must reach a space shaped by indicators marked by the participants themselves and interrelated with fundamental principles of Mathematics Education. In other words, attention must be given to indicators that enable individuals to perceive the relationship between their social contexts and the mathematical knowledge addressed during educational processes.

When referring to the foundational principles of Mathematics Education, we highlight the need for methodological approaches—such as Mathematical Modeling, Ethnomathematics, Mathematics Didactics, and Technologies in Mathematics Education (including digital technologies)—to reach educational processes within a perspective of Critical Education. That is, an education constituted through actions interconnected among individuals and derived from elements present in Social Practices (Saviani, 2011).

These principles arise from curiosity and lead to investigation, especially within digital environments, and yet they are often unaddressed, remaining restricted to the mere exploration of technological resources (computers, the Internet, social networks, software, digital platforms, etc.) that enter educational spaces timidly under political discourse claiming they will improve educational quality.

Regarding digital technologies, one may overlook their educational potential for mathematical reasoning, but one cannot ignore their presence across social contexts. As such, Dalbosco (2006, p. 12) emphasizes the need to characterize digital technology as:

> “equipped with resources that enhance didactic–pedagogical processes, constructed through various elements (hardware and software), ranging from multimedia equipment and Internet access to educational software, virtual reality tools, and intelligent tutoring systems.” (Dalbosco, 2006, p. 12)

He also highlights concerns about how such technologies have been used in educational spaces, noting that merely inserting a technology into didactic–pedagogical processes is not enough to guarantee individuals’ intellectual development. Nor does it ensure that we are connecting to students’ social contexts. In other words, “these resources only make sense in education when inserted into pedagogical contexts with well-designed objectives and strategies” (Dalbosco, 2006, p. 13).

In daily experiences exploring a digital technology not developed for teaching mathematics, one can perceive the importance of didactic-pedagogical planning for its use in order to allow individuals to freely exercise mathematical action/thinking, thus enhancing their learning. In this case, it is the Google Earth technology developed for locating properties (land and residences) on a digital map, providing information related to real estate sector processes.

In initial contacts, one notices an enchantment with the various functionalities offered by Google Earth, such as marking with different polygonal shapes, area calculations, distance between points, and perimeter, but, with a critical eye towards mathematical action/thinking, one can see the didactic-pedagogical potential that this technology offers to be explored during educational processes in mathematics, particularly geometry. The fascination initially refers to understandings of knowledge related to Basic Education by providing contexts involving the study of geometry where pragmatic and meaningless approaches predominate, creating difficulties for learners. Difficulties that extend to higher education when studying Analytical Geometry, Plane Geometry, and Spatial Geometry.

In this context, reflecting on Mathematics Education and Digital Technologies from the perspective of their contributions to educational processes, without attributing the understanding that from this moment on there is a solution for any and all educational processes in mathematics, we can consider it as one of the ways to enhance the geometrically acting/thinking of individuals.

2 ON MATHEMATICS EDUCATION

Mathematics Education, as a field of knowledge, has contributed to creating educational processes in mathematics that allow individuals to act according to their singularities, expressing their ways of acting and thinking mathematically. Nonetheless, it is still clearly noticeable in educational spaces (textbooks, audiovisual materials, etc.)—and among teachers—the presence of didactic actions shaped by the praxis of mathematics as an exact science, rather than as a domain composed of the plural forms of knowledge present in society.

These forms of knowledge have the potential to be explored through methodological approaches that emerge from research in the field of Mathematics Education. Such studies demonstrate the concern of the mathematical research community with social aspects connected to the everyday lives of individuals involved in mathematics educational processes—concerns that became more visible to society as the field of Mathematics Education began to take shape around the 1980s.

Even acknowledging this historical marker, the literature on mathematics shows that mathematical knowledge has long been linked to people’s daily lives. This can be observed in the presence of mathematical elements—numbers, symbols, geometric shapes, measurement units, among others—that have gradually evolved as humans recognized their usefulness in socioeconomic relations and interactions. These relationships emerged from the need to count, measure, demarcate land, calculate taxes, conduct commercial transactions, and even create calendars. In other words, contexts in which individuals use their knowledge while experiencing and exploring their social practices.

