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REVIEW

Latin American perspective: challenges, gaps, and opportunities

Mirada latinoamericana: desafíos, brechas y oportunidades

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ABSTRACT

Artificial Intelligence (AI) has become a decisive factor in the reconfiguration of education across Latin America, where technological innovation coexists with deep social, cultural, and economic asymmetries. Its implementation represents both an opportunity for inclusive and adaptive learning and a risk of reinforcing digital colonialism and inequality. Within this complex panorama, AI is analyzed as a phenomenon that extends beyond technology, encompassing ethical, pedagogical, and political dimensions linked to regional sovereignty and cognitive justice. The discussion highlights the need to construct a "Latin American educational intelligence" based on collective knowledge, public digital infrastructure, and equitable access to data and innovation. Drawing on comparative experiences from Uruguay, Brazil, Mexico, Argentina, and Chile, the analysis reveals how educational systems navigate the tensions between automation and autonomy, efficiency and equity. Ultimately, the text advocates for a redefinition of AI as a public good—one that is governed, developed, and taught through local cultural and ethical frameworks to promote a human-centered and cooperative technological future.

Keywords: Artificial Intelligence; Latin American Education; Digital Divide; Algorithmic Ethics; Data Sovereignty; Cognitive Justice.

RESUMEN

La inteligencia artificial (IA) se ha convertido en un factor decisivo en la reconfiguración de la educación en toda América Latina, donde la innovación tecnológica coexiste con profundas asimetrías sociales, culturales y económicas. Su implementación representa tanto una oportunidad para el aprendizaje inclusivo y adaptativo como un riesgo de reforzar el colonialismo digital y la desigualdad. En este complejo panorama, la IA se analiza como un fenómeno que va más allá de la tecnología y abarca dimensiones éticas, pedagógicas y políticas vinculadas a la soberanía regional y la justicia cognitiva. El debate destaca la necesidad de construir una «inteligencia educativa latinoamericana» basada en el conocimiento colectivo, la infraestructura digital pública y el acceso equitativo a los datos y la innovación. A partir de experiencias comparativas de Uruguay, Brasil, México, Argentina y Chile, el análisis revela cómo los sistemas educativos navegan entre las tensiones entre automatización y autonomía, eficiencia y equidad. En última instancia, el texto aboga por una redefinición de la IA como un bien público, gobernado, desarrollado y enseñado a través de marcos culturales y éticos locales para promover un futuro tecnológico cooperativo y centrado en el ser humano.

Palabras clave: Inteligencia Artificial; Educación Latinoamericana; Brecha Digital; Ética Algorítmica; Soberanía De Datos; Justicia Cognitiva.

INTRODUCTION

In the first two decades of the 21st century, AI ceased to be a scientific fantasy and became part of everyday infrastructure. Algorithms decide what we read, what music we listen to, what routes we take, and, increasingly, how we learn. In education, its emergence has sparked a profound debate: can a machine teach? Is it possible to delegate part of the pedagogical function to a predictive system? What remains of the human bond when learning is mediated by data and probability models?

Answering these questions from a Latin American perspective means recognizing that the region suffers from structural inequality that also affects access to and use of technology. The World Bank[1] points out that, even after the pandemic, 37 % of rural households do not have a stable broadband connection and 20 % of teachers lack specific training in digital skills. These figures explain why the introduction of AI in classrooms cannot be understood as a purely technical process, but rather as a political and cultural issue.

The COVID-19 pandemic acted as a catalyst for an unprecedented transformation in education. Millions of students migrated to improvised virtual environments; teacher- s were forced to reinvent methodologies; and governments were forced to recognize that digital infrastructure is now part of the right to education. In this context, the first experiences with educational AI emerged: chatbots to answer questions, adaptive tutoring systems, automated assessment platforms, and learning analytics to detect school dropouts.

However, the region also showed the limitations of uncritical adoption. Many tools were imported without local adaptation, reproducing linguistic and cultural biases. Algorithms, trained on corpora from the global north, proved incapable of interpreting local idioms, accents, or classroom contexts. Thus, AI revealed something that Latin American pedagogy already knew: "technology is not neutral" and can only be emancipatory when it is inscribed in educational projects with human meaning.

