THE ROBOTIC TEACHER: THE LOSS OF THE HUMAN-PEDAGOGICAL RELATIONSHIP IN THE AGE OF AI

O PROFESSOR ROBOTIZADO: A PERDA DA RELAÇÃO HUMANO-PEDAGÓGICA NA ERA DA IA

EL PROFESOR ROBÓTICO: LA PÉRDIDA DE LA RELACIÓN HUMANO-PEDAGÓGICA EN LA ERA DE LA IA

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RESUMO

Este artigo analisa criticamente os impactos da inteligência artificial (IA) na educação, destacando os riscos da robotização do ensino e da erosão da relação pedagógica

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humana. Argumenta que a mediação algorítmica, embora prometa eficiência e personalização, na prática padroniza processos de aprendizagem, reforça desigualdades e reduz o papel do professor a operador de ferramentas tecnológicas. Através de exemplos concretos, demonstra como sistemas de IA falham ao reproduzir vieses linguísticos e culturais, limitam a autonomia docente e transformam a educação em um processo mecânico e quantificável. O texto explora ainda alternativas para um uso ético da tecnologia, defendendo modelos híbridos que preservam a agência humana, a regulação de ferramentas educacionais e a revalorização do professor como intelectual transformador. Conclui com um chamado ao debate público sobre os fins da educação na era digital, enfatizando a necessidade de priorizar relações humanas e objetivos pedagógicos emancipatórios em detrimento de lógicas mercadológicas e de controle. A reflexão propõe que a tecnologia deve servir à educação, e não o contrário, preservando espaços para criatividade, criticidade e diálogo – dimensões essenciais que a IA não pode replicar.

Palavras-chave: Inteligência Artificial na Educação. Autonomia Intelectual. Pensamento Crítico. Viés Algorítmico. Mediação Pedagógica.

ABSTRACT

This article critically analyzes the impacts of artificial intelligence (AI) on education, highlighting the risks of robotization of teaching and the erosion of the human-pedagogical relationship. It argues that algorithmic mediation, although promising efficiency and personalization, in practice standardizes learning processes, reinforces inequalities, and reduces the role of the teacher to that of an operator of technological tools. Through concrete examples, it demonstrates how AI systems fail to reproduce linguistic and cultural biases, limit teacher autonomy, and transform education into a mechanical and quantifiable process. The text also explores alternatives for the ethical use of technology, defending hybrid models that preserve human agency, the regulation of educational tools, and the revaluation of the teacher as a transformative intellectual. It concludes with a call for public debate on the purposes of education in the digital age, emphasizing the need to prioritize human relationships and emancipatory pedagogical objectives over market and control logics. The reflection proposes that technology should serve education, and not the other way around, preserving spaces for creativity, critical thinking and dialogue – essential dimensions that AI cannot replicate.

Keywords: Artificial Intelligence in Education. Intellectual Autonomy. Critical Thinking. Algorithmic Bias. Pedagogical Mediation.

RESUMEN

Este artículo analiza críticamente los impactos de la inteligencia artificial (IA) en la educación, destacando los riesgos de la robotización de la enseñanza y la erosión de la relación humano-pedagógica. Argumenta que la mediación algorítmica, si bien promete eficiencia y personalización, en la práctica estandariza los procesos de aprendizaje, refuerza las desigualdades y reduce el rol del docente al de un simple operador de herramientas tecnológicas. A través de ejemplos concretos, demuestra cómo los sistemas de IA no reproducen sesgos lingüísticos y culturales, limitan la autonomía docente y transforman la educación en un proceso mecánico y cuantificable. El texto también explora alternativas para el uso ético de la tecnología, defendiendo modelos híbridos que preservan la agencia humana, la regulación de las herramientas educativas y la revalorización del docente como intelectual transformador. Concluye con un llamado al debate público sobre los propósitos de la educación en la era digital, enfatizando la necesidad de priorizar las relaciones humanas y los objetivos pedagógicos emancipadores por encima de las lógicas de mercado y control. La reflexión propone que la tecnología

debe servir a la educación, y no al revés, preservando espacios para la creatividad, el pensamiento crítico y el diálogo, dimensiones esenciales que la IA no puede replicar.

