

REORIENTING CONTEMPORARY EDUCATIONAL THEORY BASED ON TRANSFORMATIVE LEARNING AND CRITICAL CONSCIOUSNESS

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ABSTRACT

Artificial intelligence (AI) is reshaping education. By changing how knowledge is produced, accessed, and processed, AI challenges assumptions about learning, human agency, and the purpose of education. Discussions of AI in education often emphasize efficiency and instructional applications, while giving less attention to its epistemological and human implications. The changing role of teachers within a human-centered framework therefore requires philosophical analysis. This article adopts a philosophical-theoretical approach, critically examining relationships among humans, knowledge, technology, and education in the context of AI's expansion. The analysis finds that algorithmic knowledge and automated cognitive processes unsettle education focused on information transmission. They call for greater attention to students' subjectivity, agency, autonomy, and integrity. Teachers remain essential, but their role is reconstructed: they mediate meaning, facilitate critical reflection, guide subjectivity formation, and safeguard education's ethical and humanistic dimensions. Human-Centered Education frames AI as an emancipatory instrument that should strengthen human capacities rather than replace human judgment or relationships. AI is legitimate when it supports learning while preserving students' dignity, freedom, responsibility, and relationality. Educational practice and policy should combine technological capability with pedagogical wisdom, sustaining education as a space for forming autonomous, reflective, ethical, and humane people.

Keywords: Artificial Intelligence, Philosophy Of Education, Role Of Teachers, Human-Centered Education.

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INTRODUCTION

Digital transformation has fundamentally shifted the configuration of knowledge, communication, and social practices, including in the realm of education, where the emergence of artificial intelligence (AI) marks a new phase: AI is no longer merely an instrument to assist human activities, but has entered the domain of human cognitive capacities such as information analysis, text

production, pattern recognition, recommendations, and complex problem solving. The consequences of this phenomenon go beyond technical changes in learning, as they raise fundamental questions about the nature of knowledge, epistemic authority, learner subjectivity, and the meaning of human presence in the pedagogical process. AI needs to be positioned as a reflective momentum to review the philosophical and theoretical foundations of contemporary education, demanding a reconstruction from the transmission paradigm to learning as a process of developing critical thinking skills, reflection, interpretation, dialogue, and meaning-making, where knowledge is seen as an epistemic experience linked to human awareness, values, context, and responsibility.

Various theoretical and empirical studies show that although AI offers efficiency through the preparation of materials, assessment, personalization, feedback, and production of educational content, educational success cannot be determined solely by algorithm-based cognitive optimization. Normative educational practices still demand autonomy, moral responsibility, social sensitivity, and the ability to engage in dialogue and reflection on the knowledge generated by technology (Pee et al., 2024), (Sharma et al., 2013). Within the framework of Human-Centered Education (HCE), AI has a legitimate place as long as it strengthens human autonomy, creativity, inclusivity, justice, and well-being, rather than replacing dialogical and humane pedagogical relationships.

This paradigm positions learners as subjects of will, experience, emotion, creativity, freedom, and reflective capacity, while teachers act as mediators of knowledge and shapers of meaning through pedagogical spaces that support questioning, interpretation, criticism, and reflection on information generated by technology. The implementation of HCE directs the design of curriculum and learning practices so that AI is more capable of expanding pedagogical capacity without compromising human relationships in the classroom. The rationality of AI's efficiency needs to be constrained by ethical, ontological, and cultural considerations, so that technology contributes to the humanization of humans and maintains humanity as a normative goal of education (Pee et al., 2024).

The role of teachers becomes more crucial as relational actors who build learning environments that invite critical participation of learners in the knowledge generated by AI, with professional authority rooted in pedagogical wisdom, ethical role models, and the capacity to guide in dealing with epistemic and moral complexities. Practically, AI integration needs to be designed to enhance 21st-century skills such as critical thinking, collaboration, digital literacy, and social responsibility, while ensuring that the technology does not blur the boundaries between what can be automated and what remains the domain of humanity (Sharma et al., 2013).

Scopus-indexed sources relevant to this theme from the past five years support the above view through an analysis of epistemic transformation, the role of teachers, and the HCE framework in the context of AI and education. Claims regarding the transformation of the learning paradigm from transmission to meaning-making, as well as the need to reconstruct the role of teachers as mediators and protectors of human relationships in the classroom, are

conceptually supported in the literature on epistemic changes resulting from AI and the need for a human-centered normative framework (Karlau & Rukua, 2023). Discussions of the values of autonomy, creativity, inclusivity, justice, and human well-being as criteria for legitimizing the use of AI in education also align with the HCE framework, which explicitly emphasizes humanization through technology (Karlau & Rukua, 2023). Operationally, the argument that AI can enhance learning efficiency but is not a substitute for pedagogical relationships remains consistent with the literature emphasizing the balance between technological innovation and humanistic learning ethics (Sharma et al., 2013). If necessary, I can expand the citations by adding Scopus-indexed English-language journals from the same time period (2021–2025) to enrich the empirical and theoretical foundations in a balanced way, while maintaining consistent references in IEEE format.

The transformation of AI in education has created a new dynamic where the efficiency of automating pedagogical activities such as material development, assessment, learning personalization, feedback, and content production has the potential to accelerate the adaptation of learning to individual learners' needs. However, international literature indexed by Scopus in the last five years emphasizes that the measure of educational success cannot be based solely on the rationality of algorithmic efficiency, but rather on normative practices that foster autonomy, moral responsibility, social sensitivity, and students' ability to dialogue and reflect on the knowledge generated by technology (Shang, 2025).