The critical tradition of authors such as Freire[2] and de Sousa[3] offers a fertile framework for this debate. Freire conceived of education as a practice of freedom; de Sousa Santos, as a field of epistemic dispute. Applied to AI, both perspectives invite us to move from "technology for" to "technology with," a development where the algorithm is designed with the participation of teachers, students, and communities, not as an external imposition but as a collective construction.

The purpose of this chapter is, therefore, to "think in terms of machines without losing sight of the human aspect"; to analyze the conditions under which AI can contribute to a more inclusive, democratic, and situated education. The central thesis argues that the region has the scientific, cultural, and ethical capacities to generate its own models of educational AI, provided that it articulates regional cooperation, public investment, and critical vision.

DEVELOPMENT

Thinking in terms of machines: a new educational horizon

Talking about a new horizon implies assuming that algorithms not only process information, but also produce meaning. AI does not "think," but it does classify, predict, and suggest; and in doing so, it shapes the student's experience. Understanding this mediation is essential for any contemporary educational project.

AI modifies three dimensions of learning:

- Temporality, because it introduces personalized rhythms and continuous assessment.
- Spatiality, by extending the classroom beyond the physical school.
- Epistemology, by redefining what counts as valid knowledge and how it is certified.

These transformations require a review of dominant pedagogies. The frontal teaching model, inherited from the 19th century, is proving insufficient in the face of adaptive h y

environments and distributed information networks. Instead, AI invites the design of flexible learning trajectories, focused on competencies and projects.

However, this potential can only be realized if education systems guarantee teacher training in algorithmic literacy, equitable infrastructure, and clear ethical frameworks. Otherwise, AI runs the risk of becoming a new form of digital colonization, where educational decisions are made on distant servers and under market logic.

Authors such as Cobo[4] warn that the challenge is not to introduce more technology, but to repoliticize its use. To define what kind of intelligence we want to cultivate and with what values. In this sense, thinking in terms of machines is an exercise in collective introspection. AI can broaden humanity's cognitive horizon, but it can also narrow it if it is limited to optimizing metrics. Latin American education, with its humanistic and critical tradition, has the potential to offer the world an alternative model, one where efficiency coexists with empathy and where data is put at the service of dignity.

Global ecosystems of artificial intelligence in education

The impact of AI on education is not distributed evenly. There are three major global models that guide the way it is implemented: the Anglo-Saxon corporate model, the Asian state model, and the European humanistic model.[5]

The Anglo-Saxon model, led by the United States and companies such as Google, Microsoft, and OpenAI, conceives of education as a market for innovation. Its main objective is to increase the efficiency, productivity, and predictive capacity of education systems. Platforms collect massive amounts of user data to generate performance profiles, course recommendations, or automated assessment systems. This approach has enabled significant advances in personalization, but it has also deepened concerns about privacy, technological dependence, and the commodification of knowledge.[6]

In contrast, the Asian model, represented by China, South Korea, and Singapore, adopts a state planning paradigm. AI is embedded in national development and social control strategies. In China, the government promotes the use of learning analytics to monitor student performance and detect behavioral deviations, sparking ethical debates about surveillance and autonomy. South Korea, for its part, combines educational AI with continuous teacher training and adaptive assessment, maintaining strong public leadership.[7]

The European model, promoted by the European Union, seeks to balance innovation and ethics. Documents such as the AI Act and the European Commission's 2021 guidelines establish principles of transparency, explainability, and accountability. AI is promoted as a tool for inclusion, prioritizing accessibility, diversity, and environmental sustainability. Finland, Estonia, and Spain lead educational AI policies focused on democratic values and digital sovereignty.

Latin America is observing these models closely, but also with caution. The direct importation of technological solutions without cultural adaptation can generate effects contrary to those desired. Socioeconomic conditions, infrastructure gaps, and linguistic diversity require contextualized approaches. The region cannot be merely a consumer of algorithms; it also needs to produce its own models, trained in its native languages, with its data, and under its own ethical frameworks.

In this regard, UNESCO[5] highlights the importance of developing educational AI ecosystems based on three pillars:

1. Public digital infrastructure, ensuring equitable access and data protection.
2. Teacher training in computational thinking and digital ethics.
3. Participatory AI governance, where civil society and universities have a voice in decision-making.

The challenge is to move from technological dependence to cognitive sovereignty, understood

as the ability to define the purposes of technology from a local and humanistic perspective.