These processes originated from social and cultural knowledge shaped by the needs of individuals in each community, across different civilizations, according to their customs. Today, they can be identified in systematized form in educational settings, recorded in textbooks, audiovisual materials, magazines, newspapers, and other media. This development has occurred over time in response to changing social contexts, yet its existence dates back to prehistoric times and to contributions from ancient civilizations—Egypt, Mesopotamia, Babylon, Ancient Greece, Indo-Arab culture, among others—and continues to evolve according to contemporary needs (Silva, 2014).

Concerns about how to carry out such advancements—questioning why, for what purpose, and for whom—are shaped by the elements present in the practices themselves and the pursuit of individual and collective improvement. These questions have always been part of social interactions and today constitute some of the central objects of study in Mathematics Education as a research field.

Although still considered a relatively young field, Mathematics Education has been expanding its scope of inquiry and maturing through the production of knowledge that questions and refines the guidelines that structure mathematics education as both a professional and scientific field. In this sense, Kilpatrick (1996, p. 112) argues that:

> "There is a necessary interconnection between the scientific and professional aspects of mathematics education: the scientific side cannot develop much further unless it is somehow applied to professional practice, and professional development requires specialized knowledge that only scientific investigation can provide."

Regardless of the direction—whether professional or scientific—its relevance for developing Mathematics Education and strengthening mathematics educational processes is recognized. This aligns with the reflections set forth in the BNCC regarding competencies and skills. The document guides basic education teachers on aspects to be explored in educational contexts, including:

> "mathematical processes and tools, including digital technologies, available for modeling and solving everyday, social, and interdisciplinary problems, validating strategies and results." (Brazil, 2017, p. 223)

Although this orientation appears in the BNCC as something new, it is important to highlight that these technological resources have long been present as machine-based devices (Lima Jr., 2005)—that is, without being accompanied by didactic actions aimed at fostering students' mathematical thinking.

Digital Technologies, considered a methodological trend within Mathematics Education, have historically been underexplored in educational spaces due to limited access to computer labs, curriculum orientations, textbook content, and insufficient teacher education. Still, their presence has always been part of ongoing discussions regarding educational improvement.

Silva (2000) and Bairral (2009) argue that computer-based environments and digital technologies enable distinct contexts and diverse cognitive changes, supporting the idea that they influence mathematical reasoning when solving problems, interpreting solutions, and fostering autonomous and social development.

Digital technologies expanded their educational potential with the growth of the Internet and the emergence of digital tools designed specifically for educational contexts. Among these are: YouTube, digital platforms, websites, blogs, chats, digital games, and software such as GeoGebra, Kahoot, Matlab, Maple, Mathematica, SPSS, among others.

Across social contexts, digital technologies continue to evolve, and Artificial Intelligence (AI) has emerged strongly with the popularization of ChatGPT, Gemini, DeepSeek, and others. This expansion has empowered individuals in daily activities, enabling new educational possibilities.

Exploring AI within mathematics education has increasingly become an object of research in the field, as scholars seek to understand its impact on academic training and interpersonal relations. In his reflections, Zatti (2023) argues that AI can enhance the quality of mathematics education by providing dynamics distinct from traditional approaches. However, he warns that prudence is necessary, since the rapid integration of AI into society has also revealed contradictions relative to humanitarian values and principles of racial and gender equity, public policy, anti-racism, and social and economic justice.

Thus, Mathematics Education, as a knowledge field, has contributed—and can continue contributing—to strengthening didactic–pedagogical actions intertwined with the sociopolitical contexts of educational spaces. That is, it can enable individuals to expand their knowledge not merely through the application of techniques, as Freitas and Lima Junior (2021, p. 129) emphasize:

> “Technique, as a human action, has always been explored as a potential element for knowledge development. However, in school settings—be it textbooks, curriculum matrices, classroom plans, assessments, written activities, educational videos, TV programs—there is a didactic–pedagogical process that constantly denies the intuitive and experimental origins of this knowledge, the forms of knowing that constitute it, and consequently, the subjectivity of those involved in educational processes.” (Freitas & Lima Junior, 2021, p. 129)

Within this context, the goal is to promote students’ autonomy without ignoring the social practices inherent in their lived experiences, which can meaningfully contribute to educational processes. These contributions emerge through the knowledge and research developed with mathematical objects, especially in the triad of Arithmetic, Algebra, and Geometry—present not only in physical spaces of society but also in digital environments, such as governmental platforms, entertainment applications, commercial interfaces, among others.