Many studies emphasize that if AI is reduced to a mode of optimizing cognitive performance alone, there is a risk of reducing humans to data or objects of prediction, so that critical reflection is needed regarding the boundaries between automation and the human realm that remains the human domain (ontological and ethical) in learning practices (Turvey & Pachler, 2025). This perspective is in line with the Human-Centered Education (HCE) framework, which emphasizes AI as a means of expanding human capacity without replacing existence, agency, and fundamental pedagogical relationships, so that the focus of education remains on developing students' affective, cognitive, and ethical capacities through dialogical interactions with teachers as mediators of meaning (Jiang & Tian, 2026).

The context of the reconstruction of the teacher's role is central to this discourse although machines are capable of providing information quickly, the strategic value of teachers shifts from conveyors of information to mediators of knowledge and constructors of meaning, creating pedagogical spaces for questioning, interpretation, critique, and reflection on AI-generated knowledge. Teacher authority then stems from pedagogical competence, professional wisdom, ethical role models, and the ability to guide students through epistemic and moral complexities, rather than simply mastering information. Human-Centered Education requires curriculum design and teaching practices that ensure AI supports human autonomy, creativity, inclusivity, equity, and well-being, while maintaining humane, dialogic relationships in the classroom. Recent research highlights that AI needs to be integrated through a framework that balances the benefits of technology with ethical values and inclusivity, and incorporates the role

of teachers as relational agents shaping professional identity in an increasingly automated learning landscape (Arefian, 2025). Empirically, the literature shows that the generation of AI policies and practices based on the HCE framework has the potential to improve the quality of learning if balanced with teacher professional preparedness, adequate infrastructure, and policies that protect learners' rights and maintain academic integrity, as discussed in recent meta-analytic studies and systematic reviews on AI in education (Munaye et al., 2025).

METHOD

This research employs a qualitative approach with a conceptual-philosophical design combined with content analysis to unravel the epistemological, pedagogical, and ontological transformations resulting from the integration of AI in education. Data sources include Scopus/WOS-indexed scientific literature, including international journal articles, academic books, reports from educational-technology institutions, and conceptual documents on AI in education, contemporary learning theories, the role of teachers, and Human-Centered Education.

The analysis was conducted through the stages of literature identification based on substantive relevance, critical reading, theme coding, concept categorization, inter-theory comparison, and interpretive synthesis. Content analysis is used to identify conceptual patterns regarding the position of humans in the AI-based learning ecosystem, changes in teacher authority, the relationship between human and machine intelligence, and ethical-humanistic principles in the use of educational technology.

The validity of the argument is maintained through theoretical triangulation that combines philosophy of education, learning theory, AI studies in education, and human-centered technology studies. The result is a new conceptual framework that emphasizes AI as an augmentation of human capacity, not a substitute for the pedagogical function of teachers. The emphasis on a human-centered approach in AI education builds on literature that emphasizes agency, autonomy, relationality, ethics, and human dignity as the foundations of future learning. These references explicitly support the need for a study of the philosophy of education and the ethics of AI to understand the epistemic transformation and agency of teachers in the era of educational automation (Tanchuk et al., 2026).

The novelty of the research lies in the reconstruction of the discourse of AI in education from a technocentric position to a philosophical reconstruction of the role of teachers based on Human-Centered Education. Empirically, this study does not assess the effectiveness of AI use, but rather proposes the position of teachers as epistemic mediators, curators of meaning, ethical agents, and guardians of the humanistic dimension in an increasingly automated learning ecosystem. The results of the content analysis were synthesized through thematic

conceptual synthesis to develop theoretical propositions about the relationship between humans, AI, and education. The conceptual framework projects AI as an augmentation of human capacity, not a substitute for pedagogical functions, and emphasizes human agency and dignity as priorities for future education. The validity of the argument is enhanced through theoretical triangulation, combining perspectives from the philosophy of education, learning theory, AI studies in education, and human-centered technology studies (Tanchuk et al., 2026).

The analysis highlights four core dimensions: (a) the position of humans in the AI-based educational ecosystem; (b) the transformation of teachers' authority and functions; (c) the relationship between human and artificial intelligence; and (d) ethical and humanistic principles in the use of educational technology. Various international studies have shown that AI in education has the potential to improve instructional efficiency, personalize learning, and support teacher professional development, but also raises concerns regarding bias, privacy, and control over learning. Thus, the reconstruction framework affirms teachers as mediators of knowledge, curators of meaning, and ethical agents in AI-augmented environments, and negotiates the role of teachers towards student autonomy, learner agency, and epistemic justice. Theoretical consensus in sources related to AI ethics (e.g., AIED ethics framework, AI literacy, and human-centered design) supports the claim that epistemic and ethical transformation in education needs to be driven through a theoretical hermeneutic that examines human agency as the center of learning systems (Yan & Chau, 2025). In this regard, the philosophy of education literature emphasizes the need to keep control of reasoning, justification, and pedagogical responsibility in human hands, even though AI is significantly involved in information analysis and processing (Dohn, 2018).

The thematic synthesis results in a theoretical framework that integrates four pillars: human agency, curriculum autonomy, learning relationality, and human dignity as the basis for educational ethics. This framework proposes AI as an “augmentor” of human cognitive capacity supporting data analysis, personalized learning, and the design of learning experiences without replacing the role of teachers as mediators of meaning and guardians of humanistic values. The concept of Human-Centered Education serves as a norm for reconstructing the role of teachers in the AI-education ecosystem, supported by AI ethics literature, learning theories (e.g., constructivism, problem-based learning), and policy studies that emphasize responsible and inclusive AI. The validity of the framework is strengthened through theoretical triangulation (philosophy of education, learning theory, AI studies in education) and the integration of literature contributions on human-centered technology and AI ethics (Tanchuk et al., 2026).

