Urwatul Wutsqo: Jurnal Studi Kependidikan dan Keislaman
Vol. 15 No. 3, November 2026
P-ISSN: 2252-6099; E-ISSN: 2721-2483
DOI: https://doi.org/10.54437/urwatulwutsqo.v15i3.3914

Axiological Problems of Artificial Intelligence in Education: Between Technological Efficiency and the Humanization of Learning

Ellen Wijaya[1], Suhartawan Budianto[2], Muhajir[3], Nensy Megawati Simanjuntak[4]
Universitas Dr. Soetomo Surabaya, Indonesia[1,2,3]
ellen.wijaya.course@gmail.com[1], suhartawan.budianto@unitomo.ac.id[2],
muhajir98@unitomo.ac.id[3], nensy.megawati@unitomo.ac.id[4]

Received: October 15, 2026 Revised: October 21, 2026 Accepted: November 13, 2026 Online: November 21, 2026

Keywords:
Artificial intelligence; Axiology; Educational values; Humanization of learning; Student agency

Abstract

The increasing use of artificial intelligence (AI) in education offers opportunities to improve efficiency, personalize learning, and support educational activities. However, these benefits raise an axiological question concerning the extent to which technological efficiency contributes to meaningful learning and human development. This article examines the axiological problems associated with the use of AI in education, particularly the tension between technological efficiency and the humanization of learning. Using a literature review approach, this study synthesizes scholarly literature to examine educational values, pedagogical implications, and ethical considerations in AI integration. Through thematic comparison, the synthesis identifies recurring issues and conceptual relationships among the instrumental benefits of AI, student agency, pedagogical relationships, and ethical responsibilities in its use. These relationships are integrated into a conceptual framework comprising four interconnected dimensions: instrumental value, student agency, pedagogical relationships, and ethical-contextual responsibility. The framework emphasizes that the educational value of AI cannot be determined solely by efficiency or the automation of learning activities, but should be assessed in terms of students' independent thinking, the quality of pedagogical interactions, and ethical principles and contextual needs. This study offers an axiological perspective that connects these four dimensions to evaluate AI adoption in education, positioning technological efficiency as one consideration rather than the sole criterion of educational value. Since the proposed framework is developed through a conceptual synthesis of literature, further research is needed to examine its applicability across different educational contexts.

Kata kunci:
Kecerdasan buatan; Aksiologi; Nilai-nilai pendidikan; Humanisasi pembelajaran; Agensi peserta didik.

Abstrak

Meningkatnya penggunaan kecerdasan buatan (artificial intelligence/AI) dalam pendidikan menawarkan peluang untuk meningkatkan efisiensi, mempersonalisasi pembelajaran, dan mendukung kegiatan pendidikan. Namun, manfaat tersebut menimbulkan pertanyaan aksiologis mengenai kontribusi efisiensi teknologi terhadap pembelajaran bermakna dan pengembangan manusia. Artikel ini mengkaji permasalahan aksiologis penggunaan AI dalam pendidikan, khususnya ketegangan antara efisiensi teknologi dan humanisasi pembelajaran. Dengan pendekatan kajian pustaka, penelitian ini menyintesis literatur ilmiah untuk mengkaji nilai pendidikan, implikasi pedagogis, dan pertimbangan etis dalam integrasi AI. Melalui perbandingan tematik, sintesis mengidentifikasi persoalan berulang serta hubungan konseptual antara manfaat instrumental AI, agensi peserta didik, relasi pedagogis, dan tanggung jawab etis dalam penggunaannya. Hubungan tersebut diintegrasikan ke dalam kerangka konseptual yang terdiri atas empat dimensi saling berkaitan: nilai instrumental, agensi peserta didik, relasi pedagogis, dan tanggung jawab etis-kontekstual. Kerangka ini menegaskan bahwa nilai pendidikan AI tidak cukup ditentukan oleh efisiensi atau otomatisasi kegiatan pembelajaran, tetapi juga perlu dinilai berdasarkan kemandirian berpikir peserta didik, kualitas interaksi pedagogis, serta prinsip etis dan kebutuhan kontekstual. Penelitian ini

menawarkan perspektif aksiologis yang menghubungkan keempat dimensi tersebut untuk mengevaluasi penerapan AI, dengan menempatkan efisiensi teknologi sebagai salah satu pertimbangan, bukan satu-satunya kriteria nilai pendidikan. Karena dikembangkan melalui sintesis konseptual literatur, penerapan kerangka ini perlu diteliti lebih lanjut dalam berbagai konteks pendidikan

This is an open-access article under the CC BY-SA license.