The university as a space for collective intelligence

In Latin America, the university has historically been an engine of critical thinking and social transformation. From the University Reform of 1918 to the current movements for open science, higher education has embodied the idea of knowledge as a public good. This legacy takes on new relevance in the age of AI.

The university can and must act as a node of collective intelligence. Pierre Lévy[8] conceptualized this term to describe the ability of connected communities to produce knowledge in a distributed manner. Applied to higher education, it implies breaking down barriers between disciplines, institutions, and territories, generating networks where humans and machines collaborate in solving complex problems.

Latin American universities are already taking steps in this direction. In Argentina, the University of Buenos Aires (UBA) is developing learning analytics projects and open-source virtual tutors. In Brazil, the Federal University of Rio Grande do Sul is working on AI systems applied to inclusive education. In Mexico, the Monterrey Institute of Technology is promoting adaptive platforms for teaching engineering and mathematics. In Chile, the Pontifical Catholic University is experimenting with generative AI for feedback in academic writing.

But beyond technological innovation, the role of the university is above all ethical and political. It must ensure that AI is used to strengthen intellectual autonomy and not to undermine academic work. On this point, Morin[9] reminds us that knowledge must integrate the sciences and the humanities in order to address the complexity of the contemporary world. AI, if used critically, can be a tool for such interdisciplinary dialogue.

Likewise, universities can lead processes of data governance and algorithmic transparency policies. Instead of relying exclusively on commercial platforms, higher education institutions could develop national repositories, auditable algorithms, and regional information-sharing agreements. This would strengthen technological sovereignty and allow for the construction of a Latin American model of open science and digital education.

According to de Sousa Santos[3], it is a matter of "decolonizing knowledge" and regaining the ability to name the world with our own categories. AI offers a favorable scenario for this: universities can use their institutional and symbolic power to question the biases of global algorithms and promote a Southern epistemology in the digital sphere.

Teaching and learning with machines: augmented intelligence pedagogies

Contemporary education is undergoing a paradigm shift. The emergence of AI not only introduces new tools, but also redefines the conditions of learning. Traditionally, teaching involved transmitting content from an expert authority to a subject who had to appropriate it. In contrast, AI environments generate a bidirectional and adaptive flow, meaning that systems learn from students at the same time that students learn from them.

This phenomenon forces us to think about an "augmented intelligence pedagogy," understood as the conscious integration of human and algorithmic capabilities. According to Cobo[4], it is not a question of replacing the teacher, but of enhancing their role through tools that expand observation, personalization, and pedagogical creativity. An augmented teacher is not one who delegates to the machine, but one who uses it to multiply their reach and deepen their understanding of learning processes.

The concept of augmented intelligence also refers to the idea of complementarity. Machines can identify patterns that the human eye cannot perceive, but they lack empathy, intuition, and ethical judgment. Therefore, the challenge is not technical, but educational. Educators must be prepared to critically read data, contextualize it, and decide when to follow an algorithmic recommendation and when not to.

Recent experiments in Latin American universities demonstrate the potential of this collaboration. At the National University of Córdoba (Argentina), an intelligent tutoring system reduced dropout rates in first-year subjects by 18 %. At the University of Chile, a generative AI conversational assistant improved the quality of feedback on philosophy essays, helping students detect argumentative fallacies. These examples show that AI can become a cognitive partner when it is integrated from a logic of accompaniment rather than substitution.

However, the pedagogical use of AI raises significant ethical dilemmas. The automation of assessment, for example, can reinforce existing biases or devalue the work of teachers. Education requires more than statistical accuracy; it needs interpretation, sensitivity, and dialogue. Freire[2] warned that teaching is not about transferring knowledge, but about creating the conditions for its production. Under this premise, AI should be a mediator, not an authority.

Another key aspect is the algorithmic literacy of students. Learning with machines also involves learning about them, understanding how they work, what biases they contain, and what limitations they have. Incorporating these topics into the school curriculum is a form of critical digital citizenship. It is not just about using technology, but about understanding it, questioning it, and transforming it.

Augmented learning, in its most promising version, combines three dimensions:

1. Personalization: AI adapts content to the student's pace, level, and style.
2. Collaboration: Algorithms facilitate group work and the co-creation of projects.
3. Reflexivity: Systems offer feedback that stimulates metacognition and self-criticism.