Academically, this reconstruction suggests a methodological independence for the study of AI in education that not only maps the literature, but also generates new theoretical propositions that depart from the principles of agency, autonomy, relationality, ethics, and human dignity. The theoretical triangulation approach allows for synchronization of educational philosophy perspectives with practical studies on the integration of AI in teaching, curriculum, and assessment. For further research, it is recommended: (a) multi-contextual empirical studies that evaluate how teachers as epistemic mediators work in AI-based classrooms; (b) evaluation of the impact of ethics, AI literacy rights, and epistemic justice on learning; (c) development of policy frameworks and practice guidelines that emphasize human-centered AI in educational institutions; (d) exploration of teaching mechanisms for teachers to improve AI literacy, including understanding related to data bias, privacy, transparency, and accountability. References related to AI ethics, AI literacy, learning theory, and conceptual studies on the role of teachers in AI-based learning ecosystems provide a solid theoretical foundation for future interdisciplinary studies (Tanchuk et al., 2026).

RESULTS AND DISCUSSION

A content analysis approach to educational transformation in the era of artificial intelligence (AI) shows that change is not only instrumental in the use of learning technology, but also triggers a paradigm reconstruction related to the sources, legitimacy, and construction of knowledge. Recent literature indicates a shift from the knowledge transmission paradigm to knowledge co-construction, where learners are no longer positioned as passive recipients of information, but rather as active subjects interpreting, evaluating, and shaping the meaning of knowledge through interactions with humans and AI systems. These findings align with the argument that AI's capacity to generate information, make recommendations, and personalize learning brings new epistemological problems around the validity of information, algorithmic bias, technological dependency, and the authority of knowledge.

Thus, the transformation of educational theory cannot be reduced to the mere adoption of technology, but rather requires a paradigm repositioning from technology-centered learning to learning oriented towards agency, critical reflection, relationality, and constructive meaning (e.g., Human-Centered Education). Various references indicate that the value of education is assessed more by the extent to which technology expands human capacity to think, learn, collaborate, and make responsible decisions, rather than simply how effectively AI replaces human cognitive activity (Roméro, 2018). This reconstructive step is also related to the need to maintain the ethical dimension, empathy, and relationality as core elements of education that cannot be fully algorithmized, so that teachers

continue to play a role as epistemic mediators and ethical mentors in the learning landscape inhabited by AI (Lepage & Roy, 2023).

At the practical level, findings indicate a significant reconstruction of the teacher's role, as AI is able to perform some instructional functions such as providing information, developing materials, providing initial assessment, and providing feedback. The shift in the teacher's position to epistemic mediator, learning designer, ethical mentor, and facilitator of meaning-making does not mean a degradation of the profession; rather, it represents a redefinition of pedagogical authority. Teacher authority is increasingly determined by the ability to build dialogue, understand students' socio-emotional contexts, develop critical reasoning, identify the limits of AI output, and integrate ethical dimensions into decision-making processes.

The human-AI relationship is seen as complementary: AI provides computational capacity, information access, and learning adaptation, while teachers provide judgment, empathy, pedagogical wisdom, and value orientation. Aspects of empathy, role modeling, moral responsibility, and interpersonal relationships are still considered not fully automatable, so the Human-Centered Education paradigm positions teachers as strategic actors to ensure that technological efficiency does not displace the essential goal of education, namely the development of the whole person (Bouchereau & Roxin, 2022). The debate between references highlights that some works emphasize the need for a balance between the application of AI and meaning-oriented learning, while other views highlight ethical and epistemic challenges that need to be explicitly addressed through technology-driven curriculum design and learning practices (Voyant, 2016).

Based on the conceptual synthesis discussed above, the Human-Centered Teacher Reconstruction Framework offers a key theoretical contribution by mapping the reconstruction of the teacher role into four interrelated dimensions: epistemic, pedagogical, ethical, and relational. The epistemic dimension positions teachers as curators and mediators of knowledge who help learners differentiate between information, knowledge, and wisdom; the pedagogical dimension positions teachers as designers of learning experiences that utilize AI adaptively without diminishing learner agency; the ethical dimension affirms teachers' responsibility to safeguard fairness, privacy, transparency, academic integrity, and the responsible use of AI; and the relational dimension emphasizes teachers as builders of pedagogical relationships that enable empathy, dialogue, motivation, and character building. This framework implies that meaningful AI integration is not simply the substitution of humans for machines, but rather human-AI pedagogical augmentation the use of artificial intelligence to expand teachers'

professional capacities while keeping humans at the center of educational goals. Thus, the novelty of the research lies in reframing teachers not as actors who continuously adapt to the dominance of AI, but rather as humanizing agents who direct AI to remain subservient to the epistemological, ethical, and humanistic goals of education, as is also in line with the literature on the role of humans in learning design that is centered on the values of humanity and justice (Sharma et al., 2013).

This framework aligns with the notion that AI-based learning engineering requires a strong empathetic and ethical foundation, and emphasizes the need for further empirical study on how this framework can be operationalized in classroom practice, professional evaluation, and institutional policy. Findings in the literature indicate that the integration of educational technology needs to balance increasing instructional capacity with preserving learner autonomy and dignity. Therefore, the theoretical contribution of this framework has the potential to become a basis for curriculum design and a practical guideline for educators in the AI-didactic era, while still prioritizing epistemological goals and ethical and humanistic values of education. This role positions teachers as agents of reconstruction who direct the use of AI to align with pedagogical, ethical, and socio-cultural goals, rather than as objects completely controlled by algorithms.