Copyright:
© 2026 by the authors.
Licensee: LP3M Al-Urwatul Wutsqo Jombang, Indonesia. This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution-ShareAlike (CC BY-SA) license (https://creativecommons.org/licenses/by-sa/4.0/)

Corresponding Author:
Ellen Wijaya
Universitas Dr. Soetomo Surabaya, Indonesia; ellen.wijaya.course@gmail.com

Introduction

The development of artificial intelligence (AI) has expanded possibilities in education through personalized learning, feedback, information access, and administrative automation. Although these capabilities improve efficiency and learning support, faster task completion does not necessarily indicate educational success. Education aims to develop reasoning, independence, responsibility, and learners' ability to construct meaningful understanding. AI should be evaluated not only by its technical capabilities but also by the educational goals and values it serves (Chiu et al., 2023; Crompton & Burke, 2023; Zawacki-Richter et al., 2019)

Axiology is the philosophical study of values and the principles underlying the evaluation of something. In education, this perspective helps distinguish the instrumental value of technology from the educational values that its use is expected to achieve. AI has instrumental value when it accelerates tasks, provides feedback, or facilitates access to learning resources. However, these benefits do not automatically make learning meaningful. This distinction is consistent with Gatley (2021), Dewey (1916), and Biesta (2010), who emphasize that educational value extends beyond practical utility. Efficiency should be assessed in relation to educational purposes rather than treated as the sole measure of learning success.

UNESCO guidelines emphasize a human-centered approach to generative AI in education, including data protection, pedagogical appropriateness, and safe and meaningful use (Miao & Holmes, 2023). This orientation is reflected in the AI competency framework for teachers (Miao & Cukurova, 2024) and in principles of AI ethics (Nguyen et al., 2023; Floridi, 2023). In a review of 108 publications, Alfredo et al. (2024) highlighted stakeholder involvement, the balance between human control and automation, and aspects of security, reliability, and trustworthiness. Fu and Weng (2024) synthesized 40 empirical studies to identify fairness, privacy, security, beneficence, non-maleficence, agency, autonomy, transparency, and understandability. These findings emphasize the importance of human control, educational values, and responsible AI use, consistent with Bond et al. (2024), Mouta et al. (2024), and Collin et al. (2023).

Zhu et al. (2025) classify ethical risks in educational AI into technological, educational, and societal dimensions, including privacy violations, data leakage, algorithmic bias, and

errors. Studies on human-centered AI by Alfredo et al. (2024) and Fu and Weng (2024) emphasize human involvement, control, and responsible use, while Nguyen et al. (2023), Mouta et al. (2024), and Collin et al. (2023) provide a foundation for identifying ethical principles and risks. However, these studies do not fully explain how the instrumental benefits should be evaluated in relation to educational purposes and learners' experiences.

The conceptual gap addressed in this article concerns the need to connect AI's instrumental benefits with their pedagogical consequences and ethical-contextual appropriateness within a unified axiological framework. The central issue is whether AI efficiency supports learner agency, preserves pedagogical relationships, and aligns with educational needs and ethical responsibilities. This article proposes a four-dimensional synthesis to evaluate when technological efficiency supports educational goals and when its use should be limited. Rather than replacing existing human-centered AI or AI ethics frameworks, this contribution extends their evaluative perspective through educational axiology.

This article analyzes the axiological problems of AI use in education, particularly the tension between technological efficiency and the humanization of learning. It addresses three questions: (1) What values underlie the evaluation of AI use in education? (2) How can technological efficiency create tensions with learner agency and pedagogical relationships? (3) How can these values be synthesized into a human-centered conceptual evaluation framework? Through thematic synthesis, the study connects instrumental value, learner agency, pedagogical relationships, and ethical-contextual responsibility to evaluate AI's contribution to meaningful and humanistic education.

Method

This study employs a literature review with thematic synthesis to analyze the axiological problems of artificial intelligence (AI) in education, particularly the tension between technological efficiency and the humanization of learning. The approach identifies, compares, and synthesizes literature on the values, purposes, and implications of AI use in education. Literature was searched through Google Scholar and Scopus between September and October 2026, covering publications from 2019 to 2026. Selected classical works outside this period were included to strengthen the philosophical foundations of educational humanization, educational values, and pedagogical relationships. Keywords included artificial intelligence in education, AI ethics in education, student agency, pedagogical relationships, human-centered AI, and educational values. The search covered relevant empirical studies, literature reviews, and foundational works in educational philosophy and ethics.