In short, teaching and learning with machines means redefining the role of knowledge. The teacher becomes a designer of experiences, the student a producer of data and meaning, and AI a mediator that broadens the cognitive horizon.

Artificial intelligence in knowledge production: science, data, and creativity

AI is not only transforming teaching, it is also changing the way we produce knowledge. Scientific research today is permeated by task automation, massive data analysis, and hypothesis generation using deep learning models. This phenomenon raises a crucial question: what place is left for human creativity when machines also generate ideas?

In academia, AI is used to analyze large volumes of literature, detect trends, synthesize evidence, and propose possible lines of research. Tools such as GPT, Scite, and Semantic Scholar use language models to identify relationships between concepts and speed up literature reviews. While this improves efficiency, it also creates risks of epistemic homogenization. Algorithms prioritize the most cited or most recent, reinforcing dominant paradigms and leaving out peripheral voices.[10]

From a Latin American perspective, this situation is not insignificant. Scientific production in the region accounts for only 5 % of global publications and is often underrepresented in international databases. Therefore, relying exclusively on algorithms trained with corpora from the global North can accentuate the coloniality of knowledge.[3] In response, several countries are promoting open science repositories and local AI models capable of recognizing regional authors, topics, and languages.

AI is also changing the way creativity is conceived. Generative systems can produce original texts, images, or music, but their value depends on the human criteria that guide them. Algorithmic creativity does not replace intuition, sensitivity, or aesthetic experience; rather, it offers a new grammar of invention.[11] The educational task is to teach how to engage with this expanded creativity, harnessing its potential without renouncing critical thinking.

In terms of science policy, AI opens up opportunities for regional cooperation. Initiatives such as the Latin American Network for Artificial Intelligence and Education,[12] promote

collaboration between universities, ministries, and multilateral organizations. Their goal is to create interoperability standards and share models trained on public data, while respecting privacy and copyright. These networks seek to democratize access to innovation, preventing educational AI from being concentrated in a few hands.

Finally, AI invites us to rethink the relationship between science and society. Algorithmic transparency, data traceability, and citizen participation in defining scientific priorities are essential elements for maintaining the legitimacy of knowledge. The production of knowledge must once again be at the service of real problems: inequality, climate change, public health, and inclusive education. AI can be an ally, as long as the purpose remains human.

Voices and experiences from the field

Uruguay: From universal access to analytics with public meaning

Uruguay is one of the few Latin American countries that has managed to turn digital education policy into state policy. The Ceibal Plan, created in 2007, distributed computers to every student and teacher, but its greatest contribution was to build a public connectivity infrastructure, open resource platforms, and sustained teacher training.

During the pandemic, this network made it possible to maintain educational continuity through synchronous virtual classes and self-directed learning repositories. Starting in 2015, the plan incorporated learning analytics to detect the risk of dropouts and offer personalized support. The data is processed on national servers and displayed on dashboards accessible to teaching teams.

The guiding principle is clear: the data is public, not commercial. Each indicator is interpreted in educational terms, not as a punitive tool. In addition, the country developed micro-credentials for training in computational thinking and educational AI, strengthening teachers' algorithmic literacy. Thus, Uruguay demonstrates that innovation can be inclusive when infrastructure and ethics are also public.[13]

Brazil: Data sovereignty and community networks

Brazil consolidated an exemplary regulatory framework with the Marco Civil da Internet (2014) and the Lei Geral de Proteção de Dados (2018). These laws created a foundation of digital rights that directly impacts education. Federal universities lead AI projects applied to accessibility, such as screen readers trained in Brazilian Portuguese and automatic subtitling of classes.

The most innovative aspect is the coordination with social movements and rural education networks. Rural and indigenous schools co-design digital tools with public universities, integrating agroecological knowledge and participatory cartography. Thus, AI becomes an instrument of territorial autonomy and cognitive justice.

