Obutchénie
Revista de Didática e Psicologia Pedagógica

DOI: http://doi.org/10.14393/OBv10.e2026-24

Multi-Literacies and Artificial Intelligence: implications for education[1]

Multiletramentos e Inteligência Artificial: implicações para o ensino

Multialfabetización e Inteligencia Artificial: implicaciones para la educación

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ABSTRACT

The significant advances in Artificial Intelligence in recent years have had an impact on different spheres of society, including education. Some students and teachers have been using AI in their daily lives, and this has fueled debates that aim to point out paths and, at the same time, challenges for teachers, students, and educational institutions. Thus, this article aims to reflect on and debate the implications of the use of Artificial Intelligence in teaching, from the perspective of Multiliteracies. To this end, we draw on discussions about the use of Artificial Intelligence such as ChatGPT, for example, in Portuguese-language classes: what impacts the use of AI has on teaching and learning, and how teachers can use literacies so that students, whether "digital natives" or not, can move from being a comfortable digital user to being a digitally experienced one. We are guided by studies on Literacies from a more contemporary perspective, one that encompasses digital media as well as ways of using them more consciously and critically: Freire (1987, 1996), Jenkins (2008), Pereira (2008, 2009, 2022), Dudeney, Hockly and Pegrum (2016), Zacharias (2016), Rojo (2009, 2012, 2019), Sayad (2022), among others. This is a theoretical discussion, with a qualitative and bibliographical basis, focused critically and dialogically on two aspects: multiliteracies and AI.

Keywords: Multiliteracies; Artificial Intelligence; Implications for teaching.

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DOI: http://doi.org/10.14393/OBv10.e2026-24

RESUMO

O avanço significativo da Inteligência Artificial nos últimos anos tem causado impactos nas diferentes esferas da sociedade, inclusive na educação. Parte dos alunos e professores tem-se utilizado de IA no cotidiano e isso fortalece debates que objetivam apontar caminhos e, ao mesmo tempo, desafios aos docentes, discentes e instituições de ensino. Dessa forma, o presente artigo pretende refletir e debater sobre as implicações do uso da Inteligência Artificial no ensino, sob o viés dos Multiletramentos. Para isso, recorremos a algumas discussões sobre o uso de Inteligência Artificial como o ChatGPT, por exemplo, nas aulas de Língua Portuguesa, que impactos a utilização de IA traz para o ensino-aprendizagem e, como o professor pode-se utilizar dos letramentos para que o estudante, "nativo digital" ou não, possa sair da condição de confortável digital para experiente digital? Nos pautamos nos estudos sobre Letramentos em uma perspectiva mais contemporânea, que abarca as mídias digitais, assim como o modo de utilizá-las de forma mais consciente e crítica: Freire (1987, 1996), Jenkins (2008), Pereira (2008, 2009, 2022), Dudeney, Hockly e Pegrum (2016), Zacharias (2016), Rojo (2009, 2012, 2019), Sayad (2022) entre outros. Trata-se de uma discussão teórica, de base qualitativa e bibliográfica, que centrará criticamente e dialogicamente em dois aspectos: multiletramentos e IA.

Palavras-chave: Multiletramentos; Inteligência Artificial; Implicações para o ensino.

RESUMEN

Los importantes avances en Inteligencia Artificial en los últimos años han impactado en diferentes esferas de la sociedad, incluida la educación. Algunos estudiantes y docentes vienen utilizando IA en su vida cotidiana y esto fortalece debates que buscan señalar caminos y, al mismo tiempo, desafíos para docentes, estudiantes e instituciones educativas. Así, este artículo pretende reflexionar y debatir las implicaciones del uso de la Inteligencia Artificial en la enseñanza, desde la perspectiva de las Multialfabetizaciones. Para ello, recurrimos a algunas discusiones sobre el uso de Inteligencia Artificial como ChatGPT, por ejemplo, en las clases de Lengua Portuguesa, qué impactos tiene el uso de IA a la enseñanza-aprendizaje y, ¿cómo puede el profesor utilizar las alfabetizaciones para que el alumno, "nativo digital" o no, pueda pasar de ser un usuario digital cómodo a un experto digital? Nos guiamos por estudios sobre Alfabetizaciones desde una perspectiva más contemporánea, que abarca los medios digitales, así como la forma de utilizarlos de forma más consciente y crítica: Freire (1987, 1996), Jenkins (2008), Pereira (2008, 2009, 2022), Dudeney, Hockly y Pegrum (2016), Zacharias (2016), Rojo (2009, 2012, 2019), Sayad (2022) entre otros. Se trata de una discusión teórica, con base cualitativa y bibliográfica, que se centrará crítica y dialógicamente en dos aspectos: las multialfabetizaciones y la IA.

Palabras clave: Multialfabetizaciones; Inteligencia artificial; Implicaciones para la enseñanza.

