THE PEDAGOGICAL USE OF ARTIFICIAL INTELLIGENCE AND TEACHER MEDIATION

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Abstract

The expansion of Artificial Intelligence (AI) has significantly transformed educational environments, creating new possibilities for teaching, learning, assessment, and knowledge production. Among the most impactful developments are generative AI systems capable of producing texts, images, summaries, feedback, and instructional materials in real time. While these technologies offer important opportunities for innovation and personalization, they also raise concerns regarding authorship, critical thinking, ethical responsibility, and the role of teachers in educational processes. This chapter aims to discuss the pedagogical use of Artificial Intelligence and the centrality of teacher mediation in contemporary education. The study adopts a qualitative approach based on a narrative review of the literature, drawing upon contributions from scholars in education, digital culture, Artificial Intelligence, and critical digital literacy. The discussion highlights that AI can support more dynamic, personalized, and participatory learning experiences when integrated into pedagogically meaningful practices. However, the findings also indicate that technological innovation alone does not guarantee educational quality. Teacher mediation remains essential for fostering critical reflection, ethical awareness, human interaction, and meaningful learning. It is concluded that the educational value of Artificial Intelligence depends not on its technical sophistication, but on the ways educators integrate it into teaching practices guided by human, ethical, and pedagogical principles.

Keywords: Artificial Intelligence, Teacher mediation, Digital education, Learning, Educational innovation.

INTRODUCTION

Education has always evolved in dialogue with the social, cultural, and technological transformations of its time. Throughout history, new means of communication, different forms of language, and distinct systems of knowledge production have challenged educational institutions to rethink their practices and redefine their purposes. In the twenty-first century, the accelerated

advancement of Artificial Intelligence represents one of the most significant technological transformations affecting educational systems on a global scale. More than a technological innovation, AI has become a phenomenon capable of influencing the ways in which knowledge is produced, accessed, shared, and interpreted.

The growing availability of generative Artificial Intelligence systems has intensified debates about the future of education. Tools capable of producing texts, answering questions, creating images, organizing information, and assisting with academic tasks have rapidly become part of the daily lives of teachers and students. Consequently, educational institutions have begun to face, simultaneously, new opportunities and new challenges related to learning, authorship, assessment, critical thinking, and the practice of teaching.

Recent studies indicate that Artificial Intelligence can contribute to educational innovation by fostering personalized learning experiences, expanding access to information, and enhancing forms of student engagement. However, such possibilities require careful reflection on the pedagogical purposes that guide the use of these technologies. In discussing the impacts of AI on educational systems, Holmes and Tuomi observe:

> "The educational implications of Artificial Intelligence go far beyond the automation of administrative tasks. AI has the potential to reconfigure learning environments, modify relationships between teachers and students, and transform the way knowledge itself is constructed and accessed." (Holmes; Tuomi, 2022, p. 12).

The authors' observation highlights a fundamental aspect for understanding this phenomenon. Educational discussions about Artificial Intelligence cannot be restricted to the technical functioning of tools or the efficiency of computational systems. The central issue lies not only in what technology is capable of doing, but in how educational communities choose to use it. Technologies, by themselves, do not determine pedagogical outcomes. Their impacts depend on the educational conceptions,

methodological choices, and ethical principles that guide their incorporation into teaching and learning processes.

This perspective becomes even more relevant when teacher mediation is considered. In many contemporary debates, Artificial Intelligence is presented either as a revolutionary solution capable of transforming education or as a threat to traditional teaching practices. Both interpretations tend to minimize the importance of the teacher in the construction of meaningful learning experiences. Even in highly digitalized contexts, learning remains a human process grounded in dialogue, interpretation, social interaction, and critical reflection.

In this context, Paulo Freire's contributions remain current. His understanding of education as a dialogical and emancipatory practice challenges merely instrumental perspectives on teaching and learning. For Freire, teaching does not mean transferring ready-made knowledge, but creating conditions for subjects to construct their own understandings of the world. This principle assumes particular relevance in an era marked by the automated production of information and by the growing presence of intelligent systems in educational environments.

