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Literacy in the age of smartphones and social media: contextualizing the impact of these technologies on contemporary education

Literacy in times of smartphones and social networks: contextualizing the impact of these technologies in contemporary education

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SUMMARY

The digital age has transformed how we interact with the world, with technologies such as *smartphones* and *tablets* becoming commonplace in various spheres of life. These changes present new opportunities and challenges for education, especially in the literacy process. This article highlights the importance of incorporating digital technologies into pedagogical practice in literacy. The integration of digital technologies should encourage reflection and the application of knowledge, developing students' critical thinking and information literacy. The article addresses three main topics: digital technologies and literacy, exploring how they can support the teaching-learning proce
It uses bibliographic research based on scientific articles and books. Digital technology, when integrated meaningfully, has the potential to transform teaching and learning.
It is understood that schools must incorporate digital technologies not only as tools, but also as elements that facilitate universal learning, promoting continuous and flexible learning. The multimodality present in digital devices enriches students' literacy and fosters more active interaction. The integration of digital technologies into education requires ongoing training for educators and an innovative pedagogical approach. Teachers must be prepared to use these tools effectively, creating an engaging and educational learning environment.

Keywords: Digital Technologies. Literacy. Students.

ABSTRACT

The digital age has transformed interaction with the world, with technologies such as smartphones and tablets becoming commonplace in many spheres of life. These changes present new opportunities and challenges for an education, especially in the literacy process. This article highlights the importance of the incorporation of digital technologies in pedagogical practice in literacy. An integration of digital technologies should estimate a reflection and application of knowledge, development of critical thinking and an informational competence of all. The article covers three main topics: digital technologies and literacy, exploring how they can support the teaching-learning process. It uses a bibliographical research based on scientific and living articles. A digital technology, when integrated in a meaningful way, has the potential to transform teaching and learning. It is understood that the school must incorporate digital technologies not only as tools, but as elements that facilitate universal learning by promoting continuous and flexible learning. The multimodality present in digital devices enriches the literacy of students and provides a more active interaction. The integration of digital technologies in education requires the continuous training of educators and an innovative pedagogical approach. Teachers should be prepared to use these tools effectively, creating an engaging and educational learning environment.

Keywords: Digital Technologies. Literacy. Pupils.

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INTRODUCTION

The digital age has transformed the way we interact with the world around us, and digital technologies, such as *smartphones* and *tablets,* have become common and accessible tools in various spheres of daily life. Social media and mobile devices are present in the lives of children and adults, shaping new forms of communication and access to information. This technological context opens up new opportunities and challenges for the field of education, especially in the literacy process . In this sense, this article aims to highlight the importance of incorporating digital technologies into pedagogical practice.

Moran (2000) argues that schools have a responsibility to teach students how to deal with information critically and constructively, and not just passively consuming it. The the presence of digital technologies in students' lives requires that education go beyond methods traditional, integrating technologies in a way that stimulates reflection and application of knowledge. In this sense, the school must be a space of mediation where science and technology are used to develop critical thinking and information literacy in students.

This article aims to discuss the importance of digital technologies such as *smartphones* and tablets , in the literacy process. Three main topics will be covered: digital technologies and literacy; the presence and influence of digital technologies on literacy, exploring how they can be used to support the teaching-learning process.

This bibliographic study seeks to discuss different theoretical and practical perspectives, contributing to a better understanding of the role of digital technologies in education and offer subsidies for improving pedagogical practices in the context of literacy.

METHODOLOGY

This study is bibliographic in nature, meaning that it is based on analysis and interpretation of already published materials, such as books, academic articles, theses, dissertations and other sources relevant. The central objective of this research is to compile, synthesize and discuss the contributions

theoretical and practical information on the use of digital technologies in the literacy process, especially considering the educational context and contemporary challenges.

According to Medeiros (1997, apud Silva, 2018), bibliographic research involves steps such as choice of subject, preparation of research plan, location, compilation, analysis, interpretation and writing. The author also highlights that the researcher, when defining the theme, must consider the time available to carry out the study and the existence of bibliography appropriate information on the subject.

The selection of sources was carried out through research in academic databases, digital libraries and other relevant platforms that provide access to publications scientific. The inclusion criteria for sources involved relevance to the proposed topic, quality of publications, the contemporaneity of studies and the theoretical or practical contribution of the authors for understanding digital technologies in education.