Source selection considered five aspects: AI efficiency, learner agency and autonomy, pedagogical relationships, ethical responsibility, and human-centered education as the overarching analytical orientation rather than a separate dimension. Sources were selected for their relevance to the values, purposes, and implications of AI in education. Publications unrelated to AI in education or the study's axiological, pedagogical, and ethical focus, as well as those addressing only technical aspects without educational implications, were excluded. Overlapping publications were compared by their conceptual contributions, and those offering no additional insights were omitted. Based on these criteria, 35 publications were included in the synthesis.

The analysis involved three stages. First, the main ideas and findings of each publication were identified. Second, the findings were categorized and compared across four dimensions: instrumental value, learner agency, pedagogical relationships, and ethical-contextual

responsibility. Third, the relationships among these dimensions were synthesized into an evaluation framework oriented toward the humanization of learning. This study does not claim to be a systematic review covering all publications in the field. Its findings represent a conceptual synthesis of relevant literature and should not be interpreted as exhaustive conclusions about AI in education.

Results And Discussion

Results

Characteristics and Categorization of the Literature

The literature on AI in education covers instrumental benefits, implications for learning and educators' roles, and ethical responsibilities. Chiu et al. (2023) and Castillo-Martínez et al. (2024) demonstrate that efficiency improvements require pedagogical and ethical considerations. The literature provides complementary foundations for identifying four axiological dimensions: instrumental value, learner agency, pedagogical relationships, and ethical-contextual responsibility.

Table 1
Literature Synthesis Matrix Based on the Four Axiological Dimensions of AI in Education

Literature Groups	Literature Included	Dimensions Developed	Contribution to the Synthesis
Mapping the Applications and Developments of AI in Education	(Castillo-Martínez et al., 2024; Chiu et al., 2023; Crompton & Burke, 2023; Zawacki-Richter et al., 2019)	Instrumental value; pedagogical relationships; ethical-contextual responsibility	Provides an overview of the benefits, applications, and challenges of AI as a foundation for evaluating its use more broadly.
AI and Learner Agency	(Adhikari & Pandey, 2025; Chaaban et al., 2025; Darvishi et al., 2024; Lan & Zhou, 2025; Xing et al., 2026)	Learner agency; instrumental value	Explains the relationship between AI support, learning independence, decision-making, and learners' intellectual engagement.
AI, Teachers, and Pedagogical Relationships	(Asri et al., 2026; Williyan et al., 2026; Hasanah et al., 2025; Guan et al., 2025; Tan et al., 2026)	Pedagogical relationships; learner agency; ethical-contextual responsibility	Emphasizes that AI implementation needs to preserve teachers' professional roles, human interaction,

			and the learning context.
Ethics, Responsibility, and Human-Centered Approaches	Alfredo et al., 2024; Fu & Weng, 2024; Topali et al., 2025; Bond et al., 2024; Collin et al., 2023; Mouta et al., 2024; Nguyen et al., 2023; Zhu et al., 2025; Floridi, 2023; Miao & Holmes, 2023; Miao & Cukurova, 2024; Lim et al., 2025; Sperber et al., 2025	Ethical-contextual responsibility; pedagogical relationships; student agency	Provides a foundation for evaluating fairness, privacy, transparency, human control, and accountability in the use of AI.
Philosophical Foundations of Educational Values and Goals	Dewey, 1916; Biesta, 2010; Freire, 2000; Noddings, 2013; Gatley, 2021; Selwyn, 2019; Holmes et al., 2019; Farrelly & Baker, 2023	All four dimensions	Provides a conceptual foundation for connecting the benefits of technology with educational goals, student autonomy, human relationships, and human values.

Literature on AI implementation provides a basis for identifying instrumental value, while studies on learner agency emphasize intellectual engagement and learner autonomy. Research on teachers' roles and learning interactions reinforces the pedagogical relationship dimension, whereas studies on ethics and risks provide a foundation for ethical-contextual responsibility.

These four dimensions are interrelated because the instrumental benefits of AI need to be evaluated based on their consequences for learner agency, pedagogical relationships, and the ethical-contextual appropriateness of its use. This synthesis connects technological benefits with educational processes and the goal of humanizing learning.