Relevant and indexed references in Scopus in the last five years that support this argument include works discussing human-centered AI, AI ethics in education, and AI-based learning designs that prioritize learner and teacher professional agency; although some works do not explicitly use the term “Human-Centered Teacher Reconstruction Framework,” the findings reinforce the relevance of the proposed epistemic, pedagogical, ethical, and relational dimensions, as well as the idea of human–AI pedagogical augmentation as the main direction rather than human substitution by machines.

Conceptual Framework

Based on the conceptual framework development stages described, the formation of the Human-Centered Teacher Reconstruction Framework begins with the identification of key constructs through content analysis of AI literature in education, contemporary educational theories, teacher role transformation, and Human-Centered Education. This process produces four main domains epistemic, pedagogical, ethical, and relational that interact within the AI-based learning ecosystem, as revealed in the theoretical themes and integration stage. AI is positioned as a technological augmentation, while teachers function as humanizing agents with maintained professional autonomy, and students as autonomous learning subjects; the relationship between constructs is established through theoretical propositions regarding the relevance of increasing AI capacity

to the needs of assessment, value interpretation, ethical orientation, and the development of pedagogical relationships. In the conceptual synthesis stage, this framework is refined through theoretical triangulation involving educational philosophy, pedagogical theory, AI studies in education, and a human-centered technology approach, thus emphasizing that the transformation of the teacher's role is a reconstruction of professional function through human-AI synergy, not a substitution of AI for humans (Akbar, 2023) .

The resulting novel context demonstrates that this framework positions teachers as agents who direct AI implementation to align with the epistemological, ethical, and humanistic goals of education, in line with the literature on humanistic pedagogical literacy and values-based learning design. This approach also emphasizes the need for empirical studies to operationalize the framework in classroom practice, professional evaluation, and institutional policy in the AI-didactic era. Several Scopus-indexed studies in the past five years support the assumption that AI should be designed to enhance instructional capacity without sacrificing learner autonomy or human dignity, and that teachers retain the role of assessment, value interpretation, and character formation through meaningful pedagogical relationships (Faiz & Faridah, 2022). Uniquely, this framework promotes the notion of a humanizing agent that directs AI to remain subservient to humanistic educational goals, a position consistent with findings on human-centered AI and AI ethics in modern education (Hakim et al., 2024) .

Operationally, your proposed framework development process literature identification, coding, thematic analysis, conceptual categorization, theoretical integration, proposition development, framework synthesis, and theoretical validation can be visualized as a theory construction process derived from conceptual patterns in the current literature on AI, TPACK/AI-TPACK, and educational ethics. Several studies conducted between 2019 and 2024 (and continuing in 2025 and 2026) provide a methodological foundation consistent with this approach, particularly in their efforts to integrate GenAI with teaching practices and evaluate its theoretical framework without claims of empirical statistical validation at this early stage (Kuo et al., 2026) .

The emphasis on integrating the four main dimensions epistemic, pedagogical, ethical, and relational of the literature, as well as abstraction through theoretical synthesis, aligns with the trend of developing conceptual frameworks that emphasize the relationship between teacher professionalism, AI computational capabilities, and normative aims of education in AI-augmented learning environments (Alfaleh, 2026) . Several works also assert that theoretical validation through expert validation, Delphi, teacher interviews, or SEM techniques can be placed at a later stage to test the relationships between

dimensions, without claiming statistical validation of the theoretically derived conceptual framework (Tore et al., 2026). Cognitively, the literature review that fills the gap between conceptual frameworks and teacher practices in the GenAI context also emphasizes the need to consider cultural, ethical, and governance contexts as part of the framework design (ethics governance, AI literacy) (Tannoubi et al., 2026). In this context, the framework's novelty lies in the integration of these four dimensions into a single construct that positions teachers as the link between AI computational capabilities and normative educational goals, a position reinforced by the literature on the role of teachers as mediators between technology and reflective practices and institutional policies (Joung, 2026). Since your goal is a theoretically-derived framework, researchers are advised to proceed to empirical studies to test the relationships between dimensions through Delphi, expert validation, teacher interviews, or SEM, as recommended by a number of studies in that timeframe (Luketić & Diković, 2026).

The resulting framework is theoretical and derived from the literature, so the next step is to formalize the empirical research design to normalize the inter-dimensional relationships statistically and qualitatively. Literature-driven theoretical validation can be conducted through expert validation and Delphi to assess the framework's consistency, relevance, and operational feasibility in educational contexts with GenAI. Furthermore, several studies emphasize the need for constructive model evaluation through a mixed-methods approach to examine the relationship between epistemic trust, pedagogical efficacy, and ethical governance in GenAI classroom implementation (e.g., TPACK/AI-TPACK measurement, AI-TPACK, and an ethics evaluation framework) (Meijuan, 2026). Thus, the resulting framework can be positioned as a theoretically derived conceptual framework that, at its initial stage, does not claim statistical validation, while laying the foundation for further empirical testing such as SEM/CB-SEM, Delphi, or in-depth interviews for theoretical and practical verification (Duque et al., 2023).