DOI: http://doi.org/10.14393/OBv10.e2026-24

1 Introduction

The significant advance of Artificial Intelligence (AI) over the past few decades has transformed various spheres of society, including education. With the growing use of tools such as ChatGPT by students and teachers, urgent debates have emerged about the challenges and possibilities that these technologies bring to the teaching-learning process. In this context, this article seeks to reflect on the implications of AI in education, especially in the teaching of Portuguese language, from the perspective of Multiliteracies: an approach that encompasses the competencies required for a critical and productive reading of digital media.

Starting from the assumption that students, whether "digital natives" or not, need to transcend the condition of being a "comfortable digital user" to become "digitally experienced," we discuss how multiliteracies can help teachers and students use AI in a conscious and creative way. To this end, we draw on theorists such as Freire (1987, 1996), Pereira (2009, 2022), Cassany and Ayala (2008), Rojo (2009, 2012, 2019), Jenkins (2008), Zacharias (2016), and Dudeney, Hockly and Pegrum (2016), among others, who discuss literacy from a contemporary perspective, integrating new technologies into pedagogical practice.

This study, of a qualitative and bibliographical nature, proposes a critical dialogue between two central dimensions: multiliteracies and Artificial Intelligence, analyzing how these tools can be incorporated into teaching in an ethical and reflective way. It is hoped to contribute to the discussion of how education can prepare students not only to interact with AI, but to question it, adapt it, and use it autonomously and critically.

In view of this scenario, this study is guided by the following research problem: how can the teaching of Portuguese language, in light of the pedagogy of multiliteracies, mediate the use of Artificial Intelligence so that students — whether "digital natives" or not — overcome the condition of being a "comfortable digital user" and become "digitally experienced," able to use these tools in a critical, ethical, and authorial way?

From a methodological standpoint, this is a qualitative study, bibliographical and interpretive in character. The theoretical corpus was constituted on the basis of two criteria: (i) reference works on literacies, multiliteracies, and critical literacy (Street, Rojo, Kleiman, Pereira, Freire, Jenkins, Zacharias, among others); and (ii) recent works

DOI: http://doi.org/10.14393/OBv10.e2026-24

(2016–2024) on Artificial Intelligence in education and in the teaching of Portuguese language, selected from scientific journals using the descriptors "artificial intelligence," "ChatGPT," "multiliteracies," and "teaching." The analytical path consisted of bringing these two fronts into dialogue, identifying convergences and tensions between the pedagogy of multiliteracies and the potentials and challenges of the use of AI, to ground a proposal for a critical pedagogical practice.

2 Multiliteracies in contemporary times

2.1 From literacy to multiliteracies

The concept of literacy emerged when other concepts, such as that of *alfabetização*[5] (basic literacy / alphabetization), could no longer account for all the aspects related to reading and writing practices. In this context, the work of Street (1984) was inaugural, in the sense of considering the social practices that involve the phenomenon. In the words of Kleiman et al. (2024):

> [...] we may say that the concept of literacy/literacies that emerged in the 1980s arose from a conceptual opposition to a way of studying the phenomena related to the uses, teaching, and learning of writing — one that did not foresee results compatible with the reality under scrutiny and whose set of assumptions, often voicing anthropocentric preconceptions, did not allow significant and pertinent questions to be asked about the phenomenon (KLEIMAN et al., 2024, p. 242).

From the English "literacy," the concept of letramento has been gaining ever more ground in the national and international scene. In contemporary times it has acquired many qualifiers, giving rise to what Kleiman et al. (2024) call a "conceptual explosion." Having gained ground in this scene from the 1980s onward, as already mentioned, literacy emerges with the aim of also encompassing the social uses of reading and writing — an issue that is very dear to the concept of alphabetization.

From this perspective, "to become literate [alfabetizar-se] is to appropriate the alphabet, the orthography of the language one speaks" (Rojo and Moura, 2019, p. 15). Literacy, in turn, has a socio-anthropological view. As Rojo (2009) explains, it

[5]Translator's note: in Portuguese, the source text distinguishes between *letramento* (literacy, understood as social practice) and *alfabetização* (alphabetization, the formal process of learning the writing system). This distinction is preserved throughout the translation.

DOI: http://doi.org/10.14393/OBv10.e2026-24

> seeks to encompass the uses and social practices of language that involve writing in one way or another, whether valued or not, local or global, covering diverse social contexts (family, church, work, media, school, etc.), from a sociological, anthropological, and sociocultural perspective (Rojo, 2009, p. 98).

In the words of Kleiman et al. (2024), alphabetization can be considered a literate practice,

> [...] but not every literacy practice is a practice of alphabetization, since the intension (sic) of the latter expression applies strictly to the activities and practices whose objective is the mastery of the writing system, by means of multiple activities and genres, generally of school origin (KLEIMAN et al., 2024, p. 242).

The researcher explains this using a very ordinary everyday example, such as a wife dictating a shopping list to her husband — an activity that resembles dictation conducted at school by a teacher, even using the same genre. The difference, in this case, is that the first situation is a literate practice, yet it is not a practice of alphabetization.