In 2022, the Ministry of Education launched the *Educação Com Dados Abertos (Education with Open Data)* program, which promotes academic clouds and interoperable repositories. Each project must publish its code and submit it for ethical review. In this way, Brazil shows that data sovereignty is not an abstract discourse, but an institutionalized practice.[3]

Mexico: Linguistic diversity and cognitive justice

Mexico faces the challenge of designing AI that recognizes its linguistic diversity, as more than 60 indigenous languages coexist with a deeply regionalized Spanish. Interuniversity teams are developing natural language processing (NLP) corpora in Nahuatl, Maya, and Zapotec.[14]

These projects seek not only to translate, but also to preserve unique grammatical structures and cultural concepts. In basic education, prototypes of bilingual conversational tutors help students strengthen their literacy in their mother tongue and second language, without erasing their linguistic identity. Communities actively participate in curating the corpora and defining

open licenses.

This participatory approach transforms AI into a tool for historical repair. Digital language policy becomes a policy of cognitive justice, recognizing that each language is a way of thinking about the world and that its inclusion in algorithms is a way of democratizing knowledge.

Argentina: Public and analytical university

Argentina has a tradition of free, mass public universities, which gives it a central role in educational innovation. The University of Buenos Aires, the National University of Córdoba ( ), and the National Technological University (Universidad Tecnológica Nacional) are developing projects involving smart tutoring, academic risk prediction, and assisted writing with generative AI.

These projects maintain a balance between efficiency and ethics. The models are trained with anonymized data and interpreted collectively, then the results are discussed in interdisciplinary teams involving teachers, educational psychologists, and data specialists. The goal is to understand, not label.

At the secondary level, initiatives such as *AI for Inclusion* integrate adaptive mathematics and reading comprehension tools in rural schools. Educational mentors help read AI reports and design support strategies. The key is not to replace teachers, but to expand their scope of action.

Chile: Educational governance and data ethics

In 2021, Chile adopted its National Artificial Intelligence Strategy, with a specific focus on education. Before scaling up projects, the Ministry of Education established an Educational Data Ethics Committee made up of academics and civil society organizations. Any system that uses AI in the classroom must justify its purpose, publish its technical documentation, and offer appeal mechanisms.

In addition, Chile promotes the use of free educational software and open standards to avoid dependence on private platforms. Teachers receive training in computational thinking and instructional design with AI. This approach prevents excessive surveillance and encourages technological autonomy.

The Chilean experience demonstrates that innovation requires ethical institutionality and that, far from slowing progress, proactive risk governance improves public confidence and the pedagogical quality of solutions.[5]

Regional synthesis: Persistent patterns and gaps

The five cases described share a common thread: when AI is oriented toward the common good and managed transparently, it becomes an engine of inclusion; when it responds to commercial logic, it deepens inequalities.

Virtuous patterns:

- Sustained government investment in public digital infrastructure.
- Teacher training in ethics and algorithmic literacy.
- Social participation in project design and evaluation.

Persistent gaps:

- Poor connectivity in rural areas.
- Poor interoperability between national data systems.
- Lack of regional legal frameworks to guarantee technological sovereignty.

Overcoming these gaps requires a Latin American AI and education agenda based on

cooperation, equitable financing, and local knowledge production. Latin America should not limit itself to importing algorithms; it should produce its own, in its native languages and with its cultural values.

Imagining the future: Toward humanely intelligent education

Thinking about the future of education in terms of AI requires an exercise in critical imagination. It is not a matter of guessing trends, but of building desirable horizons. The dominant discourses on the technological future are often monopolized by large corporations in the global North, which present an inevitable future of total automation, precarious cognitive work, and algorithm-designed education systems. But Latin America can and must imagine other possible futures.

The first step is to recognize that education cannot be reduced to a process of data training. Meaningful learning involves emotions, connections, stories, and contexts. Therefore, a "humanly intelligent" education is one that integrates AI in the service of creativity, empathy, and social justice. AI should not replace human intelligence, but rather expand its capacity to understand and care.

This horizon requires, as Nussbaum[15] points out, an education in moral emotions, that is, cultivating compassion and critical thinking in the face of difference. In practice, this means designing educational technologies that recognize diversity and promote cooperation, not competition. In this sense, a pedagogically fair algorithm should be able to amplify the voices that are least heard, so that learning becomes a process of symbolic and cognitive redistribution.

Visions of the future must also incorporate the ecological dimension. AI consumes enormous amounts of energy and material resources: servers, electricity, lithium. Latin America, rich in natural resources and biodiversity, faces the dilemma of providing raw materials for digital progress while suffering the environmental consequences of that same extractivist model. A humanely intelligent education must teach us to think about technology from the perspective of sustainability, promoting an ethic of caring for the planet.