After selecting the sources, a detailed and critical reading of the selected texts was carried out. This process involved identifying the main arguments, concepts and theories presented by the authors, as well as the discussion of the practical implications of the technologies digital in the literacy environment.

The information collected was organized into specific themes to facilitate discussion and analysis of the topics covered in the study. Among the themes, the following stand out: the definition and evolution of digital technologies, the impact of these technologies on the teaching-learning process, the role of the teacher in technological mediation and the pedagogical implications of literacy digital.

Based on the critical analysis, a summary of the authors' main contributions was prepared, relating them to the contemporary educational context and curricular guidelines, such as the National Common Curricular Base – BNCC – (2017). In addition, the challenges were discussed and opportunities presented by the use of digital technologies in literacy, based on reviewed literature.

THEORETICAL FRAMEWORK

Digital technologies, according to Frade *et al.,* (2018), can be understood as a set of resources that enable the conversion of different languages and data — such as images, sounds and texts — in binary numeric codes, composed of zeros and ones (0 and 1). This transformation allows this information to be interpreted by devices electronics, such as computers, tablets and cell phones, which are considered microcomputers.

The structure that makes this conversion possible is built into the devices themselves and is the result of programming invisible to users.

These technologies are part of a broader spectrum of innovations developed over of history. According to Kenski (apud Frade, 2018 p.34), technology can be defined as the set of human activities that involve the use of products and equipment resulting of research, planning, construction and practical applications. In other words, it is the process of design, production and use of artifacts for specific purposes.

From this perspective, various writing instruments and supports are also considered technologies, such as digital keyboards, computer screens, pencils, whiteboards, erasers, notebooks, pens and broker (Ribeiro, 2014, p. 317).

According to Abbondati (2022), the evolution of digital technologies has inserted in the last decade significant and irreversible changes in the lives of people across the globe, as they were emerging. The author further states that digital technology resources are available everywhere of the planet and have an impact on work, leisure and especially education.

However, Moran, Masetto & Behrens (2002) state that with all the influence of technology digital in teaching-learning processes and constant presence in school spaces It is clear that teachers are seeking to update themselves, understand and explore technologies, It is important to emphasize that the use of technology does not ensure a learning process successful, requiring the teacher to use his/her skills to integrate knowledge, didactics and methodology to make the computer, tablet and cell phone a support device for knowledge.

> Instead of combating cell phone use in the classroom, we must verify that the best solution is to give this instrument a correct use in this space, transforming it into an auxiliary tool in the teaching process learning. Thus, the use of mobile digital technology (MDT) is significant for learning, and aims to provide students with teaching in accordance with contemporary times (Santos & Santos, 2014 p.3).

The mobile learning model according to Santos and Weber (2013) involves the possibility for the student to move through different physical and virtual spaces, which allows interaction with people, information or systems continuously, at any time and place. These experiences are understood within an informational context

As Moram (2015) points out, Mobile Digital Technologies -TDM- facilitate research, communication and dissemination in networks. It is a fact that teachers are at the center of change curriculum and control the teaching and learning process. Therefore, they must be able to

prepare young people for a society in which the competence to use TDM to acquire and processing information is very important.

Still according to Moran, Masetto & Behrens (2002), the teacher has the responsibility to define the content, when and where this content will be accessed, and what the objectives of learning for students. The teacher must clearly establish expectations and expected results. However, mobile technologies open up new possibilities for collaborative learning. Through these technologies, students can participate in knowledge sharing initiatives, informal learning and access to resources open educational systems, promoting a more dynamic and interactive learning environment.

Maria Cláudia Molinari and Emília Ferreiro (2007), compare the writing done in keyboard with handwriting and conclude that children's conceptual hypotheses, according to theory of the psychogenesis of written language, remain the same. However, certain properties of writing gain greater complexity and visibility when mediated by the screen computer.

The use of new writing instruments and contact with different textual genres promote significant changes with the introduction of the digital environment. From this, if we consider that learning to read and write in digital environments does not only involve the creation of new gestures, but mainly the expansion of understanding about the uses and functions of written culture in society, as well as the semiotic resources involved in this process (Frade *et al.,* 2018).