Literate practice is understood here in the broadest sense, following Street (2014, p. 174), for whom it involves "behaviors and conceptualizations related to the use of reading and writing." According to this thinker,

> Literate practices incorporate not only "literacy events," as empirical occasions of which literacy is an integral part, but also "folk models" of those events and the ideological preconceptions that sustain them (Street, 2014, p. 174).

In this sense, as Kleiman et al. (2024) make clear, the importance of context in determining the function of the literacy event and the meaning of the literate practice is evident. Hence, the researcher argues that every literacy event is situated. From this standpoint, the concept would cover all social practices that involve writing in situations such as:

> in a given situation, always inextricable from context; in specific literacy events according to the conventions of the various spheres

DOI: http://doi.org/10.14393/OBv10.e2026-24

> of activity through which these practices and the texts that enable them circulate; according to the norms of the institutions that regulate these modes of use and circulation; according to the characteristics of the events in which they occur (such as: the communication situation, participants and their socio-historical and cultural backgrounds, the activities involved and the meanings attributed to them by participants, and the genres mobilized by participants to handle the situation) (KLEIMAN et al., 2024, p. 243).

Rojo (2019) also states that modern urban society takes part in diversified reading and writing practices. According to her, everything we do in daily life involves writing, whether the individuals are literate (in the alphabetic sense) or not, since even illiterate people manage to take the bus, use ATMs, mobile phones, and engage in other practices. In such cases, we may say that all of them are literate, even if these levels of literacy are not as valued or schooled. Thus, to take part in other literate practices considered more socially valued, individuals need to participate in different literacy events that will enable this, highlighting the role of the school and the university, for example, as the main literacy agencies.

In this sense, given the diversity of these social practices, the concept comes to be used in the plural: literacies.

Kleiman et al. (2024) also point out that:

> In the Brazilian context, the word "literacy" [letramento] is coined in academia, more specifically in the field of Applied Linguistics (AL), to register the change sought in the approach of earlier research that considered writing to be a neutral and autonomous technology in itself, legitimizing only some more socially valued practices and disregarding the validity of others. This new coinage comes to mark an approach of a social, critical, historical, and identity-related character (KLEIMAN et al., 2024, p. 243, author's emphasis).

Thus, literacy is a situated concept; working from this perspective, within the classroom, the teacher needs to create literacy events (making it possible to deal with relevant, meaningful reading and writing activities that students do not yet master). The idea is to broaden school practices, including even those in which students already take part in their daily lives. Thinkers such as Jenkins (2008), for example, show that the school has fallen short of various literate practices — including digital and media

DOI: http://doi.org/10.14393/OBv10.e2026-24

practices — while a respectable number of students already have a certain mastery of social practices involving reading and writing in these spheres.

In Santos (2019), for instance, it was likewise found that school practices still amounted to doing textbook exercises, copying activities/texts from the board, and completing photocopied worksheets. Hence the urgency of reclaiming this concept and rethinking it within the teaching-learning context.

In contemporary times — mainly because of the significant advance of technologies and media — concern with the social practices of reading and writing is gaining strength in the field of language and education. Thus, "it was by thinking not only about the various literate practices, but about the cultural multiplicity of populations and the semiotic multiplicity in the constitution of texts" that the term "multiliteracies" was created (Santos, 2019, p. 23).

The concept was coined in 1996 by the New London Group, a group of researchers who gathered at a colloquium in the town of New London and wrote the manifesto "A Pedagogy of Multiliteracies – Designing Social Futures."

For these scholars, the Pedagogy of Multiliteracies can be summarized in two important arguments that synthesize the group's concern: the multiplicity of communication channels and media to which contemporary students have access, in addition to the cultural and linguistic diversity with which these individuals arrive at school.

Along these lines, as other authors who study this perspective point out, such as Pereira (2022), one of the aims of this pedagogy of multiliteracies is to prepare individuals for the new literacies that are emerging in this social context, which is, as we have said, immersed in new technologies. The concept therefore also calls for a more critical look at this reality, as well as at the texts that circulate in our daily lives: how each individual reads, understands, and evaluates the texts that circulate in different spheres.

To this end, according to Rojo (2012):

> A new ethics and new aesthetics are required. An ethic that is no longer based so much on property (copyright, royalties, which have dissolved in the free navigation of the web), but on dialogue (sanctioned, cited) among new interpreters (the remixers, mashupers). A new aesthetic that, whether in reception, production, or design, is based on critical literacies [...]. (Rojo, 2012, p. 16, author's emphasis).

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Beyond this, Rojo (2012, p. 21) also stresses that "new tools are needed — beyond handwriting (paper, quill, pencil, pen, chalk, and blackboard) and print (typography, the press) — for audio, video, image processing, editing, and layout." This implies, then, other practices: of production and reception of these contemporary utterances.

This is where the role of the school comes in. The Brazilian scholar indicates that the challenge is not knowing how to deal with this multiplicity of semiosis present in these texts, but rather seeing school practices in another way, since, even for the print era, they are often insufficient. Rojo (2012) argues that it is necessary to understand that:

> We live in a world in which people (employees, teachers, citizens, leaders) are expected to know how to guide their own learning in the direction of the possible, the necessary, and the desirable; to have autonomy and know how to seek out how and what to learn; to have flexibility and to be able to collaborate with civility (Rojo, 2012, p. 27).