Another relevant aspect concerns the influence of Artificial Intelligence on practices of language, authorship, and digital literacy. Recent research has shown that AI not only makes information available but also actively participates in processes of discursive production, content generation, and meaning-making. In view of this scenario, it becomes necessary to prepare students not only to use digital tools, but also to critically understand their limits, implications, and potential impacts on knowledge production.

The educational debate surrounding Artificial Intelligence therefore requires a balanced perspective, one capable of simultaneously recognizing its transformative potential and its limitations. Technological innovation can enrich educational experiences, but it does not replace the ethical, relational, and pedagogical dimensions that characterize education as an essentially human practice.

Thus, this chapter aims to discuss the pedagogical use of Artificial Intelligence and the importance of teacher mediation in contemporary educational contexts. To achieve this purpose, the text is organized

into four main moments. First, it discusses the relationship between Artificial Intelligence and contemporary education. Next, it analyzes the role of teacher mediation in AI-mediated learning environments. Subsequently, it discusses the pedagogical possibilities and ethical challenges associated with generative Artificial Intelligence. Finally, the chapter reflects on human agency, critical thinking, and the future of education in a society increasingly marked by automation.

ARTIFICIAL INTELLIGENCE AND CONTEMPORARY EDUCATION

The presence of Artificial Intelligence in educational spaces constitutes one of the most visible expressions of the transformations that characterize contemporary society. In recent decades, the advancement of digital technologies has profoundly modified forms of communication, knowledge production, and access to information. However, the emergence of intelligent systems introduces a new element into this scenario: the capacity to produce content, interpret commands, establish relationships among information, and interact with users in increasingly sophisticated ways. This condition places Artificial Intelligence in a unique position among the educational technologies developed to date.

Education is directly traversed by these changes. Artificial Intelligence tools are already used to support research processes, the preparation of teaching materials, the personalization of learning, content translation, the monitoring of academic performance, and the production of educational resources. The speed with which these technologies have been incorporated into the daily lives of students and teachers demonstrates that the discussion about AI has ceased to be a future projection and has become a concrete reality within educational institutions.

In this context, it is important to understand that Artificial Intelligence is not merely a set of digital tools. It is a technology that directly interferes in the production and circulation of knowledge. By producing answers, texts, summaries, images, and interpretations, intelligent systems begin to participate in processes traditionally associated with human intellectual activity. This characteristic requires broader reflection on their educational impacts.

The analyses developed by UNESCO emphasize that Artificial Intelligence has the potential to expand educational opportunities in different social and cultural contexts. However, the organization warns that such benefits can only be achieved when the technology is used responsibly, transparently, and in alignment with the principles of inclusive education. In this regard, the document Guidance for Generative AI in Education and Research states:

> "Generative Artificial Intelligence offers new possibilities for learning, creativity, and knowledge production. However, its use must be accompanied by strategies that promote equity, inclusion, human supervision, and the development of critical competencies capable of preparing students for a changing society." (UNESCO, 2023, p. 13).

This recommendation shows that the debate about AI cannot be limited to gains in productivity or efficiency. The focus must remain on learning, human formation, and the construction of competencies that enable subjects to act critically in relation to the technologies they use.

The most recent studies have indicated that one of the main contributions of Artificial Intelligence to education is related to the personalization of learning. The possibility of adapting content, suggesting differentiated pathways, and offering individualized support has frequently been identified as a significant advance for educational processes. In analyzing this phenomenon, Silva et al. observe that AI has been expanding opportunities to adapt pedagogical practices to students' needs, contributing to more flexible and responsive learning experiences.

This capacity for personalization becomes particularly relevant in contexts marked by diversity in profiles, interests, and learning rhythms. However, the literature also shows that personalization should not be confused with excessive individualization. Learning remains a social process, constructed through interaction, dialogue, and participation in learning communities. Technology can support these processes, but it cannot replace them.

Another relevant aspect concerns the changes produced by Artificial Intelligence in processes of intellectual production. For centuries, the elaboration of texts, syntheses, and analyses was directly

associated with human labor. With the popularization of generative systems, part of these activities has begun to be carried out automatically, creating new possibilities but also new concerns.