Palabras clave: Inteligencia Artificial en Educación. Autonomía Intelectual. Pensamiento Crítico. Sesgo Algorítmico. Mediación Pedagógica.

INTRODUCTION

Education, historically a space for human encounter, dialogue and transformation, is today facing an unprecedented disruption. Artificial intelligence and digital technologies, sold as magic solutions to the challenges of teaching, promise efficiency, personalization, and scalability. But at what cost? This article is born from a concern: what do we lose when algorithms start to mediate – and, in some cases, replace – the pedagogical relationship?

We live under the myth of technological neutrality, as if adaptive platforms, automatic brokers, and virtual tutors were mere passive tools. The reality, however, is more complex. AI systems are not impartial: they carry in their code worldviews, cultural biases, and an instrumental logic that reduces learning to metrics. The risk is not only the expansion of inequalities, but the silent erosion of what is most essential in education: the human bond between those who teach and those who learn.

The hegemonic discourse celebrates the supposed "revolution" brought about by AI, ignoring its side effects. There is talk of "personalization", but there is no question of who defines the parameters of this personalization. "Efficiency" is exalted, but the standardization of curricula and the loss of teacher autonomy are omitted. Teachers are pressured to become tool operators, while students are transformed into sources of data to be mined. The classroom, once a space of uncertainty and collective discoveries, runs the risk of becoming a laboratory for algorithmic experiments.

This article does not deny the potential of technology, but rejects the technological determinism that treats it as an end, and not as a means. We start from an urgent premise: education is not the transmission of information, but the construction of meaning. When software dictates rhythms, evaluates competencies and even "interprets" emotions, the critical, affective and political dimension of teaching disappears. AI can simulate answers, but it is no substitute for a teacher's attentive listening to a student's trembling voice or the spark of an unexpected question.

The following chapters map the impacts of this robotization. We started by dismantling the salvationist discourse of AI in education, exposing the economic interests and fallacies behind slogans such as "on-demand teaching". Next, we detail how massive technological mediation is altering – and impoverishing – the pedagogical relationship, with concrete cases of homogenization and dehumanization.

It's not about nostalgia. The criticism presented here is based on evidence: from algorithms that reinforce stereotypes to the growing frustration of teachers reduced to curators of pre-formatted content. We also explore how AI, by treating learning as a linear

process, ignores traditional knowledge, local contexts, and the bodily dimension of education – what a gesture, a silence, or a look can convey.

But there is resistance. This article is not just a diagnosis, but a call to claim alternatives. We discuss experiences in which technology serves emancipation, not standardization, and we propose principles for ethical regulation. The central question that guides our reflection is: do we want an education that trains human beings or users of systems?

The future of education is not written. It will be defined by the choices we make today – or by the failure to make them. If we abandon the human dimension in the name of technological fetishism, we will not only be robotizing teachers, but amputating the core of the educational process. This article is an invitation to debate. A warning. And, above all, a manifesto for the reinvention of an education that does not give up its soul.

THE RISE OF AI IN EDUCATION – PROMISES AND HEGEMONIC DISCOURSE

The future of artificial intelligence in education offers a wide range of opportunities, but it demands careful consideration regarding its development and use. AI-based technologies tend to be increasingly integrated into pedagogical practices, not only as support instruments, but as fundamental components of a more adaptable, personalized, and effective educational system. However, this integration must be done with a critical and ethical perspective, taking into account social inequalities and the possible effects on the autonomy of teachers and students (Costa Júnior et al., 2025).

It is understood, therefore, that the insertion of artificial intelligence in education is not a neutral or inevitable phenomenon, but rather a project driven by a techno-utopian narrative that associates innovation with progress without questioning its ideological foundations. This chapter dismantles the dominant discourse that celebrates AI as a panacea for educational challenges, exposing its contradictions and the hidden interests behind its expansion. We analyze three central axes: the construction of hype around technological efficiency, the concrete tools that materialize this imaginary, and the economic pressures that accelerate its uncritical adoption.