To this end, the idea of the pedagogy of multiliteracies is to enable individuals to become functional users (with technical competence and practical knowledge), meaning-makers (who master the technology), people who can analyze critically (selection), and who can transform what has been learned in different ways (Rojo, 2012).

From this perspective, the New London Group proposes four fundamental principles for these objectives to be achieved in the teaching-learning process: situated practice, overt instruction, critical framing, and transformed practice. By situated practice, as the name itself indicates, we can understand the school activities (didactic projects) that take students' reality into account, against the backdrop of the sociocultural theory of language and Vygotsky's theory of learning (Pereira, 2008).

Not only the activities but also the chosen texts must be part of the learners' culture; at this point the other principle comes in: overt instruction, which concerns the way each student deals with learning or, as Rojo (2012, p. 30) explains, "[...] a systematic and conscious analysis of these lived practices and of the genres and designs familiar to the students," which leads to the other principle: critical framing

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or critical literacy, which would be the development of the capacity to evaluate the texts/discourses that circulate in one's daily life. This also requires a change in pedagogical practice. We understand Critical Literacy (hereafter CL) from the perspective of Pereira (2009), who states that they are:

> [...] social practices in which readers and/or listeners go beyond the mere use of texts to construct meaning, deliberately carrying out a questioning analysis of the meanings present therein and of the influence that these representations have upon themselves in social contexts, as well as mobilizing this information to publicly denounce and subvert the presence of this hidden social power (Pereira, 2009, p. 19, our emphasis).

Along these lines, this principle also leads to the next, in that it prepares the student to transform their learning practice through a critical analysis of their reality and of the texts that circulate within it. For the New London Group: "*We need always to return to where we began, to Situated Practice, but now a re-practice, where theory becomes reflective practice*" (New London Group, 1996, p. 34-35). In this case, they understand that we ourselves are the ones who design our practices. Thus, transformed practice also offers pedagogical projects a capacity to evaluate, in a situated way, what has been learned, making it possible, then, to re-plan it differently, if necessary.

Thus, each principle is related to the next, giving continuity. Rojo (2012) stresses that these practices are perfectly possible in the Brazilian context, given that we are ahead, in the sense that Paulo Freire's theory had already foreseen a pedagogy like this long ago. The challenges, then — as the researcher makes clear — would lie in implementing such a proposal, since we come up against the issue of teacher education, the organization of the curriculum, the school itself, and the materials that serve as the basis for teaching and learning.

2.2 Why speak of digital and critical literacies?

Continuing with the question of multiliteracies, we need to highlight two other concepts that are intertwined with it, as we have already observed: critical literacy and digital literacy. First, we will focus on the discussion of critical literacy and its importance for the teaching-learning process in contemporary times.

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We may say that the idea of CL as a capacity to unveil reality through a questioning analysis of it was already being discussed by Paulo Freire, especially when the Brazilian thinker works with the concept of liberating education: "[...] through education, we can understand what power is in society, illuminating the power relations that the dominant class renders obscure" (Freire and Shor, 1986, p. 34, our emphasis). In this sense, a liberating education would be an education with a situated character, one that allows students to reflect on their reality and to struggle to change it, to transform it.

Paulo Freire would not have coined the term conscientization, according to Gadotti (2016) since the team of the Higher Institute of Brazilian Studies (ISEB) created it. However, upon perceiving the depth of this concept, he soon incorporated it into his studies, giving it prominence. Thus, according to Gadotti (2016):

> [...] conscientization is the critical development of the taking of consciousness, a going beyond the spontaneous phase of the apprehension of the real to reach a critical phase in which reality becomes a knowable object (Gadotti, 2016, p. 15, author's emphasis).

Moreover, according to the Freirean theorist, there is a difference between conscientization and the taking of consciousness for Freire. From this perspective, the former suggests a deeper critical action, whereas the latter does not. Thus, in addressing the concept of conscientization, Freire (1996) speaks of stages of consciousness (naïve consciousness, critical consciousness): "Overcoming, and not rupture, occurs to the extent that curiosity — continuing to be curiosity — becomes critical" (FREIRE, 1996, p. 32).

And this happens through the liberating education proposed by Freire, "through the development of CL which, although Freire and Gadotti did not come to use the term, we can infer from the definition of what would come to be the critical curiosity promoted by education" (Santos, 2019, p. 28). Accordingly, Gadotti (2016), in speaking of critical curiosity, stresses that:

> It unveils reality, leads beings to their "ontological" and historical vocation of becoming more human. It is grounded in creativity and stimulates the genuine reflection and action of human beings upon reality, promoting its transformation (Gadotti, 2016, p. 16).