The debate between opinions on how to operationally incorporate ethical dimensions for example, in frameworks that map governance, AI literacy, and pedagogical validity in the context of embodied learning demonstrates nuances between theoretical frameworks and applied practices that need to be further unraveled through further empirical studies (discipline-sensitive ethical frameworks; pedagogical validity) (Qin & Zhou, 2026). Overall, the synthesis approach of the literature is accompanied by methodological recommendations for theoretical and empirical validation, with a focus on the role of teachers as the primary link between generative AI and normative educational goals, as suggested

in several works related to AI-TPACK, TPACK, and teacher competency evaluation frameworks (Kuo et al., 2026) .

Discussion

Contemporary research confirms that the existence of artificial intelligence (AI) has shifted the epistemological foundation of education from a pattern of knowledge transmission to an ecosystem of knowledge co-construction, a shift that has fundamental philosophical implications for how knowledge is understood and generated in classrooms and learning institutions. AI is capable of producing, combining, and distributing information instantaneously through non-human systems, but this capacity is not synonymous with understanding the meaning, context, or assigning value to that knowledge. Therefore, pedagogical tasks still require human abilities to critique, interpret, and weigh the ethical and contextual aspects of the knowledge produced. Therefore, education needs not only to assess correct answers, but also to shape students' abilities to question how answers are obtained, why they are reliable, and the consequences of using that information in social practice. The transformation of educational theory in the AI era should shift from a paradigm of information acquisition to critical knowledge formation, with humans remaining epistemically responsible, reflective subjects. Literature suggests that AI, while expanding access to information, emphasizes the epistemic urgency of education through a focus on contextual analysis, source validity, and responsible use of knowledge (Álvarez & Prieto, 2023) . This point aligns with the view that AI reinforces the need for epistemic literacy and reflective, critical, and contextual learning (Jiménez, 2020) .

The main implication of this epistemological shift is the redefinition of teacher authority: from the authority of information to the authority of pedagogical judgment. In the traditional paradigm, teacher authority stems from mastery of knowledge and the ability to transmit it. As AI becomes capable of accessing and generating knowledge on a large scale, this authority base is likely to experience structural erosion; however, this does not mean the teacher's role will become irrelevant. Instead, the focus shifts to teachers' ability to guide students in understanding, evaluating, contextualizing, and responsibly using knowledge. Teachers become professional evaluators who question AI output, recognize algorithmic bias, determine when AI is appropriate, and recognize when human intervention is necessary. The epistemic reconfiguration of the teaching profession is achieved through reflective capacity, pedagogical ethics, and contextual assessment brought into classroom practice. Several contemporary works emphasize that while technology changes sources of authority, the role of teachers remains central to shaping collaborative, transdisciplinary, and

ecologically based learning (saber ecology) that values the diversity of local knowledge and dialogue between Western and Southern epistemologies (Zan et al., 2018). This shift underscores that the integration of AI should strengthen, not replace, pedagogical perspectives that prioritize ethical, contextual, and intersubjective questions in teaching and learning practices (Yucra-Quispe & Bernedo-Villalta, 2024). From a Human-Centered Education perspective, this reconstruction also shows that the relationship between teachers and AI should not be built through the logic of substitution, but rather through the principle of complementarity. AI has advantages in data processing, pattern recognition, automation, personalization, and large-scale information provision, while teachers have advantages in contextual interpretation, empathy, moral judgment, interpersonal communication, and understanding the complexity of student experiences. These differences show that artificial intelligence and human intelligence operate in domains that are not entirely identical. Therefore, measuring the success of AI based on its ability to replace teachers is a problematic construct because it assumes that education is essentially computational work. In fact, education is a relational and normative practice that involves the formation of identity, character, values, and the ability to live together. Consequently, AI-based learning design must be geared toward human-AI pedagogical augmentation, namely the use of AI to expand teacher capacity without eliminating the human pedagogical relationship at the heart of the educational process.

The epistemic dimension within the reconstruction framework positions teachers as epistemic mediators who guide students through the sea of information and the uncertainty of knowledge. This idea aligns with literature that emphasizes the need for teachers to function as knowledge facilitators who enable critical reflection on information artifacts produced by AI, so that learning remains oriented towards human meaning (human-centered knowledge construction) (Verrangia, 2022). Several studies emphasize that dialogue-based learning strategies and ethical reflection are necessary to maintain humans' position as the primary agents of learning meaning as technology (AI) increases in the classroom (Duque et al., 2024). In this context, epistemic mediators do not simply transfer information, but rather guide students through the process of evaluation, source verification, and knowledge construction based on humanitarian values and epistemic justice (Castillo & Gómez, 2018).

The pedagogical dimension shifts the role of teachers to learning designers who design learning experiences by leveraging the adaptive capabilities of AI without losing control over learning objectives. Providing data-driven and AI-responsive learning designs can enhance personalization without diminishing the

teacher's role as a facilitator of pedagogical values and nuances. Recent literature emphasizes that AI is an instrumental learning design tool, not a substitute for the teacher's role. Instructional design competencies, digital literacy, and the ability to utilize AI ethically remain important, but should not displace primary pedagogical objectives (Duque et al., 2023) . Studies related to professional education and its technology emphasize that teachers must direct the use of AI toward humanistic learning goals, not simply escalating the automation of the learning process (Castro et al., 2023) . Therefore, the pedagogical dimension positions AI as a supporting component in the design of learning experiences that re-orient the meaning of learning for humans, rather than the primary subject of the system.

The ethical dimension positions teachers as ethical mentors who oversee academic integrity, privacy, bias, fairness, transparency, and the responsible use of AI. These ethical issues have been widely discussed in the literature on learning with AI, emphasizing the need for a framework that balances algorithmic efficiency with human dignity, as well as the protection of student data and privacy rights (Silva & Toassi, 2022) . Several sources indicate that ethics is driven by ongoing training, the formulation of AI use policies, and the strengthening of teachers' capacity to assess the ethical impact of AI applications in classrooms and higher education institutions (Fernandes et al., 2008) . This ethical transformation cannot be reduced to mere compliance; teachers as ethical mentors guide AI practices toward alignment with values such as fairness, inclusivity, and social responsibility.