3 ON DIGITAL TECHNOLOGIES

Overcoming the difficulties experienced by individuals (teachers and students) in mathematics educational processes has long been a concern reflected in academic literature, textbooks, classroom discussions, school meetings, scientific conferences, and other forums. In parallel with this pursuit of improvement, didactic–pedagogical reflections have emerged that align with the idea of enhancing digital technological resources for use within these processes, fostering an educational relationship/interation mediated by digital environments.

Among the digital technological resources, we highlight the Internet, computers, tablets, software, smartphones, digital games, robots, virtual reality glasses, among others, which have always been freely explored across society, defining these environments as digital. However, within educational spaces, it must be emphasized that the simple use of these resources is not sufficient to achieve learning objectives. Their use must be accompanied by didactic–pedagogical planning aligned with theoretical–methodological propositions for application within educational processes.

In this context, Dalbosco (2006, p. 38) reflects that:

> “the inclusion of new technologies in the educational process is a one-way path; however, it is necessary to exercise caution when appropriating these technologies so they may be adequately applied in pedagogical activities. The mere use of technologies does not necessarily bring significant contributions to education—

> especially when they are treated as the most important component of the educational process or used without human reflection." (Dalbosco, 2006, p. 38)

This consideration is supported by Gravina and Santarosa (1999, p. 74), who emphasize the need to create educational contexts that can promote paradigm shifts in education, while warning that such shifts cannot be achieved through technological devices alone. That is, teachers must act as:

> "critical and careful participants in the process of using digital tools. Computers alone do not guarantee this transformation and, in many cases, may deceive users through the visually appealing technological resources offered, which simply reinforce the same characteristics of a school model that prioritizes the transmission of knowledge." (Gravina & Santarosa, 1999, p. 74)

A critical and reflective individual—capable of acting and thinking mathematically based on their own knowledge—must not fall back on a reproduction of mathematical structures such as formulas, theorems, axioms, and definitions. Instead, learning should involve elements that stimulate engagement through interactive, exploratory, and investigative processes that advance understanding. Within this context, discovery, investigation, induction, experimentation, abstraction, generalization, visualization, and interpretation should naturally flow among individuals during educational processes, particularly in mathematics.

Concerns about how technology should be explored in educational contexts, addressed by Dalbosco (2006), Gravina and Santarosa (1999), are echoed in Brazil (1998, p. 14), which states that—regardless of the specific technology—its use must "enrich the educational environment, promoting the construction of knowledge through active, critical, and creative participation from students and teachers." This reflection reappears in Brazil (2018, p. 9), which establishes that students must be prepared to:

> "understand, use, and create digital information and communication technologies critically, meaningfully, reflectively, and ethically across different social practices (including school practices), to communicate, access and disseminate information, produce knowledge, solve problems, and exercise protagonism and authorship in personal and collective life." (Brazil, 2018, p. 9)

Even though we are immersed in a context where digital technologies play a vital role in human survival and social participation, educational processes must recognize the political inequalities reflected in the distribution of these resources across schools—especially those located in areas with poor infrastructure or socioeconomic vulnerability.

This inequality is evident in access to the Internet, which is now considered a basic resource, yet still not universally available in schools. A study conducted by researchers from the Center for Studies and Research in Network Technology and Operations (Ceptro.br), part of NIC.br (Brazilian Internet Steering Committee), found that while 89% of Brazilian public schools have Internet access, this number drops to 62% when considering whether students can actually use the resource for educational purposes (NIC.br, 2024, p. 5).

The study also reports stark regional disparities—schools in the North and Northeast have significantly lower connectivity and poorer Internet quality. When comparing rural and urban schools, the disparities are even more pronounced.

Another obstacle to implementing digital environments in schools is the neglect of public authorities, who are responsible for providing continuing professional development for teachers—not only for technical training but also for fostering critical reflection on the use of technologies. Such training is essential, but teachers also need opportunities to incorporate these reflections into their own pedagogical praxis.

Among the digital environments most commonly found in schools is the computer lab, which typically contains only computers—and often an insufficient number compared to class sizes. Despite the widespread presence of computers in various areas of daily life, schools have not adopted them with the same enthusiasm; their educational potential remains underexplored due to limited visibility, lack of training, or insufficient institutional support. That is, public authorities and some educators display notable sluggishness regarding the introduction of digital technologies in educational processes.