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From this standpoint, education plays an especially key role in Freire's theory, for it is capable of "[...] freeing learners from oppressive reality and injustice through this conscientization, that is, through a reflection on being in the world, on their existence" (Santos, 2019, p. 28). On this point, as Freire (1987, 1996) argues, "such freedom requires that the individual be active and responsible, not a slave nor a well-fed cog in the machine" (Freire, 1987, p. 76, our emphasis).

This presupposes the non-neutrality of the subject, as Santos (2019) stresses, for to Freire (1996) the subject cannot be in the world in a neutral way; one becomes a subject only in the dialogical process with the other, which is why dialogue is so important to the theory in question. Thus — thinking about the teaching-learning process — it is this dialogue that allows the collaboration of subjects, the unveiling of reality through the word, as mediator.

Reflecting, then, on the importance of developing CL for teaching and learning, Santos (2019) argues that:

> [...] the development of CL is possible to the extent that the teacher and the students place themselves in a situation of self-conscious reflection on their realities — a reflection that leads to collaborative practice in the search for changes (Santos, 2019, p. 30).

Furthermore, as was already highlighted earlier when we were discussing the concept of multiliteracies, CL gains prominence in the current scenario when we consider the significant advance of digital media and, therefore, of the digital genres and platforms that students must deal with in their daily lives, since, as Jenkins (2008) and other media scholars stress, we need to think about media education.

To illustrate this issue, we need only recall the quantity of fake news propagated in digital media every day, with no filtering whatsoever on the part of individuals. And why not begin at school — the great literacy agency — whose students, occupying their desks, are known as "digital natives"? Does the fact that they "master" technologies make them someone who has full command of the skills needed to move safely through these environments?

The answer to this question lies in the mastery of other literacies: digital literacies.

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According to the authors Dudeney, Hockly and Pegrum (2016), "a digitally competent generation would be a myth." This is because being digitally literate is linked to the fact that it is not enough to master the technology; one must acquire individual and social skills that will allow the subject to interpret, manage, share, and create new meanings from digital media.

Another scholar of the concept, Zacharias (2016), also states that the school must prepare students for digital literacy. According to her:

> [...] digital literacy will require both the appropriation of technologies — such as using the mouse, the keyboard, the scroll bar, turning devices on and off — and the development of skills to produce associations and understandings in multimedia spaces (Zacharias, 2016, p. 21).

In this way — returning to the question of digital natives — they were born in the digital age, and most manage to master technologies when the goal is entertainment. However, they face difficulties when it comes to matters related to the world of work and education. At this point, once again, the role of the school and the teacher as mediators of the process deserves emphasis.

According to Jenkins (2008), it is necessary to reinvent the school so that it takes part in this culture of media convergence. On this issue, Santos (2019) explains that the literate practices of the 21st century are not only multiple but convergent: they dialogue with one another in the media space.

In this sense, Jenkins (2008) explains that convergence is related not only to technological transformations but also to the market, cultural, and social transformations that dialogue in the same space. Good examples of this convergence are films — which turn into video games (or vice versa) — go viral on the Internet as memes, videos, and other digital resources, and sell accessories to the public such as caps, T-shirts, mugs, among others.

According to Jenkins (2008), students participate and demand the right to participate in this culture of convergence, for many of them take part in literate practices that have not yet been incorporated into school practices. One example is that fans of a TV series or a film manages to build other narratives from the original story — such as the creation of summaries, videos, fan fictions, and other digital genres/formats — while the school disregards such practices.

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In this way, the new media bring other challenges to the contemporary school, challenges linked to literacy, such as those pointed out above. Thus, we argue, along with Santos (2019), that the 21st century demands of student's skills specific to this society, which reflect the way each subject deals with reading and writing in these multiliterate environments.

Along these lines, we can point to school practices that are still little oriented towards technologies and student agency as one of the challenges. This occurs even in the face of the BNCC (2017), which already brings, as one of its ten general competencies, attention to technologies. It even indicates which digital genres can be worked on in the different fields of activity.

Likewise — as Rojo (2012) has already shown — in addition to school practices, another challenge would be the organization of the curriculum in a way that addresses these contemporary practices, along with teacher education. Even while pointing out these challenges, Rojo (2012) stresses that they would be small if teachers and students decided, together, to design projects that contemplate multiliteracies.

Zacharias (2016, p. 26) also makes clear that "the fragmentation of knowledge into disciplines, the division of time into class hours, and the classification by age group are aspects that exemplify the persistence of an education that has done little to keep pace with social changes." Moreover — when it comes to practices related to the uses of digital media — there are still many beliefs on the part of teachers about what it means to teach and to learn, the researcher explains.

In Zacharias's (2016) understanding, there are two major challenges related to working with digital literacy at school:

> The first is that reading, as an object of teaching, must be brought into the school without simplifications, considering not only cognitive skills — such as inferring, anticipating, comparing, verifying, analyzing — but considering its purposes and its diversity as a social practice. The second challenge is to include digital technologies in such a way that the meanings attributed to them in the social context do not become overly artificial when schooled (Zacharias, 2016, p. 27).