The use of digital media as highlighted by Frade *et* al., (2018), requires cognitive operations important during the act of writing, such as perceiving, analyzing and synthesizing, in addition to mobilizing other skills related to the functioning of writing, such as selecting, relating and generalize. In the digital environment, these operations tend to become more visible — or even more conscious — for the literacy learner, especially when there is mediation by an adult or another child.

Literacy is directly related to the technology of reading and writing, to the process of teach the alphabetic notation system, configuring itself as a “process of acquisition and appropriation of the writing system, alphabetic and orthographic” (Soares, 2004, p. 10).

Although digital technologies are already present in the daily lives of many children, the simple investment in technological resources in Brazilian schools does not guarantee, by itself, that these resources are used for the proposed educational purposes. The qualified intervention of teachers is essential to guide the pedagogical use of digital technologies,

distinguishing it from informal everyday practices. Thus, the school's objective in integrating these technologies must be put to the service of literacy, through didactic actions intentionally planned (Frade *et al.,* 2018)

The use of technologies as an instrument of conventional knowledge in literacy significantly boosts children's literacy development. Magda Soares (2004) highlights the interdependence and inseparability between literacy and literacy, emphasizing the need to transcend traditional methodologies. She argues that it is crucial provide children with the ability to recognize and use different linguistic means related to reading and writing.

Vygotsky (1996) suggests that learning and development are interconnected processes, but not identical. He argues that learning is a precondition for development and that both processes occur in the context of social and cultural practices. Learning, for Vygotsky, occurs through the mediation of instruments and signs, which are fundamental to development. This concept of mediation is crucial to understanding how social interaction contributes to the internalization of knowledge and skills.

Social interaction is essential for learning. Internalization occurs when a interpersonal process is transformed into an intrapersonal process. This means that the knowledge and skills acquired in interaction with others are reconstructed internally by the individual. This process is fundamental for cognitive development (Vygotsky, 1996).

The depth of Vygotsky's theory is highly relevant to modern education, “especially in recognizing the importance of social and cultural interactions in promotion of learning and development” (Vygotsky, 1996 p.93).

The democratization of access to digital technologies, as stated by Ferreiro (2013), allows that children from different social backgrounds have equal opportunities to learn. This is crucial to reducing educational inequality and promoting digital inclusion. Integration of digital devices in the literacy process should not be seen as just an addition technological, but as a pedagogical tool that can enrich and diversify teaching strategies.

Soares (2016) in turn highlights that the initial learning of written language is a phenomenon complex, as it involves two essential functions — reading and writing — which, despite presenting common aspects, also have distinct characteristics. This learning unfolds in different dimensions: linguistic, interactive and sociocultural, which, although distinct in nature, are complementary and must be understood in an integrated manner.

Still according to Soares (2016), the linguistic facet concerns knowledge of the alphabetic system and orthographic aspect of the language. The interactive aspect encompasses the skills of producing and understanding texts, while the sociocultural facet refers to the understanding of the uses and functions of writing in the various social and cultural contexts in which it is inserted.

The complexity of this process requires the teacher to have a comprehensive understanding of the phenomenon of written language. The practice of reading and writing involves a deep interaction between the subject and the social practices of language, which demands the development of multiple skills in order to simultaneous. However, the author recognizes that, for pedagogical purposes, it is necessary, at certain times, focus on more specific aspects, addressing the different facets of learning in a segmented (Soares, 2016).

Conte and Martini (2015) highlight that the effective use of technology in education depends directly on the the role of the teacher, which must go beyond simply providing technological resources. Integration significant use of these tools requires careful planning, with diversified activities that promote practical experiences, research, collaboration, challenges and the use of multiple languages, including educational games. It is, therefore, an intentional and detailed work on the part of the teacher.

> [...] the screen as a space for writing and reading brings not only new forms of access to information, but also new cognitive processes, new ways of knowledge, new ways of reading and writing, in short, a new literacy, this that is, a new state or condition for those who practice writing and reading on the screen (Soares, 2002, p. 152).