Digital technologies can offer many contributions to mathematics education. For instance, graphics displayed using GeoGebra can assist in understanding abstract mathematical concepts; geometric solids can be animated, making learning more interactive and less static. Beyond GeoGebra, tools such as Geoplan, Ruler and Compass, Winplot, Exercise Generators, Measurement Converters, and others can enhance mathematics education and help build foundational digital competencies.

Even with the wide availability of mathematical software, we emphasize that many of these tools are developed by individuals who are not familiar with pedagogical or epistemological aspects of mathematics education. As a result, some content may be limited or conceptually imprecise. In these cases, it falls to individuals—especially teachers—to recognize and address potential inaccuracies during educational activities, using investigative methodologies. As Skovsmose (2008, p. 21) describes, an investigative scenario invites students to ask and explore questions such as:

"Yes, what happens if…?" "Why does this occur?" "Yes, but why…?"

The goal is not correction for its own sake, but rather reflection that emerges from the learner's own knowledge and experience.

Even when a digital technology is not originally designed for educational purposes, it may still be used effectively in this way, provided that observation, reflection, and creativity are involved in classroom planning. This means an Investigative Scenario can indeed emerge in such contexts.

For example, Word, PowerPoint, and Excel can be used to explore graphical representations of points, lines, planes, tables, two- and three-dimensional shapes, perspective geometry, measurement, data representation, table creation, financial education, and arithmetic algorithms.

YouTube offers opportunities to stimulate creativity through audiovisual production or analysis. Google tools can support mathematical investigation. Google Earth, for instance, allows for exploration of geometric forms (regular and irregular), coordinate geometry, and geographic localization of properties.

These and other digital platforms present in social practices represent just a few of the many possibilities for integrating everyday technologies into educational processes. When included in planning with a clear didactic–pedagogical purpose, they may greatly enrich mathematics learning.

Such purpose emerges when individuals act and think mathematically, based on their own knowledge, in response to situations they encounter throughout academic formation and professional aspirations. According to Skovsmose (2014), in reflections on Critical Mathematics Education, an Investigative Scenario helps strengthen mathematics education by fostering non-linear learning with multiple possibilities—where learning develops freely from the meanings individuals construct through their own questioning.

Ultimately, these contexts must be approached reflectively, in relation to their theoretical contributions and practical applicability, so that they can be integrated into mathematics educational processes and practices within social contexts.

4 DERIVABLE CONTRIBUTIONS]

Mathematics educational processes contextualized through the use of digital technologies enable the construction of mathematical knowledge based on learners' perceptions, as they become responsible for both the learning moment and their own development. Through the visualization of symbolic representations within digital environments, mathematical knowledge appears in more concrete situations, facilitating the recognition of concepts related to area, perimeter, distance, and volume; the identification of angles; the development of spatial reasoning; graphical representations; table construction; financial education; and more.

These technologies also provide a bridge between mathematical knowledge and students' realities, fostering engagement, creativity, interest, critical thinking, autonomy, and collaborative work. By using digital technologies as support, it becomes possible to work within the field of Mathematics Education by designing activities that aim to stimulate investigative scenarios and reflections on issues linked to the social practices of learners.

Digital technologies influence and modify social interactions, communication methods, work dynamics, and forms of action and reasoning. Therefore, educational environments cannot deny their presence or relevance within learning processes. It is not advisable to ignore the potential of digital technologies, especially considering that outside of school, students witness the rapid transformation brought about by these tools, experiencing them often without reflection or sufficient technical understanding.

By inserting digital technologies into mathematics educational processes, we contribute to bringing students' lived contexts closer to the school environment, promoting an educational process centered on developing critical thinking and autonomy, preparing them to face challenges associated with these digital resources.

It is important to highlight the need for adequate teacher training for the effective use of these digital tools. Continued professional development is essential, both for technical proficiency and for cultivating a critical perspective on technological applications. This ensures that such tools are not used merely to break routine in the classroom but are guided by didactic–pedagogical intentions directed toward learners' development.

In this context, we observe that digital technologies—even those not originally designed as educational tools—can be used as didactic–pedagogical resources with significant contributions to mathematics educational processes. These contributions have the potential to strengthen knowledge construction and develop digital competencies and skills, especially in the field of Mathematics Education. In other words, by critically exploring the tool, its use can contribute to the improvement of educational processes and the intellectual development of learners.

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