In the perspective analyzed by this researcher, it is necessary to create conditions for the development of these literate practices — which regard students as protagonists

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— and thus to reduce the distance between these school practices and those developed outside it. Lastly, like the others, Zacharias points to teacher education as a challenge to be faced, explaining that it is necessary to promote individual and collective reflections on practice to transform it, in line with the ideas already set out by Freire (1996).

In this way, as the scholars cited above show regarding literacies in the 21st century, it is urgent to adopt these literate practices already acquired by students in their daily lives; in other words, the school cannot remain outside this debate and this reality that is digital technologies. Moreover, it is necessary to invest in teacher education, increasingly seeking to reduce the distance between theory and practice, and to strengthen the role of the teacher as the more capable peer, one who is able to lead students to undertake a critical analysis of contemporary digital texts/tools, with a view to developing multiliteracies.

At this point, in recognizing that multiliteracies broaden the repertoire of languages, modalities, and cultures that circulate in the social practices of reading and writing, it becomes inevitable to turn our gaze to the technologies that today catalyze these dynamics: Artificial Intelligence. If multiliteracies invite us to understand multimodal texts and to produce meaning in complex digital ecosystems, the growing presence of AI systems in schools — from recommendation algorithms to generative language models — deepens and strains this scenario, offering, simultaneously, new pedagogical potentials and ethical challenges. Thus, the discussion of multiliteracies in contemporary times serves as a foundation for examining how Artificial Intelligence can personalize formative pathways, automate assessments, and stimulate creativity, while at the same time imposing critical reflections on authorship, technological dependence, and equity of access.

3 Artificial Intelligence in education: potentials and challenges

Since the early days of Intelligent Tutoring Systems (ITS) in the 1970s, Artificial Intelligence has sought to “advance significantly over the last twenty-five years” in support of personalized learning (Roll; Wylie, 2016). In the 2000s, the focus shifted to automated assessment: in discussing the limitations of manual examinations, “the process is time-consuming, lacks reliability, and presents

DOI: http://doi.org/10.14393/OBv10.e2026-24

several other weaknesses" (Ramesh; Sanampudi, 2022), which spurred research on automated essay-scoring systems.

More recently, systematic reviews show that "AI chatbots continue to gain popularity, attracting the attention of universities, schools, and researchers," opening space for conversational agents that offer tutoring in natural language. The arrival of generative language models broadened this panorama; today, "ChatGPT can function as an assistant to both teachers and students," generating materials, assessment proposals, and instant feedback (Lo, 2023).

Thus, the historical trajectory reveals a continuous movement of expansion of the potentials of AI in education — from individualized teaching to large-scale grading and now, to dialogical mediation — while at the same time highlighting ethical, reliability, and authorship challenges that accompany each new technological stage.

Considering the historical trajectory presented, it becomes necessary to analyze the already visible effects of AI on pedagogical practices. On the one hand, intelligent systems ease the teaching workload and refine instruction, offering personalized tutoring and immediate feedback that enhance individual learning trajectories (Chen; Perez, 2023, p. 74). On the other hand, warnings about side effects are multiplying. Excessive dependence on generative tools may lead to "increased laziness, the spread of misinformation, a lower level of creativity, and a reduction in critical and independent thinking" (Zhang et al., 2024, p. 2), signaling risks of cognitive superficiality.

Added to these ethical concerns is the fact that the use of "ChatGPT also has very serious implications for academic integrity: at its core lies plagiarism" (Kovari, 2025, n.p.). Thus, between promises of personalization and dangers of intellectual complacency, the incorporation of AI into the teaching-learning process requires critical mediation and formative policies that maximize benefits without ignoring its weaknesses.

In this context, in which both operational gains and ethical warnings have already emerged, it is worth detailing what ChatGPT adds — and requires — in the teaching of Portuguese language. Field studies show that, under appropriate guidance, the tool "can function as an allied resource to assist in revision and rewriting" (Silva; Vaz; Baumgärtner, 2024), while also stimulating textual invention, since "access to the ideas of Generative Artificial Intelligence brings about an increase in the writer's creativity, with stories being rated as better written and more enjoyable" (Doshi; Hauser, 2024).

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Nevertheless, the literature itself warns that such conveniences go hand in hand with "plagiarism, critical development, and creativity in contemporary textuality" as central concerns (Rodrigues; Rodrigues, 2023). Hence the emphasis on intentional mediation: "Artificial Intelligence and the teacher need not take on antagonistic roles in school; on the contrary, this alliance can bring a significant evolution to students' writing" (Coelho; Souza, 2024). Thus, ChatGPT opens space for more fluid textual production, immediate revision, and creative experimentation, but only under teacher curation that ensures authorship, depth, and critical-linguistic reflection.