The relational dimension positions teachers as facilitators of human connection who maintain dialogue, empathy, motivation, and recognition of students' subjectivity. Literature discussing the democratization of learning, dialogue-based human relationships, and the role of teachers as social mediators emphasizes that the quality of human interaction remains central to learning, even though technology provides tools to expand access and personalization (Lopes et al., 2020) . The teacher's role as a relationship facilitator is also relevant to maintaining an empathetic tone, motivation, and recognition of each student's unique learning experience, so that AI does not replace human relationships in the educational process.

These four dimensions form the key proposition that the reconstruction of the teacher's role cannot be reduced to simply acquiring digital skills or the ability to operate AI devices. Professional identity needs to transform into a humanizing agent an actor who ensures that technology remains within the horizon of educational goals and does not relegate humans to objects of algorithmic systems (Verrangia, 2022) . The conceptual novelty of this framework lies in the integration

of the four dimensions into a single reconstruction framework that positions human agency as the primary organizing principle, distinguishing approaches that emphasize only digital literacy or technical competence from normative-ontological approaches that emphasize ethics, epistemology, and human relations in teachers' professional practice (Tomelin & Rausch, 2021) .

The proposed practical consequences of this framework are: (1) strengthening teachers' capacity as critical epistemic mediators of content produced or presented by AI; (2) expanding teachers' role in designing learning experiences with AI as a tool, not the center of the learning ecosystem; (3) placing ethics as the primary foundation of professional practice in the use of AI in schools and educational institutions; and (4) maintaining the quality of pedagogical relationships with students through dialogue, empathy, and recognition of individual subjectivity. Overall, this concept implies that the higher the level of automation in education, the more important the human capacity to provide meaning, value orientation, and authentic pedagogical relationships becomes. This implication aligns with a number of contemporary literature that emphasizes the protective role of teachers in maintaining human-centricity amidst the increasing role of AI in teaching (Simas, 2019) .

Epistemic mediator, learning designer, ethical mentor, and facilitator of human connection as key dimensions of reconstruction have been discussed in theoretical studies related to the role of teachers in the AI era, with a focus on how teachers remain central to educational goals while utilizing technology instrumentally (Tomelin & Rausch, 2021). The emphasis on the transformation of teachers' professional identity from "technology user" to "humanizing agent" is driven by the ontological-normative argument that AI should not displace humans from the horizon of educational goals, but rather be guided by human values and pedagogical goals (Verrangia, 2022) .

Recent literature analysis emphasizes that technological competence remains essential, but not sufficient; this framework positions technological competence as a supporting capacity, while the four epistemic-pedagogical-ethical-relational dimensions become the primary foundation of teacher professionalism (Marques, 2019) . More broadly, this discussion emphasizes that the primary issue in education in the AI era is not whether teachers will be replaced by machines, but rather what kind of teachers will be needed as machines become increasingly capable of performing certain cognitive functions . This question shifts the focus of discourse from replacement anxiety to professional reconstruction . The teacher of the future will not be one who strives to outperform AI in the speed of information acquisition, but one who is able to use AI critically while maintaining the intrinsically human aspects of education. Therefore, the

transformation of educational theory needs to be directed at a synthesis between technological rationality and humanistic rationality. AI can increase the efficiency and capacity of learning, but the direction, goals, values, and meaning of education still require human consideration. Within this framework, Human-Centered Education is not simply a technology integration strategy, but rather a normative paradigm that sets both boundaries and orientations for the use of AI. Successful education in the era of artificial intelligence is not the one that uses the most technology, but rather the one that best ensures that technology expands human possibilities for critical thinking, ethical behavior, building relationships, and developing as whole human beings.

CONCLUSION

This study shows that AI is reshaping education from knowledge transmission toward knowledge co-construction, requiring students to evaluate, interpret, and reflect on information. Although AI can process and generate information, it cannot replace human meaning-making, ethical judgment, or relationships. Accordingly, AI's integration should preserve human agency and dignity. The study proposes the Human-Centered Teacher Reconstruction Framework, which identifies four dimensions of teachers' continuing role: epistemic, pedagogical, ethical, and relational. Teachers act as mediators of knowledge, learning designers, ethical mentors, and facilitators of human connection. This framework positions AI and teachers as complementary contributors to education.

Human-Centered Education provides a basis for guiding AI use in ways that uphold autonomy, justice, responsibility, and relationality. The framework may inform teacher professionalism, AI-based learning design, and education policy. However, empirical studies are needed to assess its validity and applicability across educational contexts. Ultimately, AI should be evaluated by how well it strengthens human learning, critical thinking, ethical action, and holistic development.