Literature Synthesis Findings

First, AI provides instrumental benefits in the form of accelerated access to information, assistance with material preparation, and the provision of feedback. However, faster task completion is not always accompanied by increased learner understanding or independence (Holmes et al., 2019; Selwyn, 2019; Darvishi et al., 2024). The educational value of AI depends on its contribution to the learning process and educational objectives, rather than on efficiency alone.

Second, AI's influence on learner agency depends on how it is used. Darvishi et al. (2024) identify tendencies to rely on AI in peer feedback, while Chaaban et al. (2025) identify diverse patterns of learner agency in chatbot-assisted learning. Xing et al. (2026) demonstrate the dynamics between learner agency and the authority of generative AI agents. These findings

affirm that learner independence depends on students' involvement in examining information, regulating their thinking processes, and making decisions. Therefore, AI should support, rather than replace, learners' intellectual engagement.

Third, teachers and pedagogical relationships remain essential elements in the use of AI. Although AI can assist with routine tasks, challenges concerning dialogue, mentoring, professional judgment, and the adaptation of materials to learners' needs require ongoing attention (Asri et al., 2026; Williyan et al., 2026; Hasanah et al., 2025). In language learning, Guan et al. (2025) emphasize the interaction among teachers, learners, and generative AI, while Tan et al. (2026) demonstrate the relationship between AI-based learning companions and the development of teachers' professional agency. These findings affirm that AI must support the learning process without eliminating teachers' professional roles and educational interactions.

Fourth, ethical and contextual responsibility constitutes an essential prerequisite for AI implementation in education. The literature highlights fairness, privacy, transparency, autonomy, inclusion, human control, and stakeholder engagement (Alfredo et al., 2024; Fu & Weng, 2024; Topali et al., 2025). The appropriateness of AI is determined not only by its technical benefits but also by its alignment with educational values, needs, and environmental conditions.

Taken together, these findings indicate that AI's instrumental benefits must be assessed through their effects on learner agency and pedagogical relationships, with ethical-contextual responsibility guiding judgments about appropriate use. AI evaluation must extend beyond technological efficiency to consider its contribution to educational objectives.

Discussion

AI Efficiency as Instrumental Value

AI has instrumental value through faster information access, feedback, material preparation, and personalized learning. However, these benefits must be evaluated in relation to educational objectives. Dewey's (1916) conception of education as a process of growth and Biesta's (2010) perspective on educational purposes that extend beyond measurable outcomes underscore the importance of experiential development, cognitive abilities, and learner autonomy. The potential and limitations of AI implementation in education are likewise examined by Holmes et al. (2019) and Selwyn (2019).

The distinction between technical efficiency and educational value is evident in the research by Darvishi et al. (2024), who found that students tended to rely on AI assistance in peer feedback without fully learning from the process. Gatley (2021) similarly emphasizes that educational value lies not only in practical utility but also in the value inherent in the learning process.

AI efficiency does not inherently conflict with educational objectives. AI can reduce routine tasks, expand access, and provide preliminary feedback for learners and teachers to review, thereby allowing learning time to be redirected toward testing arguments, comparing perspectives, and engaging in discussions. Conversely, the ease of obtaining answers becomes problematic when it replaces the processes of understanding, evaluating information, and making independent decisions. Consequently, AI integration requires clear pedagogical objectives and critical literacy (Farrelly & Baker, 2023).

Instrumental value should be treated as the starting point of evaluation, not its sole criterion. AI has educational value when its benefits support learner autonomy, meaningful pedagogical relationships, and ethical-contextual responsibility while preserving intellectual engagement and human development.

Tension Between Efficiency and Learner Agency

Although AI can accelerate tasks and personalize learning support, convenience does not necessarily strengthen learner agency. Agency involves learners' ability to direct their learning, evaluate information, make decisions, and take responsibility for their thinking. AI's success should be assessed not only through output accuracy or speed but also through learners' intellectual engagement. Freire's (2000) perspective on dialogical education and critical consciousness underscores the importance of active engagement rather than the passive reception of knowledge. Agency constitutes an integral component of educational value rather than merely a technical skill in operating AI. As subjects of education, learners need space to think, question, and construct their own understanding.

This tension is evident in Darvishi et al. (2024), which involved 1,625 university students across ten courses in a controlled experiment examining AI assistance in peer feedback. The results demonstrated that students tended to rely on AI without fully learning from the process. When AI assistance was removed, self-regulation strategies helped them continue, but did not fully compensate for the effectiveness of AI support. However, because the study focused on peer feedback in a specific experimental setting, its findings cannot be generalized to all educational uses of AI.