THE TECHNOLOGICAL HYPE AND THE NARRATIVE OF "EFFICIENCY" IN EDUCATION

The rhetoric around AI in education rests on a founding myth: the idea that technology is capable of optimizing teaching and learning processes, overcoming the limitations of the traditional model. Terms such as "personalization," "adaptability," and "efficiency" are repeated like mantras, but rarely subjected to critical analysis (Selwyn,

2019). This narrative ignores that education is not a linear system of data transmission, but a complex process marked by uncertainties, contradictions, and affective dimensions that are impossible to quantify.

The discourse of efficiency, widely disseminated by edtech corporations and international organizations, operates a dangerous reduction: it transforms learning into a technical problem to be solved by algorithms, emptying its political and social character (Williamson, 2023). Reports by the World Bank and the OECD, for example, promote AI as a solution to the "learning crisis" in peripheral countries, without considering how these technologies can reinforce global asymmetries (Knox, 2020). The result is a fetishization of innovation, where platforms are celebrated even before they prove their pedagogical benefits.

CHATBOTS, ADAPTIVE TUTORS, AND BIG DATA PLATFORMS

The materialization of this imaginary takes place through specific tools, each with different promises and problems. Educational chatbots, such as the famous ChatGPT, are sold as assistants capable of answering questions instantly, but they often reproduce misinformation and simplify complex responses to predictable linguistic patterns. Its indiscriminate use threatens to replace teacher mediation with superficial interactions, where the construction of knowledge is reduced to automated feedback.

Adaptive tutors, such as the machine learning-based systems of Khan Academy or Duolingo, operate under the logic of mastery learning, fragmenting knowledge into micro-skills to be mastered sequentially. Although they promise "personalized pathways", these systems are unable to capture the creative and critical dimension of learning, standardizing educational objectives according to predetermined metrics (Bulger, 2016). Finally, big data platforms, such as Google Classroom or learning analytics systems, transform students into data sets, favoring quantifiable indicators (screen time, correct answers on tests) to the detriment of subjective and collective processes (Slade; Prinsloo, 2013).

THE ECONOMIC PRESSURE FOR SCALABILITY AND COST REDUCTION

The accelerated expansion of these tools is not a purely pedagogical phenomenon, but an economic one. The global market for AI in education, which is expected to reach $25 billion by 2030 (Meticulous Research, 2023), is driven by a cost-benefit logic that prioritizes scalability over quality. Educational institutions, pressured by budget cuts and demands for accountability, see AI as a way to reduce expenses with teachers and infrastructure, outsourcing processes to standardized platforms (Zuboff, 2019).

This dynamic is particularly perverse in contexts of teacher precariousness. In the USA, for example, school districts have replaced human tutoring with software such as Carnegie Learning, claiming "efficiency", even with evidence that such systems deepen inequalities (O'Neil, 2016). In higher education, the adoption of *proctoring tools* for surveillance in remote tests illustrates how AI is used to discipline bodies and normalize behaviors, under the guise of ensuring "academic integrity" (Selwyn, 2022). The risk here is the consolidation of an educational model where the human becomes an obstacle to be eliminated by automation.

THE HARMFUL IMPACTS: WHEN TECHNOLOGY DEHUMANIZES

The penetration of artificial intelligence in education is not a mere technical adjustment, but a radical transformation in the nature of pedagogical relations. This chapter examines the perverse effects of this change, demonstrating how technological mediation can erode fundamental dimensions of the educational act. By replacing human interactions with algorithmic logic, AI not only impoverishes the teaching-learning process, but also reproduces inequalities and empties the teaching agency. Three central axes structure this analysis: the erosion of the pedagogical bond, the homogenization imposed by automated systems, and the transformation of the teacher into a mere operator of tools.