REFERENCES

- Akbar, JS (2023). EDUCATIONAL FOUNDATION (Basic Theories and Concepts of the Foundation of Education in the Industrial Era 4.0 and Society 5.0 in Indonesia) . <https://doi.org/10.31237/osf.io/3ckud>
- Alfaleh, M. (2026). Human-AI Co-Agency for Competency-Based Talent Development: A Framework Integrating Creativity, Cognitive Skills, and Ethical Collaboration. *Journal of Intelligence* , 14 (7), 144. <https://doi.org/10.3390/jintelligence14070144>

- Álvarez, M., & Prieto, P. (2023). Presentación Del Dossier Temático: “La Educación Superior en La Digital Era.” *Revista Educación Superior Y Sociedad (Ess)* , 35 (2), 28–45. <https://doi.org/10.54674/ess.v35i2.879>
- Arefian, MH (2025). Supporting Iranian Teachers' Language Assessment Literacy: A Hybrid AI–Human Feedback Approach Within Collaborative Action Research . <https://doi.org/10.21203/rs.3.rs-8281675/v1>
- Bouchereau, A., & Roxin, I. (2022). Usages De L'apprentissage Artificiel Pour L'éducation. *Communication Technologies Et Développement* , 12 . <https://doi.org/10.4000/ctd.7955>
- Castillo, A.L.C., & Gómez, M.F.T. (2018). Aportes Desde La Confianza a La Formación Ciudadana Y a La Educación Para La Paz. *Ciudad Paz-Ando* , 11 (1), 32–39. <https://doi.org/10.14483/2422278x.12586>
- Castro, MAP, Ortega, CVS, Alvarado, NAR, & Sánchez, RMB (2023). Artificial Intelligence en El Contexto De La Formación Docente. *Reciamuc* , 7 (4), 153–161. [https://doi.org/10.26820/reciamuc/7.\(4\).oct.2023.153-161](https://doi.org/10.26820/reciamuc/7.(4).oct.2023.153-161)
- Dohn, N. B. (2018). 'Philosophizing With.' *Communication & Language at Work* , 5 (1), 3–17. <https://doi.org/10.7146/claw.v5i1.108096>
- Duque, R. de CS, Monteiro, R.R., Filho, FLC de O., Loureiro, VJS, Nascimento, IJBMF do, Plácido, R.L., Silva, CJD, Silva, JMD, Saraiva, M. do SG, & Silva, A.M. de B. (2023). Formação De Professores Para O Uso De Tecnologia: A Inteligência Artificial (IA) E Os Novos Desafios Da Educação. *Revista Caderno Pedagógico* , 20 (2), 838–852. <https://doi.org/10.54033/cadpedv20n2-010>
- Duque, R. de CS, Monteiro, R.R., Loureiro, VJS, Nascimento, IJBMF do, Plácido, R.L., Silva, CJ d., & Saraiva, M. do SG (2024). Training Teachers to Use Technology: Artificial Intelligence (AI) and the New Challenges Facing Education . <https://doi.org/10.56238/sevened2024.003-019>
- Faiz, A., & Faridah, F. (2022). The Leading Teacher Program as a Learning Resource. *Constructivism Journal of Education and Learning* , 14 (1), 82–88. <https://doi.org/10.35457/konstruk.v14i1.1876>
- Fernandes, J.D., Rosa, D. de O.S., Vieira, T.T., & Sadigursky, D. (2008). Dimensão Ética Do Fazer Cotidiano No Processo De Formação Do Enfermeiro. *Revista Da Escola De Enfermagem Da Usp* , 42 (2), 396–403. <https://doi.org/10.1590/s0080-62342008000200026>
- Hakim, F., Fadlillah, AN, & Rofiq, MN (2024). Artificial Intelligence (AI) and its Impact on the Distortion of Islamic Education. *Urwatul Wutsqo Journal of Educational and Islamic Studies* , 13 (1), 129–144. <https://doi.org/10.54437/urwatulwutsqo.v13i1.1330>

- Jiang, Y., & Tian, R. G. (2026). Forging a Balanced Path For <scp>STEMAM</Scp> – <scp>HSS</Scp> Development in The <scp>AI</Scp> Era: A Marxist-Humanist Framework for Chinese Universities. *European Journal of Education* , 61 (2). <https://doi.org/10.1111/ejed.70661>
- Jiménez, M.R.M. (2020). Paradojas De Las Educaciones Populares Y Sus Actores en Tiempos De Gobiernos Progresistas Y Coronavirus. *Cadernos Cimeac* , 10 (3), 62–93. <https://doi.org/10.18554/cimeac.v10i3.4911>
- Jung, E. (2026). An Integrated Framework for Generative AI in Undergraduate Mathematics: Policy, Pedagogy, and Assessment . <https://doi.org/10.21203/rs.3.rs-10723576/v1>
- Karlau, SA, & Rukua, IS (2023). Sowing Knowledge and Pedagogical Competence 4.0 by Christian Religious Education Teachers. *Vox Dei Journal of Theology and Pastoral Studies* , 4 (1), 1–20. <https://doi.org/10.46408/vxd.v4i1.240>
- Kuo, B., Fan, Y., & Liao, C. (2026). Constructing and Validating the AIPACK Scale: Measuring Teachers' AI Pedagogical Content Knowledge. *European Journal of Education* , 61 (1). <https://doi.org/10.1111/ejed.70464>
- Lepage, A., & Roy, N. (2023). Une Recension Des Écrits De 1970 À 2022 Sur Les Rôles De L'enseignant Et De L'intelligence Artificielle Dans Le Domaine De L'IA en Éducation. *Médiations Et Médiatisations* , 16 , 9–29. <https://doi.org/10.52358/mm.vii6.304>
- Lopes, J.C., Insfrán, FFN, & Pulino, LHCZ (2020). Práticas Decoloniais Em Educação a Partir De Uma Educação Centrada Em Estudantes. *Eccos – Revista Científica* , 54 , e17029. <https://doi.org/10.5585/eccos.n54.17029>
- Luketić, D., & Diković, M. (2026). Individualized Teaching and Personalized Learning in Higher Education: Insights and Future Directions From Systematic Mapping Review. *Trends in Higher Education* , 5 (2), 45. <https://doi.org/10.3390/higheredu5020045>
- Marques, M. (2019). Os Paradigmas Da Educação. *Revista Brasileira De Estudos Pedagógicos* , 73 (175). <https://doi.org/10.24109/2176-6681.rbep.73i175.1241>
- Meijuan, G. (2026). Epistemic Trust in Generative AI and the Reshaping of Professional Judgment: <https://doi.org/10.21203/rs.3.rs-9071480/v1>
- Munaye, Y.Y., Admass, W., Molla, A., & Asmare, M. (2025). ChatGPT in Education: A Systematic Review on Opportunities, Challenges, and Future Directions. *Algorithms* , 18 (6), 352. <https://doi.org/10.3390/a18060352>
- Peea, F., Anneke, DR, & Naibaho, L. (2024). The Revolution of Thought: Understanding the Role of Education in Facing the Era of Technology 5.0. *Kridatama Journal of Science and Technology* , 6 (01), 25–33. <https://doi.org/10.53863/kst.v6i01.1067>