In mapping the potentials (personalization, real-time feedback, expansion of creativity) and the challenges (technological dependence, risks of plagiarism, and inequalities of access) that Artificial Intelligence brings to the educational field, the need to move beyond a merely instrumental view of these tools becomes evident. It is precisely at this point that multiliteracies become the articulating axis: by recognizing the plurality of languages and semiosis present in the digital environment, they offer a theoretical-practical framework for reconfiguring the use of AI in the classroom, guiding it by principles of authorship, criticality, and inclusion. Thus, the discussion shifts from "what" AI can do to "how" and "for whom" it should be mobilized, paving the way to reflect, in the next section, on the challenges and possibilities of integrating Artificial Intelligence and multiliteracies in a genuinely critical and conscious pedagogical practice.

4 Artificial Intelligence and Multiliteracies: challenges and possibilities for a critical practice

With the advent of the global technological transformations of recent years, it becomes essential to discuss the challenges and possibilities of the convergence between Artificial Intelligence and pedagogical practices, considering the pedagogy of multiliteracies — a central concept for contemporary debates on language, culture, and education. Since the formulation of the New London Group's manifesto, it was already recognized that school literacies could no longer be restricted to the traditional practices of normative writing. Its authors propose valuing situated, multimodal, and culturally diverse practices, responding to the multiplicity of

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languages and semiotic modes that make up everyday life: visual, textual, auditory, gestural, and spatial (New London Group, 1996).

By combining the lenses of multiliteracies with the new semiotic layers inaugurated by Artificial Intelligence, we are confronted with a scenario in which generative algorithms produce texts, voices, and images as easily as students swipe their fingers across the screen. The pedagogy of multiliteracies already warned that contemporary learning requires fluid movement across different media, codes, and cultures (Cope; Kalantzis, 2015); now, AI expands this mosaic by personalizing study routes, generating instant feedback, and broadening the creative repertoire — as demonstrated by experiences with the reading assistant Amira, which adapts stories to each child's level and intervenes in real time (Chen; Perez, 2023).

However, the very advance that enhances multimodal authorship reveals ethical and formative tensions: unequal access to technologies, the weakening of authorship, and the uncritical automation of pedagogical decisions impose "countless opportunities and challenges for contemporary language education" (Sousa; Rabello; Windle, 2024). In this in-between place, to think "Artificial Intelligence and multiliteracies" is less about asking "what" the machine does and more about reflecting on "how" and "for whom" these tools can be integrated into a project of critical, inclusive, and socially responsible teaching.

From the perspective of multiliteracies, integrating AI into the curriculum first requires equipping students with metacognitive tools to question and assess the reliability of the texts generated by algorithms. After all,

> in an increasingly connected world, in which Artificial Intelligence is part of our everyday life [...] it is crucial to understand it: not only to make the best use of it, but mainly to ensure the correct and responsible use of this technology that is here to stay" (Sayad, 2022, p. 15, our emphasis).

In parallel, pedagogical work must promote the conscious use of digital environments, for "the school is a place where one learns to deal with [these resources] in a respectful, ethical, creative, and emancipatory way" (Coscarelli, 2020, p. 15). Thus, developing criticality to evaluate AI responses and cultivating ethical practices of reading, writing, and online sharing converge with the principles of multiliteracies,

DOI: http://doi.org/10.14393/OBv10.e2026-24

forming subjects capable of dialoguing, creating, and innovating without renouncing their civic responsibility.

Critical and contextualized reading consists of the capacity to analyze the content presented, considering its context of production and its intentionalities. Access to digital tools must be accompanied by the development of the capacity to construct meanings in environments marked by multiple discursive genres and spheres of human activity (Bakhtin, 1997). In this sense, it is essential that students learn to select and critically evaluate the information obtained, making "the content of learning the very process of learning itself" (Freire, 1996, p. 78).

Freire (1996) reconstructs the meaning of the term with attention to the political-pedagogical content of educational practice, understanding conscientization as "the very critical development of freedom, of the taking of consciousness, an unveiling of discourses toward the critical phase, of critical positioning as a synonym of action" (Siqueira, 2019, p. 70). In view of this, the school structure is called upon to recognize and promote innovative, ethical, and conscious practices that contribute to the development of a critical pedagogy.

To operate an integration of AI that genuinely dialogues with the principles of multiliteracies, the teacher may adopt three complementary fronts:

(1) Activities of analysis, authorship, and reinterpretation of algorithmic outputs. One path is to propose "curation laboratories," in which students generate texts or images via ChatGPT and then deconstruct them collectively: they identify registers of voice, the correspondence between form and purpose, uncited sources, and argumentative gaps, rewriting the material in accordance with their own communicative objectives. This practice mobilizes the critical reading of texts

> that incorporate sounds, icons, static and moving images, and multisemiotic layouts, altering readers' gestures, the processing of information, and the construction of meanings, and shifting the student from the condition of passive consumer to that of author-editor (Zacharias, 2016, p. 16).

DOI: http://doi.org/10.14393/OBv10.e2026-24

Rewriting with one's own objectives mobilizes a multimodal critical reading and re-signifies the place of the student as author-editor (Zacharias, 2016), developing interpretive, argumentative, and creative competencies in multisemiotic contexts.