Another fundamental element is the democratic governance of AI. According to Floridi[10], technological development must be guided by the principle of "distributive social benefit." This implies that advances in automation and data analysis must translate into collective well-being and not into the concentration of power. In the educational context, this takes the form of policies that guarantee open access, algorithm transparency, and citizen control of data systems.

In this sense, the region has a historic opportunity. It can combine its tradition of critical thinking, its cultural wealth, and its scientific potential to generate a Latin American pedagogy of AI. It is not a question of competing with Silicon Valley, but of offering the world an ethical and supportive alternative, an AI at the service of humanity.

Situated knowledge and Latin American epistemologies in the age of artificial intelligence

If anything characterizes Latin America, it is its ability to think from contradiction. Time and again, the region has had to learn in contexts of crisis, improvise solutions, and transform scarcity into creativity. That resilience can become a strategic advantage in the new global digital ecosystem. AI, like other technologies, does not arrive in a vacuum; it lands on pre-existing social structures, languages, memories, and inequalities. Therefore, any policy or research on AI in Latin American education must start from the recognition of situated knowledge.[16]

Such situated knowledge implies accepting that there is no universal or neutral perspective on technology. All innovation responds to specific cultural contexts, and the validity of knowledge depends on its relationship to lived experience. In this sense, Latin American education must construct its own digital epistemology, a way of thinking about AI from the global south that engages in dialogue with international technical frameworks without renouncing its critical identity.

Unlike theories imported from the North, Latin American educational thought has a long tradition of emancipatory reflection. From Freire[12] to Giroux[17], critical pedagogy has insisted that knowledge is inseparable from political action. Applied to AI, this means that algorithms must not only be auditable or transparent, but also dialogical, that is, capable of incorporating the voices of those who use them and those who are affected by them.

When educational AI is implemented without this situated perspective, it runs the risk of generating a new cognitive colonialism. Training corpora are usually composed mainly of data in English and content produced by institutions in the North. As a result, models tend to reproduce a worldview that does not reflect Latin American cultural plurality. This affects not only linguistic representation, but also the way in which educational problems, metrics of success, and proposed solutions are defined.

In response to this, several universities in the region are beginning to explore algorithmic co-design methodologies, where students, teachers, and local communities participate in defining the categories that the systems will use to classify and recommend. This approach democratizes the production of technology and turns it into a pedagogical tool in itself, so that learning how an AI model works becomes part of the curriculum.

Situated knowledge does not oppose scientific rigor; on the contrary, it expands it. It allows us to recognize the limitations of models, structural biases, and the importance of contextual interpretation. In Latin America, where cultural and socioeconomic heterogeneity is enormous, a universal educational algorithm would be an oxymoron. Each country, even each province, requires flexible frameworks that integrate its diversity.

Ethics, politics, and technological sovereignty

The ethical debate on AI tends to focus on abstract dilemmas, machine autonomy, the risk of job replacement, or data privacy, but in Latin America it takes on a much more concrete dimension: who controls the infrastructure and for what purposes?

Technological sovereignty is a condition of possibility for educational sovereignty. Without control over servers, platforms, and algorithms, the region becomes dependent on external models that do not respond to its values or priorities. Therefore, thinking about AI in ethical terms also means thinking about it in geopolitical terms.

Philosopher Hui[18] introduces the concept of cosmotechnics, which suggests that all technology embodies a particular conception of the cosmos and the relationship between humanity and nature. Applied to Latin America, this implies developing a cosmotechnics of the South, an AI that does not seek to dominate but rather to coexist with the environment, valuing reciprocity and community over competition.

Public policies must advance on three fronts:

1. Transparency and democratic governance: Educational algorithms must be auditable and subject to citizen control.
2. Regional public infrastructure: It is necessary to create sovereign, interoperable, and energy-sustainable data centers.
3. Interdisciplinary ethical training: Teachers, programmers, and decision-makers need moral and philosophical skills in addition to technical ones.

Several countries have begun to move in this direction. Argentina is promoting the *National Program for AI and Algorithmic Ethics*, Brazil has created the *Comitê de Ética em IA* (AI Ethics *Committee*), and Chile has established its *National Data Governance Committee*. Although these advances are partial, they mark a trend, as AI is conceived not only as technological innovation but also as public policy on human rights.