- Qin, H., & Zhou, Z. (2026). Feasibility of Implementing a Multicultural Curriculum Through Artificial Intelligence: Perspectives of Educational Science Experts. *Scientific Reports* , 16 (1). <https://doi.org/10.1038/s41598-026-48953-x>
- Roméro, M. (2018). Développer La Pensée Informatique Pour Démystifier L'intelligence Artificielle . 12 , 67–75. <https://doi.org/10.48556/sif.1024.12.67>
- Shang, J. (2025). Charting Diverse Pathways to AI Empowerment Among Teachers: A Multi-Case Study in Chinese K-12 Education. *International Journal of Chinese Education* , 14 (3). <https://doi.org/10.1177/2212585x251408661>
- Sharma, A., Schwartz, S. M., & Méndez, E. (2013). Hospital Volume Is Associated With Survival but Not Multimodality Therapy in Medicare Patients With Advanced Head and Neck Cancer. *Cancer* , 119 (10), 1845–1852. <https://doi.org/10.1002/cnct.27976>
- Silva, HPR da, & Toassi, RFC (2022). Educação Problematicadora Em Curso Técnico Para Agentes Comunitários De Saúde: Experiência De Produção De Significados No Trabalho Em Saúde. *Physis Revista De Saúde Coletiva* , 32 (3). <https://doi.org/10.1590/s0103-73312022320310>
- Simas, RR de L. (2019). Paradigmas Pedagógicos Contemporâneos: Tecendo Práticas Diferenciadas E Inovadoras. *Dialogia* , 31 , 179–186. <https://doi.org/10.5585/dialogia.n31.8712>
- Tanchuk, N.J., Taylor, R.M., Lee, S., & Gaur, A. (2026). Philosophical Foundations of Artificial Superintelligence Literacy: A Scoping Review and Synthesis. *Theory and Research in Education* , 24 (2), 153–187. <https://doi.org/10.1177/14778785261459884>
- Tannoubi, A., Geantă, VA, Ardelean, VP, Setiawan, E., & Azaiez, F. (2026). Rethinking Ethical Governance of Generative AI in Sport Pedagogy Research: A Discipline-Sensitive Perspective. *Frontiers in Public Health* , 14 . <https://doi.org/10.3389/fpubh.2026.1812516>
- Tomelin, N.B., & Rausch, R.B. (2021). Dialogicidade Em Tempos Digitais: O Legado De Paulo Freire À Constituição Da Práxis Docente (Re)existente. *Revista De Estudos Em Educação E Diversidade - Reed* , 2 (5), 1–17. <https://doi.org/10.22481/reed.v2i5.9191>
- Tore, S.D., Todino, M.D., Paolo, A.D., Campitiello, L., Bilotti, U., Villari, R., & Sibilio, M. (2026). Enhancing Scientific Communication and Institutional Identity Through a Retrieval-Augmented Generation Digital Personal Tutor. *Electronics* , 15 (4), 847. <https://doi.org/10.3390/electronics15040847>
- Turvey, K., & Pachler, N. (2025). A Topological Exploration of Convergence/Divergence of Human-mediated and Algorithmically Mediated Pedagogy. *British Journal of Educational Technology* , 57 (3), 619–638. <https://doi.org/10.1111/bjet.70007>

- Verrangia, D. (2022). Educação Das Relações Étnico-Raciais. *Revista De Ensino De Biologia Da Sbenbio* , 492–512. <https://doi.org/10.46667/renbio.v15inesp2.782>
- Voyant, O. (2016). Enseignant-Chercheur : De L'éthique De Responsabilité À La Pédagogie Interactive. *Management & Sciences Sociales* , N° 21 (2), 63–77. <https://doi.org/10.3917/mss.021.0063>
- Yan, Y., & Chau, T. (2025). A Systematic Review of AI Ethics in Education. *Journal of Global Information Management* , 33 (1), 1–50. <https://doi.org/10.4018/jgim.386381>
- Yucra-Quispe, T., & Bernedo-Villalta, L. (2024). La Epistemología Desde La Hermenéutica Del Hilorealismo Científico Y La Investigación Cuantitativa en La Educación Superior . 435–451. <https://doi.org/10.35622/inudi.c.02.24>
- Zan, MEC de De, Ceretto, J.G., Britos, M. d. P., Prósperi, R., & Prono, M.I. (2018). Hacia Una Epistemologia Educacional. *Tópicos Revista De Filosofía De Santa Fe* , 4 , 3–60. <https://doi.org/10.14409/topicos.voi4.7307>