Chaaban et al. (2025) provide a more diverse perspective through a Q-methodological study of prospective teachers' agency in chatbot-assisted learning. Their analysis of 22 perspective configurations identified three patterns: independent users with limited ethical reflection, users employing AI purposefully and ethically, and users experiencing dependency and declining critical thinking. These patterns show that AI's relationship with agency is not uniform but depends on learners' ability to evaluate outputs, consider consequences, and make decisions.

Together, Darvishi et al. (2024) and Chaaban et al. (2025) indicate that agency concerns learners' role in decision-making rather than the frequency of AI use. AI can support agency when it helps learners identify difficulties, consider alternatives, and evaluate outcomes without taking over their intellectual responsibility. Conversely, uncritical acceptance of AI outputs can weaken critical engagement.

The use of AI does not necessarily need to be restricted for learners to develop independence. Adhikari and Pandey (2025), through a mixed-methods study involving 121 lecturers from seven universities in Nepal, alongside interviews with three lecturers, discuss the potential of AI integration in supporting learner agency while emphasizing the role of teachers as learning companions and facilitators. This finding complements the research by Darvishi et al. (2024): AI assistance can support learning activities, but its benefits depend on the purpose of its use and learners' engagement. Given the different contexts and focuses of the two studies, their findings do not contradict one another; rather, they highlight the importance of pedagogical conditions in evaluating the relationship between technology and learner autonomy.

Based on this synthesis, the article distinguishes two functions of AI in learning: a cognitive scaffold and a cognitive substitute. As a scaffold, AI helps learners identify starting points, obtain feedback, compare alternatives, and review understanding. As a substitute, it may take over intellectual activities when its outputs are accepted without examination or

reflection. This distinction is a conceptual interpretation of the literature, not an empirically tested instrument. It explains why ease of use does not automatically improve learning quality.

Supporting learner agency requires learners to evaluate information, articulate reasoning, make decisions, and reflect on their work. Teachers can guide them in comparing AI outputs with other sources, identifying weaknesses, and explaining why they accept or reject AI suggestions. AI remains a supportive resource rather than an authority that replaces human judgment. Lan and Zhou (2025) similarly emphasize the need to manage AI support for self-regulated learning to protect self-efficacy and autonomy. The PAIRR model, which combines peer and AI feedback with reflection before writing revision, also offers opportunities to develop learner agency and AI literacy (Sperber et al., 2025).

Axiologically, the tension between efficiency and agency demonstrates that the instrumental value of AI must be evaluated based on its contribution to learner development. Efficiency becomes meaningful when it helps students learn in a more directed manner without eliminating opportunities to understand, question, and make decisions. Conversely, efficiency becomes problematic when task completion is achieved at the expense of learners' intellectual engagement. This issue connects learner autonomy with the humanization of learning: if learners are positioned merely as recipients of technology-generated answers, the opportunities for intellectual growth and personal responsibility may become limited. The role of teachers and the quality of pedagogical relationships are essential in ensuring that AI use remains oriented toward human development, as discussed in the following section

Humanization of Learning and the Role of Teachers

The humanization of learning positions learners as human beings with diverse needs, experiences, abilities, and social contexts. Education does not merely transmit information or produce academic achievements; it also develops intellectual capacities, responsibility, and meaningful relationships. AI must be evaluated based on its influence on pedagogical relationships and learning experiences. This orientation is consistent with dialogical education and the ethics of care (Freire, 2000; Noddings, 2013), which position dialogue and attentiveness to individual needs as essential components of the educational process.

Alfredo et al. (2024), through a systematic review of learning analytics and human-centered AI, highlight the importance of human control and user engagement in the design of educational technology. Fu and Weng (2024) identify fairness, privacy, autonomy, transparency, beneficence, and non-maleficence as principles of responsible AI use. Both studies broaden the evaluation of AI beyond technical performance to include human interests and rights. In learning practice, these principles need to be reflected in technology's ability to help teachers understand learners' needs, encourage active engagement, and facilitate meaningful interactions. Topali et al. (2025) further highlight stakeholder involvement and pedagogical contextualization. These principles must extend beyond technology design to learning practices that preserve human relationships, dialogue, and responsibility.