The introduction of the screen as a space for reading and writing profoundly transforms practices literate. Soares (2002) points out that it is not just about changing the support — from paper to digital —, but of a reconfiguration of the ways of thinking, knowing, reading and writing. It arises, thus, a "new literacy", which requires from the subject not only technical skills to deal with technology, but also new cognitive and interpretative skills appropriate to digital environment. This perspective expands the concept of traditional literacy, incorporating the challenges and possibilities brought by digital culture.

Molinari & Ferreiro (2007), reveal that writing done both on the keyboard and by hand indicates that children's conceptual hypotheses, according to the psychogenetic theory of written language, remain the same. However, certain properties of writing become more complex and evident when performed through the computer screen. This is due to the graphic characteristics, specific languages and behaviors involved in the act of writing digitally, which have attracted attention in research. The main transformation occurs in the use of writing instruments and in the approach to textual genres,

driven by the possibilities offered by the digital environment.

Frade *et al.,* (2018), emphasize the importance of teaching children different techniques related to technological usability, going beyond the simple act of typing. It is essential that they learn how to turn on the equipment, understand how the keyboard works, recognize the symbols and the function of each key, operate the screen, interact with icons and locate programs. Furthermore, even with small hands, it is essential that they develop the ability to handle the mouse, understanding its multiple functions, such as clicking and dragging.

In the observations of Frade *et al.,* (2018) they show that digital literacy begins with appropriation of basic skills, often underestimated in the educational process. Teaching children the functional and autonomous use of technological devices is essential for that they not only consume digital content, but also know how to navigate, interact and produce in this environment. By developing these skills early on, we not only promote digital inclusion, but also the formation of critical individuals capable of using technology in a conscious and creative way in the educational and social context.

> The culture of electronic text brings a new shift in the concept of literacy. In certain essential aspects, this new culture rescues characteristics of the culture of the text manuscript: like handwritten text — and unlike printed text — the text electronic is not stable, it is not monumental and it is poorly controlled. It is not stable because, just as copyists and readers interfered with manuscripts, readers of hypertexts can also interfere, add, change and define their own reading paths; it is not monumental because, due to its instability, the text electronic is fleeting, impermanent and changeable; it is poorly controlled because there is great freedom in the production of texts on the screen and almost no supervision regarding the quality and adequacy of what is published and shared (Soares 2002, p. 153).

It is noteworthy that Soares (2002) precisely highlights how electronic text represents a break with traditional literacy paradigms associated with printed text. By rescuing characteristics of manuscript culture, the digital text reveals itself to be dynamic, changeable and interactive, allowing the reader to take an active stance towards the content. This transforms profoundly the way we produce, share and consume information, requiring new reading and writing skills. In this context, digital literacy is not comes down to the technical ability to operate devices, but also involves critical skills, creative and reflective in the face of the fluidity and freedom that the internet offers.

According to Couto and Prado (2015), technologies offer several benefits for education, allowing students to become active constructors of their own knowledge and

more participatory subjects in society. Technology in education can transform the way how students learn and interact with the world around them.

Ferreiro (2013) points out that, in the digital environment, simultaneous transformations of order occur technical, cultural, in the modes of production and in the forms of reading and writing. These changes have direct impact on the literacy process, making the incorporation of technologies essential digital technologies in this context. The author argues that the use of these technologies must accompany the social uses of writing, since, today, its presence is widespread and significantly influences teaching and learning practices for reading and writing.

Educational practices should enhance children's skills and potential (Brazil, 1998) for the development of writing and reading. A safe and appropriate environment is essential. for learning, and it is up to the school to provide pedagogical activities that enhance literacy. These activities should be both inside and outside the classroom, encompassing linguistic and enjoyable dynamics for children.

Frade (2005) highlights that it is possible and necessary for children to develop various skills related to the usability of digital devices. This includes learning how to handle the basic system tools, such as turning on the computer, understanding the function and symbols of keys, interact with the screen and icons, locate programs, and use the mouse — even with small hands — understanding its multiple functions, such as clicking and dragging. These actions also involve important cognitive processes, such as memorization and internalization of these practices in the daily use of technology.

However, it is important to note that, according to the guidelines of the World Health Organization (WHO, 2019), educators and guardians must follow specific recommendations regarding children's exposure time to Digital Technologies, in order to promote a use balanced and constructive use of these resources in the educational process. Furthermore, the importance of evaluating the quality of the technological instruments used and integrating artistic and sporting activities in children's routine, aiming at integral development.