From an educational perspective, this translates into an ethic of care. As Noddings[19] reminds us, teaching is a relational act that implies responsibility toward others. AI must be designed

and used from this ethical standpoint, not to monitor or classify, but to accompany. Ethical-educational AI is that which expands empathy and participation, not standardization or control.

Towards a regional agenda for educational intelligence

The future of educational AI in Latin America will depend on the ability to coordinate efforts around a common agenda for regional cooperation. The challenges (digital divides, teacher training, public investment) are shared, and solutions can be enhanced if addressed collectively.

Such an agenda should include:

1. Regional applied research networks: Public universities and technology centers can share data infrastructure and open-source AI models.
2. Critical digital literacy programs: Aimed at teachers, students, and families, to understand the scope and limitations of AI.
3. Regional educational innovation funds: Finance local projects that integrate AI and situated pedagogy.
4. Latin American ethics observatories: Spaces for ongoing evaluation of the social and cultural impacts of AI.

These pillars would consolidate what de Sousa Santos[3] calls an "ecology of knowledge," the coexistence of scientific, technical, and popular knowledge without rigid hierarchies. In such an ecosystem, AI would cease to be an imported product and become a tool for cognitive emancipation.

An inspiring example comes from the RELIAE Network[12], which promotes cooperation between universities in Argentina, Uruguay, Brazil, and Mexico to develop educational AI models in Spanish and Portuguese, respecting cultural diversity. This type of coordination shows that the South can produce technology with its own identity.

Complexity, method, and critical thinking in the face of artificial intelligence

Morin[9] stated that "complex thinking is not an intellectual luxury, but a vital necessity." In the current context, where AI is redefining the frontiers of knowledge, this statement takes on new meaning. Latin America needs to think about technology from the perspective of complexity, not from the simplicity of efficiency. Understanding AI requires articulating science, humanities, and ethics, which implies recognizing that every technical advance has social and symbolic consequences.

In education, complex thinking translates into the ability to connect levels and dimensions, infrastructure with culture, algorithms with pedagogy, innovation with justice. The region has a historical advantage in this field: its tradition of interdisciplinary critical thinking, which has been nourished by European philosophy as well as indigenous, Afro-descendant, and popular epistemologies.

Thinking from a perspective of complexity implies accepting that AI is not a linear phenomenon, but rather an adaptive system that learns from data and reproduces it in new contexts. Education cannot be limited to training users of digital tools; above all, it must train reflective individuals capable of questioning the foundations of technology itself. In the words of Freire (1970), literacy is not about learning letters, but about "reading the world." In the 21st century, reading the world also means reading the algorithms that mediate it.

The educational method proposed by AI, based on constant feedback, may seem incompatible with the uncertainty that characterizes complex thinking. Evertheless, Morin[9] reminded us that "intelligence is not the elimination of uncertainty, but the lucid management of it." Teaching with AI should therefore be about teaching how to navigate uncertainty, interpret contradictory data, distinguish between correlation and causation, and be suspicious of automatic responses.

Socioeconomic and labor impact: the challenge of teaching

The advance of AI in education raises profound questions about the future of teaching. Some technocratic discourses argue that automation will reduce the need for teachers, as adaptive systems will be able to personalize teaching on a large scale. However, this view ignores the fact that teaching is much more than the transmission of information; it is accompaniment, support, and community building.

In Latin America, where the classroom fulfills an irreplaceable social function, the risk of making teaching work more precarious through indiscriminate digitization is particularly serious. The pandemic has already shown the effects of this overload, with teachers transformed into technology operators without sufficient support, facing platforms that demanded more time and energy than face-to-face classes (emergency remote education).

AI can reverse this situation if it is used to revalue the teaching profession. Learning analytics systems can free up administrative time, detect difficulties early on, and offer personalized resources. But these advantages will only be emancipatory if decisions remain in the hands of educators. In ethical terms, the principle must be clear: no algorithm can evaluate better than those who know the human context of the student.

In addition, educational AI introduces new labor inequalities. Training in digital skills and access to infrastructure vary greatly between regions and genders. A report by ECLAC[13] reveals that women represent less than 20 % of AI professionals in Latin America and that most rural teachers lack stable connectivity. Therefore, AI can deepen the gender and territorial gap if inclusive policies are not designed.