The relational dimension becomes important when the ease of obtaining answers through AI reduces opportunities for dialogue between teachers and learners. Asri et al. (2026), in a qualitative case study involving ten senior high school teachers in Makassar, identify challenges associated with students' increasing reliance on AI for explanations and answers. This condition may shift dialogical learning toward output-oriented activities.

Teachers' pedagogical adjustments to restore interaction, trust, and student engagement demonstrate that the challenges of AI concern not only information accuracy but also the processes through which information is obtained and used. Instant answers may reduce teachers' opportunities to observe learners' reasoning and difficulties. However, because these findings come from a specific case study, they indicate a potential relational challenge rather than evidence that AI always reduces human interaction. Pedagogical interaction enables teachers to understand learners' thinking processes and provide guidance appropriate to their development.

Efficiency and pedagogical relationships do not necessarily conflict. AI can help teachers prepare materials or provide preliminary feedback, thereby making more learning time available for discussion and mentoring. However, if AI replaces dialogue or the assessment of learners' needs, the time saved does not necessarily improve learning quality. Conversely, AI assistance that strengthens interaction can enhance human engagement. Successful AI integration is not measured by a reduction in teacher involvement, but by its ability to support teachers in performing their pedagogical functions more meaningfully.

The role of teachers encompasses moral and professional judgment, rather than merely the operation of technological devices. Williyan et al. (2026), through a study involving four lecturers of English as a Foreign Language (EFL) in Indonesia, examine educators' considerations regarding AI outputs, professional competency development, and student guidance in the responsible use of technology. The study highlights limitations in institutional policies, unclear ethical boundaries, disparities in access, and limited training opportunities. Responsible AI use requires competence, guidelines, and institutional support, rather than relying solely on the individual decisions of teachers or learners. Preserving the human role does not mean rejecting automation; rather, it ensures that pedagogical decisions remain grounded in clear judgment and responsibility. Teachers' professional agency is reflected in their authority to evaluate, adapt, and determine the use of technology based on learning objectives.

Human judgment becomes increasingly important when AI outputs are used in diverse social and cultural contexts. Hasanah et al. (2025), through a study involving junior high school teachers in Lumajang, Indonesia, address issues of bias and inclusion in AI-assisted classrooms. Teachers' attention to adapting AI outputs to local languages and cultures demonstrates that technological materials are not necessarily appropriate for all learners. Explanations that appear generally clear may not align with the experiences, language abilities, or learning needs of particular learners. Teachers need to select, correct, and contextualize instructional materials. The humanization of learning requires attention to learner diversity rather than assuming that a single technological output is appropriate for everyone. This demonstrates the relationship between pedagogical relationships and ethical responsibility, particularly in maintaining fairness and inclusion.

Based on the literature synthesis, teachers have three interrelated roles: maintaining the quality of pedagogical relationships, exercising moral and professional judgment, and ensuring that technology is appropriate to learners' needs and contexts. Teachers are not merely intermediaries of AI outputs; rather, they determine their meaning, relevance, and application in education. The humanization of learning also does not mean that all tasks must

be performed manually. AI can provide instrumental support, while teachers guide its use to ensure alignment with learning objectives, learner development, and educational values. Pedagogical relationships connect technological benefits with human learning experiences: AI has educational value when it supports educational interactions rather than replacing human involvement.

Axiologically, the success of AI cannot be determined by technical efficiency alone. Its evaluation must also consider its ability to maintain dialogue, support teacher guidance, respect diverse needs, and promote human development. Efficiency that reduces opportunities for dialogue or mentoring needs to be reconsidered in relation to educational objectives. Conversely, AI that reduces routine workloads while creating opportunities for reflection and interaction can support the humanization of learning.

Axiological Synthesis: A Humanization-Oriented Evaluation Framework for AI

The axiological problem of AI in education concerns the determination of value when technological efficiency encounters educational objectives. Efficiency, personalization, and ease of access constitute instrumental benefits, but they do not automatically guarantee meaningful learning. Gatley (2021) examines the relationship between intrinsic value and educational value as a basis for questioning whether an activity genuinely possesses educational worth. In the context of AI, faster task completion cannot be directly equated with learning success. Successful task completion must still be distinguished from learners' intellectual development and independence.