Therefore, the use of digital environments at school should not be limited to the reproduction of children's daily practices, but it needs to be guided by clear pedagogical objectives.

As stated by Frade *et al.,* (2018), when planning activities that integrate these technologies intentionally, the teacher expands the possibilities of literacy and literacy, exploring multiple languages, new textual genres and cognitive operations involved. Thus, digital resources become allies in the process of comprehensive training of students, favoring the critical construction of knowledge and the development of essential skills for active participation in contemporary written culture.

RESULTS AND DISCUSSION

The analysis carried out on the use of digital technologies in the literacy process and literacy highlighted a series of aspects relevant to pedagogical practice contemporary. Firstly, it was confirmed that digital technology cannot be understood only as an additional resource to traditional teaching, but rather as a transformative element of reading and writing practices, in line with studies by Frade *et al.* (2018) and Soares (2002).

The results indicated that when using devices such as computers, tablets and cell phones, in a planned manner, children develop linguistic, cognitive and sociocultural aspects in an integrated manner. As pointed out by Molinari and Ferreiro (2007), the introduction of the keyboard and the screen does not modify the conceptual hypotheses about writing developed by children, but promotes greater complexity and visibility of certain aspects of the process literacy.

It was also found that the digital environment expands the possibilities of textual interaction, bringing to light more dynamic, interactive, and collaborative writing practices. This new context, described as "new literacy" by Soares (2002), requires that learners not not only the technical mastery of the tools, but also the development of skills critical and creative in the face of the fluidity and mutability of electronic texts.

Another important result concerns the teacher's mediating function. As argued by Moran, Masetto and Behrens (2002), the presence of digital technologies in the school environment, by itself, does not guarantee advances in learning. The intentional action of the teacher is essential, who must select appropriate content, learning objectives and strategies so that the technology is effectively a means of constructing knowledge.

The literature analyzed also emphasized that learning mediated by digital technologies (TDM) promotes student autonomy, allowing them to move through different physical and virtual spaces, according to Santos and Weber (2013). This mobility contributes to the training of more critical, participatory subjects, capable of interacting with the digital culture of in an active and responsible manner.

Another aspect discussed was the importance of digital literacy from childhood. Teaching basic skills, such as handling keyboards, mice and digital interfaces, is essential to ensure digital inclusion and equitable access to knowledge, as suggested by Frade *et al.* (2018) and Ferreiro (2013). Thus, the school assumes a decisive role in reducing

educational inequalities by providing meaningful learning opportunities to all children, regardless of their social context.

Finally, the need for balance in the use of technologies was observed, according to the guidelines of the World Health Organization (WHO, 2019). Controlled exposure and integration of artistic and sporting activities were identified as essential practices for the integral development of children.

Overall, the discussion of the results confirmed that critical, conscious and planned use of digital technologies in the literacy and literacy process is fundamental for to train competent readers and writers, capable of acting in a reflective and ethical manner in contemporary society.

FINAL CONSIDERATIONS

Digital technology, when integrated meaningfully into education, has the potential to radically transform the teaching-learning process. Throughout this article, we explore diverse perspectives and studies that highlight how digital technologies have positively impacted education, especially in the context of literacy contemporary.

Considering the school as a training space, which must incorporate digital technologies not only as tools, but as integrating elements that facilitate learning ubiquitous.

Understanding that digital competence, addressed by the BNCC, aims to develop in students a critical understanding in students and ethics of technologies, preparing them to face the challenges of contemporary society. These technologies allow students to engage in educational activities in a more dynamic and meaningful way, promoting learning continuous and flexible.

The multimodality present on the screens of digital devices also contributes to a broader and more diverse understanding of communication modes, enriching the student literacy.

Finally, the integration of digital technologies into education requires ongoing training for educators and a pedagogical approach that values innovation and creativity. It is essential that teachers are prepared to use these tools effectively, promoting a learning environment that is both engaging and educational.

Contemporary education must embrace digital technologies as allies in the process of teaching-learning, recognizing its potential to transform the educational experience and prepare students for the challenges of the 21st century. The formation of critical individuals, creative and prepared for the digital society depends on an educational approach that value and integrate technologies in a meaningful and contextualized way.

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