(2) Projects that combine technology and critical reflection. Inspired by the idea of multimodal didactic sequences (Pereira, 2009) — for whom "the adoption of information and communication technologies in the educational field has repercussions on teaching practice and on learning processes" (n.p.) — the teacher can organize thematic modules ("AI and fake news," "Poetics of the prompt," "Data, ethics, and society") in which each stage alternates between exploring digital tools and metacognitive debates. Thus, production with AI never ends in technique: it is always strained by questions about authorship, genre, social purpose, and cultural impacts.

(3) Formation of the "digitally experienced" student. Instead of limiting itself to instrumental skills (clicking, copying, pasting), teaching cultivates competencies of questioning, creation, and re-signification: lateral reading for fact-checking, human-machine collaborative writing, multimodal remixing of texts, sounds, and videos, as well as the elaboration of "originality letters" that detail where the human intervened in the product. In this way, AI becomes a resource for developing critical agency and creativity: foundations of a pedagogical practice that recognizes contemporary semiotic plurality, but also the need for ethical and conscious mediation.

As Rivoltella (2016) advises, the use of technologies at school cannot be merely technical-instrumental; it is necessary to foster reflective thinking about media and digital processes, which includes understanding algorithmic mechanisms. Pierre Lévy (1999), in turn, had already envisioned digital technologies as cognitive extensions, capable of enhancing the effective mobilization of competencies. From this perspective, AI presents itself as a powerful tool for discursive and sociocultural interaction, capable of bringing school experiences closer to contemporary digital knowledge and of promoting forms of shared and reconfigured authorship.

In this sense, integrating AI into the curriculum implies equipping students with metacognitive tools to assess the reliability of the content generated by algorithms. Sayad (2022, p. 15) warns that, in a hyperconnected world, "it is crucial to understand it:

DOI: http://doi.org/10.14393/OBv10.e2026-24

not only to make the best use of it, but mainly to ensure the correct and responsible use of this technology that is here to stay." Likewise, as Coscarelli (2020, p. 15) states, the school must be the space for the development of ethical, respectful, creative, and emancipatory practices in the use of technologies.

Thus, developing criticality to interpret AI responses, cultivating ethical practices of reading, writing, and the circulation of digital information, and recognizing the limits and the powers of algorithmic production are attitudes that converge with the principles of multiliteracies and of critical pedagogy. As Freire (2016) stresses, the content of learning must merge with the learning process itself, in a perspective of conscientization that leads to "critical positioning as a synonym of action" (Siqueira, 2019, p. 70).

In sum, the articulation between Artificial Intelligence and the pedagogy of multiliteracies represents an expanding field, one that challenges traditional models and invites the construction of innovative, ethical, and inclusive school practices. It is a matter of forming subjects capable of dialoguing with the multiple languages of the present, recreating meanings, taking a critical stance, and contributing, with awareness and responsibility, to the construction of a more just and plural society.

5 Final Considerations

The path undertaken throughout this article has shown that the emergence of Artificial Intelligence, especially of generative language models such as ChatGPT, reconfigures teaching-learning practices and broadens the repertoire of resources available to teachers and students. Starting from the concept of multiliteracies, we have demonstrated that becoming critically literate today implies mastering multiple languages, platforms, and modes of meaning production, without losing sight of the sociocultural, ethical, and political factors that run using digital technologies. In revisiting the dialogue between AI and education, we pointed to potentials — personalization, immediate feedback, the stimulation of creativity — and risks — plagiarism, technological dependence, cognitive superficiality — that require teacher curation, critical reflection, and ongoing formative policies.

We therefore reaffirm the strategic role of multiliteracies as a formative axis for a critical education in times of AI. Only an approach that articulates the reading, authorship, analysis, and transformation of multimodal texts can empower students to

DOI: http://doi.org/10.14393/OBv10.e2026-24

move from the condition of "comfortable user" to that of "digitally experienced," able to question algorithms, evaluate the quality of information, and (re)signify content generated by machines. In this sense, teacher and AI should not occupy antagonistic positions but rather establish a dialogical partnership that favors the development of intercultural, ethical, and creative competencies.

To deepen these discussions, we propose as an agenda for future research: (1) long-term empirical investigations into the impact of generative tools on the development of authorial writing and critical thinking; (2) comparative studies that analyze teacher-education programs oriented toward critical multiliteracies in different sociocultural contexts; (3) the creation of assessment instruments that take into account authorship, depth, and semantic diversity in AI-mediated texts; and (4) the exploration of active methodologies — interdisciplinary projects, multimodal writing laboratories, problem-based learning — that integrate AI in an ethical and reflective way. Within pedagogical practices, we suggest: consolidating continuing-education hubs for teachers on AI and multiliteracies; adopting rubrics that value process, not only product, in AI-assisted textual production; encouraging practices of "critical co-authorship," in which students revise, expand, and critique machine-generated texts; and fostering institutional policies that guarantee transparency, data security, and digital inclusion. By treading these paths, the school will be able to transform the challenge of AI into an opportunity for a more democratic, creative, and socially committed education.

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Received: November/2025

Accepted: June/2026