The reflections developed by Junqueira et al. point precisely to this transformation by highlighting that AI does not operate merely as an auxiliary tool, but interferes directly in processes of language and authorship. According to the authors:

> "Generative Artificial Intelligence not only expands access to information, but also begins to act as a participating agent in discursive production, influencing forms of writing, the circulation of meanings, and the construction of knowledge. This movement requires education to develop new frameworks for understanding authorship, language, and learning in digital contexts." (Junqueira et al., 2026, p. 7).

This observation makes it possible to understand that contemporary educational challenges are not limited to the adoption of new technologies. They involve the need to reinterpret traditionally consolidated concepts such as authorship, research, textual production, and knowledge construction.

At the same time, the growth of Artificial Intelligence has also prompted reflections on the preparation of students for an increasingly automated society. If, on the one hand, intelligent systems broaden access to information, on the other, they require competencies related to critical analysis, content validation, and the contextualized interpretation of available information. Simple access to knowledge is no longer sufficient. It becomes necessary to understand how this knowledge is produced, by whom it is produced, and what interests may be present in the processes through which information is generated.

In this sense, contemporary education faces a complex challenge: integrating the potential of Artificial Intelligence without relinquishing the critical formation of subjects. Technology offers new opportunities for teaching and learning, but its use must be associated with the development of intellectual autonomy, ethical responsibility, and the capacity for reflection.

Thus, understanding the relationship between Artificial Intelligence and contemporary education requires recognizing both its potentialities and its limitations. Technological innovation can enrich

educational processes, expand learning possibilities, and foster new forms of knowledge construction. However, such benefits are only realized when accompanied by qualified pedagogical mediation, critical reflection, and commitment to the humanizing principles that have historically underpinned education.

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PEDAGOGICAL POSSIBILITIES AND ETHICAL CHALLENGES OF GENERATIVE ARTIFICIAL INTELLIGENCE

The rapid expansion of generative Artificial Intelligence has caused profound transformations in contemporary educational processes. Tools capable of producing texts, preparing lesson plans, generating images, synthesizing content, translating information, and answering complex questions have become part of the daily lives of students and teachers at different levels of education. As a consequence, new possibilities for learning emerge, while questions related to ethics, authorship, and educational responsibility intensify.

Among the main pedagogical potentialities of generative Artificial Intelligence is its capacity to expand access to information and support personalized learning processes. Students can receive explanations adapted to their level of understanding, explore different ways of presenting content, and obtain almost immediate feedback on certain activities. For teachers, these tools can assist in the

preparation of teaching materials, the organization of activities, and the planning of more diversified learning experiences.

The impacts of these technologies on education have been observed in different studies. In analyzing the transformations produced by AI in academic contexts, Freitas et al. emphasize that:

> "Artificial Intelligence enables new forms of monitoring learning, offering more detailed analyses of students' performance and allowing more precise and contextualized pedagogical interventions." (Freitas et al., 2025, p. 2746).

This observation shows that intelligent systems can contribute to improving educational processes when used as tools to support pedagogical work. Rather than replacing teaching action, technology provides information that assists decision-making related to teaching and learning.

Another possibility frequently identified in the literature concerns the strengthening of practices aimed at the personalization of learning. Intelligent systems are capable of identifying patterns, suggesting differentiated pathways, and adapting educational resources to students' needs. In contexts marked by diversity of profiles and learning rhythms, this characteristic may represent an important contribution to the development of more flexible and inclusive educational experiences.

However, the same technologies that expand opportunities also produce challenges that cannot be ignored. One of the main challenges concerns the issue of authorship. The capacity of generative systems to produce complete texts, structured arguments, and elaborate answers challenges traditionally consolidated conceptions of intellectual production and knowledge creation. In many cases, it becomes difficult to distinguish what was produced directly by the student from what was generated by automated systems.

This scenario calls for new reflections on the objectives of education. More than verifying the origin of a text or identifying the use of a particular tool, it becomes necessary to rethink assessment practices and pedagogical strategies capable of valuing processes of analysis, interpretation, creativity,

and critical construction of knowledge. The challenge does not consist solely in controlling the use of technology, but in developing forms of learning that keep students' intellectual participation as a central element of the educational process.