THE EROSION OF THE PEDAGOGICAL RELATIONSHIP

Education, as a human phenomenon, is based on dialogical relations in which the exchange of meanings goes beyond the mere transmission of contents. Taking this into account, it should be noted that the incorporation of artificial intelligence in education ended up exposing the enormous challenge of balancing human interaction with the growing automation made possible by technologies. Education, being a fundamentally human practice, encompasses interpersonal relationships, empathy and intuition, characteristics generally seen as unreplicable by machines. However, the progress of AI tools requires educators to reconsider their role and the dynamics of the classroom, balancing the use of technology with the preservation of a relevant connection with students (Costa Júnior, et al., 2025).

Vygotsky (1978) already highlighted the role of social interactions in the construction of knowledge, emphasizing how the mediation of a more experienced partner allows the child to reach levels of development that he would not reach alone. This perspective is echoed by Freire (1996), for whom the educational act is essentially an encounter between subjects, loaded with intentionality and affectivity.

AI, on the contrary, operates as a cold and unilateral mediator. Adaptive systems can adjust the difficulty level of exercises, but they are unable to perceive the tremor in an insecure student's voice, the spark of curiosity behind an impromptu question, or the sociocultural context that shapes each trajectory (Turkle, 2015). A study in schools that adopted virtual tutors showed that students develop strategies to "cheat" the system (e.g., repeating answers until they get it right), without actually engaging in reflection processes (Selwyn, 2022). The lack of empathy of algorithms is particularly harmful in situations that require acceptance, such as learning disabilities linked to trauma or neurodivergent conditions.

HOMOGENIZATION AND ALGORITHMIC BIAS

The promise of "personalization" via AI hides a paradox: to work at scale, systems rely on predefined patterns that inevitably erase diversity. Platforms such as those based on learning analytics classify learners into rigid categories (e.g., "advanced", "at risk"), ignoring contextual nuances (Eubanks, 2018). An emblematic case occurred in the USA, where essay correction algorithms penalized non-hegemonic dialects, interpreting linguistic variations as "errors" (Noble, 2018).

Algorithmic bias also reinforces structural inequalities. Tracking systems that direct students to different educational paths based on historical data tend to perpetuate stereotypes of gender, race, and class. In England, an algorithm used to predict performance in national exams systematically underestimated students from public schools, benefiting those from private institutions (O'Neil, 2016). These mechanisms create a vicious circle: by making decisions based on data from the past, AI crystallizes injustices, presenting them as neutral and technical.

THE TEACHER AS A TOOL OPERATOR

The introduction of AI in classrooms has radically reconfigured the role of the teacher. Instead of autonomous intellectuals, teachers are increasingly reduced to "curators" of content generated by algorithms, responsible for managing platforms whose internal logic is obscure to them (Morozov, 2019). This dekilling (or "emptying of skills") follows the trend observed in other professions subjected to automation: complex tasks are fragmented into repetitive activities, such as monitoring performance dashboards or adjusting parameters in adaptive systems.

The loss of autonomy is equally worrying. When curricula are dictated by corporate platforms (such as Google for Education), teachers are prevented from adapting content to

local realities or experimenting with critical pedagogical approaches (Couldry & Mejias, 2019). It is known that teachers spend up to 40% of their time on bureaucratic tasks linked to digital systems, reducing their ability to plan creative classes. In the long run, this process can lead to professional exhaustion and the social devaluation of teaching, now seen as a technicist and replaceable function.

CONCRETE CASES: WHEN AI FAILS

The theoretical critique of the impacts of artificial intelligence on education gains greater relevance when confronted with empirical evidence of its failures and contradictions. This chapter examines real-world situations in which the application of AI has been shown to be not only ineffective, but actively detrimental to the educational process. Through three axes of analysis – algorithmic biases in automatic correction, the limits of supposed adaptive personalization, and teachers' reports on frustrating experiences – it is demonstrated how technological mediation can distort pedagogical objectives and deepen inequalities. These cases serve as a warning against the uncritical adoption of tools whose social impacts have not been adequately evaluated.