Truly equitable education requires the democratization of technological knowledge. Teacher training programs should include modules on algorithmic ethics, basic programming, and computational thinking. But also, and above all, spaces for philosophical and political reflection on the meaning of technology. Critical digital literacy is not just about knowing how to use technology, but also knowing when and why to use it.

A pedagogy of care and cooperation

If education with AI is to be truly humanistic, it must be based on a pedagogy of care. Nel Noddings[19] defines care as an ethical relationship that involves attention, commitment, and reciprocity. Teaching with AI should not mean delegating to the machine, but rather using it as a tool to care better, that is, to detect in time who needs help, offer meaningful feedback, and personalize teaching from a place of empathy.

The pedagogy of care is opposed to the logic of performance. Instead of measuring everything, it seeks to understand processes; instead of classifying, it accompanies. Latin America, with its tradition of community-based and solidarity-based education, can be a pioneer in this approach. Educational AI projects should be evaluated not only for their efficiency, but also for their ability to strengthen human bonds in the classroom.

Likewise, regional cooperation is a form of collective care. Faced with global technological concentration, countries in the South need to act as a solidarity network. Sharing open-source AI models, translating educational materials, and developing joint repositories are cooperative practices that embody the values of care. In ethical terms, each country has a responsibility to ensure that educational AI benefits not only its citizens, but the entire region.

CONCLUSION

AI is a mirror. It reflects our aspirations, our fears, and our contradictions. In Latin America, that mirror shows a region full of creative potential, but still marked by inequalities. The question is not whether we will use AI in education, but what kind of intelligence we want to cultivate.

The challenge is not to humanize machines, but to humanize ourselves through them. Truly

educational AI will be that which restores our ability to think together, to disagree, to imagine common futures. Knowledge will cease to be a commodity and return to being a shared good.

Freire[20] reminded us that "education is an act of love, therefore an act of courage." Applying this maxim to AI means developing technologies that embody the courage to educate with hope. There is no innovation without ethics, nor progress without justice. Latin America can lead the change if it turns its vulnerability into a source of wisdom and its diversity into an engine of creativity.

Ultimately, thinking in terms of machines is not surrendering to machines, but learning to dialogue with them. The intelligence we want is neither artificial nor purely human; it is relational, situated, and supportive. In short, it is all about achieving an intelligence that recognizes in each student not a piece of data, but a story; in each algorithm, an opportunity to build community; and in each educational act, a gesture of resistance against dehumanization.

When Alan Turing asked his famous question, "Can machines think?", he started a debate that is still going on. However, in the 21st century, the question seems to be reversed: Can humans continue to think critically in an era dominated by machines?

Rethinking what it means to be human does not mean rejecting technology, but rather redefining it from an ethic of limits. By automating cognitive processes, AI forces us to reconsider what makes us truly human: consciousness, empathy, the capacity for error, and/or imagination. In the words of Byung-Chul Han[21], "excessive technical positivity nullifies contemplation and turns life into permanent performance." Education, in contrast, must be a space of resistance, a place where the slow time of thought and the dignity of the word are preserved.

Educational AI can contribute to this task if it is geared towards recovering the meaning of learning as dialogue. Freire[2] conceived of education as an act of love, a conversation that humanizes. Algorithms, on their own, do not dialogue, they calculate. But they can facilitate the encounter between different types of knowledge if they are programmed from a logic of cooperation.

Therefore, rethinking the human also implies rethinking the machine. There is no absolute boundary between the two; deep learning in digital systems is inspired by human neural networks, and human thought is expanded through technological mediation. What is truly dangerous is not hybridization, but the inequality of power in its control. If algorithms remain in the hands of a few, education runs the risk of becoming an industry of prediction, not emancipation.[22]

Latin American education, with its history of resistance and its vocation for justice, can offer a different response: re-humanizing artificial intelligence. This implies open access policies, critical literacy, inclusion of indigenous languages, and continuous evaluation of ethical impacts. Rather than adapting to the machine, it is about teaching how to dialogue with it.

The future of artificial intelligence in Latin American education will depend not only on technical innovation, but also on the collective capacity to sustain an ethical horizon. As Morin[9] wrote, "the essential mission of education is to teach the human condition." In the age of algorithms, that mission takes on a renewed urgency.

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