UNESCO has drawn attention to this issue by emphasizing that generative Artificial Intelligence systems should not be used uncritically in educational contexts. In one of its most recent documents, the organization observes:

> "The educational use of generative Artificial Intelligence requires continuous human supervision, the development of critical competencies, and an understanding of the risks associated with the automated production of content, including inaccuracies, biases, and misinformation." (UNESCO, 2023, p. 18).

This concern is particularly relevant because generative systems do not operate with human understanding of the content they produce. Although they often present coherent and well-structured responses, they may generate incorrect information, reproduce prejudices existing in the databases used for their training, or present inadequate interpretations of certain contexts.

The studies by Silva et al. also point to the need for attention to ethical aspects related to the use of AI in education. Among the main challenges identified by the authors are the protection of users' privacy, the reliability of the information produced, and the need for constant human supervision to ensure the quality of educational processes.

Another aspect that deserves emphasis concerns algorithmic transparency. Many tools widely used by students and teachers operate on the basis of models whose internal logic remains poorly understood by users. This situation can hinder critical analyses of the criteria used to produce responses, organize information, or recommend content.

In this context, education assumes a fundamental role in forming subjects capable of understanding not only the technical functioning of tools, but also their social, political, and cultural

impacts. The development of competencies related to critical digital literacy becomes an indispensable condition for students to use Artificial Intelligence ethically and responsibly.

The discussions developed by Junqueira et al. reinforce this need by arguing that contemporary education must overcome instrumental conceptions of technology:

> "Education cannot be limited to teaching the efficient use of digital tools. It becomes necessary to understand the ways in which these technologies participate in the construction of discourses, influence processes of knowledge production, and interfere in the formation of subjects." (Junqueira et al., 2026, p. 11).

The reflection proposed by the authors significantly broadens the debate. The educational challenge does not consist only in teaching students to use Artificial Intelligence, but in preparing them to critically understand the effects of these technologies on their practices of reading, writing, research, communication, and learning.

Thus, the pedagogical possibilities of generative Artificial Intelligence are unquestionably relevant. However, its incorporation into educational environments requires responsibility, human supervision, and ethical commitment. The transformative potential of these technologies depends less on their technical sophistication and more on the capacity of educational institutions to use them in favor of learning, intellectual autonomy, and the critical formation of students. Ultimately, technological innovation only acquires educational meaning when it remains subordinated to the human principles that guide education.

HUMAN AGENCY, CRITICAL THINKING, AND THE FUTURE OF EDUCATION

Discussions about Artificial Intelligence in education often focus on the technical capacities of digital systems, productivity gains, and the possibilities of automation. However, one of the most important questions for the future of education does not concern what machines can do, but the role that

human beings will continue to play in a society increasingly mediated by algorithms. In other words, the central issue is not technological, but profoundly educational.

The advancement of intelligent systems has expanded the capacity for access to information, automated processes, and offered answers to previously complex problems. Nevertheless, the abundance of information does not eliminate the need for human judgment. On the contrary, it makes even more necessary the ability to interpret, select, validate, and assign meaning to knowledge produced in digital environments. In this scenario, the formation of critical thinking emerges as one of the main responsibilities of contemporary education.

Biesta argues that education cannot be limited to the transmission of knowledge or the development of technical competencies. Its purpose also involves the formation of subjects capable of acting in the world responsibly, ethically, and consciously. In discussing the aims of education, the author states: “The fundamental educational question is not only what students learn, but who they become through educational processes and how they come to exist as subjects in a world shared with others.” (Biesta, 2022, p. 34).

This reflection shifts the focus from technology to human formation. In contexts marked by Artificial Intelligence, this perspective becomes even more relevant, as it reminds us that education does not exist merely to develop operational skills, but to contribute to the formation of citizens capable of participating critically in social life.

Another important concept for this discussion is that of human agency. Holmes and Tuomi observe that intelligent systems can support educational processes, but should not replace the capacity of subjects to make decisions, construct interpretations, and exercise intellectual autonomy. According to the authors:

> “Educational development should strengthen human agency, not reduce it. Artificial Intelligence should expand the possibilities for learning and participation without compromising individuals’ capacity to act, decide, and construct knowledge autonomously.” (Holmes; Tuomi, 2022, p. 41).