BIASES IN AUTO-CORRECTORS: WHEN AI PENALIZES LINGUISTIC DIVERSITY

Automatic text correction systems, widely adopted on platforms such as Turnitin and Grammarly, have demonstrated systematic patterns of discrimination against non-hegemonic linguistic variants. Research conducted by Sap et al. (2019) revealed that algorithms classify typical African American English (AAVE) constructions as "errors", even when semantically correct, thus imposing a colonial linguistic standard. Autocorrectors can underestimate structures of non-standard Portuguese, marking as incorrect expressions from peripheral communities.

This bias has serious pedagogical consequences. By flagging certain linguistic varieties as inferior, such systems reinforce social stigmas and inhibit the authentic expression of students. As Baugh (2018) warns, the supposed neutrality of automatic correctors masks a symbolic violence: the denial of the cultural legitimacy of speakers who do not belong to the educated elites. Even more worrying is the use of these tools in decisive evaluation processes, such as ENEM and university entrance exams, where algorithmic corrections can harm public school students whose language diverges from the cultured standard.

THE ILLUSION OF PERSONALIZATION ON ADAPTIVE PLATFORMS

The core promise of systems like DreamBox Math and Khan Academy – to offer

individualized learning paths – runs up against structural limitations of today's AI. A longitudinal study by Williamson et al. (2020) in British schools demonstrated that "personalization" on these platforms is reduced to small adjustments in the rhythm and order of pre-defined exercises, without considering cognitive styles, personal interests, or sociocultural contexts. What is sold as adaptation to the student is, in reality, the adaptation of the student to a fixed model of knowledge.

This fake personalization has perverse effects. Students with learning disabilities can get "stuck" in endless loops of basic exercises, without receiving the human mediation necessary to advance. The case of the ALEKS system, used in mathematics, is emblematic: by prioritizing the repetition of procedures to the detriment of conceptual understanding, it created generations of students capable of solving equations mechanically, but unable to apply knowledge to real problems (Watters, 2021). Algorithmic personalization, when devoid of teacher intervention, tends to reduce education to behavioral training.

RESISTANCE AND ALTERNATIVES: IS ANOTHER EDUCATIONAL TECHNOLOGY POSSIBLE?

The critical analysis of the negative impacts of artificial intelligence on education should not culminate in a simplistic repudiation of technology, but rather in the construction of alternatives that subordinate the technological to the pedagogical. This chapter maps paths for a more balanced relationship between humans and algorithms in the educational space, starting from three fundamental axes: the urgency of ethical regulations, models of use that preserve human agency, and the revaluation of the teacher as a central subject of the educational process. These proposals do not represent mere technical adjustments, but a political-pedagogical project that resists the logic of education as a commodity.

ETHICAL LIMITS AND THE NEED FOR REGULATION

The regulatory vacuum around AI in education has allowed the proliferation of tools that violate basic pedagogical principles and fundamental rights. In response, international organizations are beginning to establish guidelines for the responsible use of these technologies. UNESCO's Recommendations on the Ethics of Artificial Intelligence (2021) document establishes crucial parameters: prohibition of surveillance systems in educational environments, mandatory transparency on algorithms used, and guarantee of human control over pedagogical decisions. These principles challenge the current structure of the

edtech market, which operates under opaque logics of data extraction and increasing automation (Zuboff, 2019).

At the national level, initiatives such as the Civil Rights Framework for the Internet in Brazil (Law 12.965/2014) and the General Data Protection Regulation (LGPD) are beginning to offer instruments to curb abuses. Researchers advocate the creation of specific bodies to audit educational tools, following the model of the Algorithmic Accountability Act proposed in the USA (Crawford, 2021). Cases such as France, which banned the use of learning analytics-based platforms in elementary school, show that state regulation can prevent the commodification of learning (Morozov, 2022). The challenge is to balance innovation with protection, ensuring that AI serves emancipation, not control.