This observation has significant implications for pedagogical practice. In a context in which automated systems can provide rapid responses to numerous demands, it becomes essential to create educational experiences that value investigation, creativity, argumentation, and decision-making. The objective is not to compete with Artificial Intelligence, but to develop human capacities that remain fundamental even in the face of technological advances.

This reflection also extends to the role of educational institutions. Castells observes that the network society has profoundly altered the modes of production and circulation of knowledge. The school is no longer the main source of access to information, but it remains a privileged space for the construction of meanings, for the development of citizenship, and for the critical formation of subjects. In this context, its relevance does not diminish; it is transformed.

UNESCO has reinforced this perspective by arguing that educational systems must prepare students to act in environments characterized by uncertainty, complexity, and constant technological transformation. This implies developing competencies related to ethics, critical thinking, collaboration, and social responsibility—dimensions that cannot be automated by computational systems.

Thus, the future of education in times of Artificial Intelligence will not depend exclusively on the capacity to incorporate new technologies into classrooms. It will depend, above all, on the capacity to preserve and strengthen what makes education a genuinely human activity: the construction of meanings, dialogue, ethical reflection, creativity, and the formation of subjects capable of acting critically in an increasingly complex society. Artificial Intelligence will continue to evolve, but the responsibility of forming human beings remains an essentially educational task.

FINAL CONSIDERATIONS

The discussion developed throughout this chapter sought to analyze the pedagogical use of Artificial Intelligence and the permanence of teacher mediation as a central element of contemporary educational processes. The growing presence of intelligent systems in educational institutions shows that

Artificial Intelligence has ceased to represent a future possibility and has become a concrete reality that influences pedagogical practices, assessment processes, forms of knowledge production, and learning experiences at different educational levels.

The literature analyzed demonstrates that Artificial Intelligence has significant potential to contribute to educational innovation. The personalization of learning, the expansion of access to information, support for the preparation of teaching materials, and the diversification of pedagogical strategies are among the main possibilities offered by these technologies. When integrated into well-structured educational proposals, intelligent systems can foster more flexible, participatory formative experiences aligned with students' needs.

However, the findings also show that the mere incorporation of technologies does not guarantee improvement in educational quality. Issues related to authorship, critical thinking, algorithmic transparency, data privacy, and ethical responsibility remain central challenges for schools, universities, and educational systems. The pedagogical relevance of Artificial Intelligence depends less on its technical sophistication and more on the principles that guide its use.

One of the most important reflections developed in this chapter concerns the preservation of human agency in educational processes. Although intelligent systems are capable of supporting numerous activities related to learning, they do not replace essentially human capacities such as interpretation, judgment, creativity, empathy, dialogue, and ethical responsibility. Education remains a social practice grounded in human relationships and in the shared construction of meanings.

In this context, teacher mediation emerges as one of the most important elements for the critical and responsible use of Artificial Intelligence. Teachers continue to play a fundamental role in guiding students, problematizing the information produced by automated systems, and promoting the intellectual autonomy necessary to act in a society increasingly marked by the presence of digital technologies.

The contributions of authors such as Holmes, Tuomi, Biesta, Castells, and UNESCO documents reinforce the need to understand educational innovation beyond the technological dimension. More than

adapting to technical changes, educational systems need to strengthen the formation of subjects capable of acting ethically, critically, and responsibly in the face of contemporary challenges. Education cannot be limited to learning how to use tools; it must contribute to understanding the social, cultural, and political impacts produced by them.

It is therefore concluded that the future of the relationship between education and Artificial Intelligence will depend less on the evolution of algorithms and more on the choices made by teachers, administrators, researchers, and educational institutions. The true challenge does not consist only in incorporating new technologies into classrooms, but in ensuring that these technologies serve learning, citizenship, and human development. In an era marked by increasing automation, the responsibility of education to form subjects capable of thinking, questioning, creating, and participating critically in the construction of society remains current.

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