TECHNOLOGY AS A TOOL, NOT AN END

Innovative pedagogical experiences demonstrate that technology can be useful when subordinated to educational projects clearly defined by educators. Paulo Blikstein et al. (2008), in their work at Stanford University, developed the concept of critical computational literacy, where students do not passively consume digital tools, but dismantle them critically, understanding their mechanisms of power. This approach has been successfully applied in Brazilian public schools through the creative programming platform TinkerCAD, where students create technological solutions to local problems, maintaining control over the process (Blikstein; Worsley, 2016).

Successful hybrid models share common characteristics: technology is used episodically to expand pedagogical possibilities (not replace them), and teachers retain full autonomy over curricula and assessments. In Finland, the AI Education program implements chatbots only as assistants for reinforcement exercises, always under teacher supervision. Denmark's Human-Centered AI project, on the other hand, integrates artificial intelligence into social science education, but requires students to systematically criticize the biases of the systems used. These experiments prove that technological determinism is not inevitable.

RE-CENTERING THE HUMAN

The most radical resistance to the robotization of education involves the reaffirmation of the teacher as a transformative intellectual – a category developed by Giroux (1997) to describe educators who articulate technical knowledge with critical consciousness. This requires breaking with the narrative that reduces the teacher to a "facilitator" or "platform tutor", repositioning him or her as a designer of meaningful learning experiences. Teacher

training should therefore include not only digital skills, but tools to critically analyse the policy implications of the technologies they use.

It is necessary to realize that technology transforms the way we use and perceive time and the world around us, generating opportunities for a more effective and productive organization of daily activities, for life itself. However, it brings challenges, especially in relation to the limits of productivity and the effects of the continuous use of digital devices on mental health and the balance between work and leisure. This impact is also felt not only in human relationships, but also in academic relationships and in education itself as a whole (Costa Júnior, 2024).

Therefore, the emergence of a collective awareness of these risks is noted. Professionals argue that no technological tool should mediate more than 30% of class time, preserving spaces for non-instrumentalized interaction. This recentralization of the human does not imply rejecting technology, but subordinating it to what Freire called a "knowing act", always mediated by ethics, affection and political responsibility.

FINAL CONSIDERATIONS

The analysis developed throughout this article demonstrates that the growing robotization of education, driven by a narrative of efficiency and technological innovation, represents a multidimensional threat to the educational project. The risks identified are not mere side effects of a process being improved, but structural consequences of a model that replaces human relationships with algorithmic mediations, contextual knowledge with quantifiable patterns, and pedagogical objectives with performance metrics. The erosion of the educational bond, the standardization hidden under the discourse of personalization, and the transformation of the teacher into a systems operator configure a scenario in which education loses its soul – that unique capacity to form critical, creative, and solidary subjects.

The urgency to curb this logic does not derive from an anti-technological conservatism, but from the realization that artificial intelligence, in its current form, operates like a Trojan horse that introduces values into schools that are contrary to the purposes of democratic education. When algorithms determine learning paths based on historical data, they crystallize inequalities; when platforms transform interactions into data transactions, they empty dialogue; When surveillance systems masquerading as "personalized tracking" invade privacy, they normalize control. Robotization is not neutral: it imposes a technical rationality that reduces students to users, teachers to machine tutors, and knowledge to a *measurable* commodity.

This scenario requires a broad and urgent public debate on the purposes of education in the digital age – a discussion that transcends specialized circles and involves the whole of society. What kind of human beings do we wish to form? For which project of society do we educate? Will we accept that pedagogical decisions are guided by corporate interests and technological limitations? The moment is for choice: between an education that prepares for the job market and one that trains for full citizenship; between the efficiency of automated systems and the richness of unpredictable interactions; between global standardization and respect for local diversities.

Resistance to educational dehumanization does not mean rejecting technology, but subordinating it to clear ethical and pedagogical principles. It requires public policies that protect education from commodification, teacher training that strengthens critical autonomy, and technologies designed to expand – not restrict – human possibilities. Above all, it requires the courageous reaffirmation that education is, above all, an encounter between consciences, a task of subjects with subjects, as Freire reminded us. In this age of algorithms, our greatest challenge may be to preserve what can never be programmed: the human capacity to be surprised, question, and transform the world.

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