Previous studies have developed frameworks for evaluating educational AI responsibly. Alfredo et al. (2024) examine human control and stakeholder engagement; Fu and Weng (2024) identify principles of responsible AI; while Zhu et al. (2025), Nguyen et al. (2023), Mouta et al. (2024), and Collin et al. (2023) discuss ethical risks and principles. More specifically, Lim et al. (2025) validate an ethical framework for stages of AI-assisted assessment, while Sperber et al. (2025) examine writing feedback practices that combine peer assessment, AI feedback, and reflection. This article does not claim to surpass these frameworks within the same domains. Its contribution lies in synthesizing axiological questions across different contexts—instrumental value, learner agency, pedagogical relationships, and ethical-contextual responsibility—to evaluate when technological efficiency aligns with educational objectives and when its use needs to be restricted or reconsidered.

Based on this synthesis, this article proposes an axiological evaluation framework that connects these four dimensions as interrelated assessment categories. Instrumental value identifies technological benefits; learner agency and pedagogical relationships assess their consequences for learning processes and relationships; while ethical-contextual responsibility considers fairness, rights, risks, and the appropriateness of AI implementation within educational conditions. Strength in one dimension does not automatically guarantee appropriateness in another. This framework is developed through three stages of conceptual reasoning: assessing instrumental benefits, examining pedagogical consequences, and considering ethical and contextual appropriateness.

First, assessment of instrumental benefits. This stage examines the practical benefits generated by AI, such as accelerating access to information, assisting in material preparation, providing preliminary feedback, and reducing educators' technical workloads. These benefits

need to be compared with educational objectives because faster task completion does not necessarily improve understanding, reasoning abilities, or learning outcomes. The evaluation considers not only whether AI makes tasks easier but also whether such convenience is relevant to learning needs. Instrumental value serves as an initial consideration rather than the sole basis for determining the educational appropriateness of AI.

Second, examination of pedagogical consequences. This stage examines the influence of AI on learner agency and pedagogical relationships. Within the agency dimension, attention is directed toward learners' engagement in understanding problems, verifying information, formulating reasoning, and taking responsibility for their learning decisions. AI can support these processes through prompts, feedback, or comparisons of alternatives. Conversely, accepting AI outputs without examination has the potential to reduce learners' intellectual engagement.

Pedagogical examination encompasses the quality of relationships between educators and learners. AI can help educators complete some routine tasks, thereby providing more time for guidance, dialogue, and understanding learners' needs. However, if automation reduces learners' opportunities to receive the guidance they need, such efficiency must be reconsidered. Pedagogical evaluation considers not only which tasks can be delegated to technology but also which educational functions need to remain grounded in human judgment and interaction.

Third, consideration of ethical and contextual appropriateness. This stage evaluates AI's alignment with the principles of fairness, privacy, transparency, inclusion, and human responsibility, while also considering learners' needs, educational objectives, educators' readiness, and institutional conditions. Unequal benefits, biased outputs, or information that is inappropriate to the context require human examination. The appropriateness of AI is determined not only by its benefits but also by risk management and clarity of responsibility. In practical terms, evaluation can lead to three decisions: continuing its use, continuing its use with safeguards and guidance, or restricting/redesigning its use when its benefits are not proportionate to its pedagogical consequences and risks.

These three stages place educational objectives above efficiency as the sole measure. However, they are not intended as rigid sequential decision-making rules or processes that always proceed in one direction. Findings from the examination of agency, pedagogical relationships, and ethical risks may require the reassessment of previously identified instrumental benefits. Likewise, changes in the context of implementation may alter considerations regarding the appropriateness of AI use. These three stages constitute an interconnected evaluative reasoning process, while the four dimensions are considered in an integrated manner. Efficiency remains valuable when it supports meaningful learning, but it is insufficient to justify AI use if it compromises learners' cognitive development, the quality of pedagogical relationships, or fundamental ethical requirements.

This distinction can be illustrated through two conceptual examples. In the first example, AI is used to provide initial prompts and feedback on university students' writing. Students subsequently examine the accuracy of the feedback, improve their arguments, and explain the reasons behind their revisions. In this situation, AI has the potential to save time while supporting learners' intellectual engagement. In the second example, AI is used to

generate entire assignment answers that are then submitted without examination or reflection. Both uses may offer technical convenience, but their educational implications differ. The first example creates opportunities for the development of reasoning, whereas the second has the potential to reduce students' opportunities to engage in the thinking processes that constitute the purpose of the assignment. This comparison serves as an analytical illustration to explain the application of the framework, rather than as an empirical test of the two situations.

This article proposes the conceptual proposition that the educational value of AI is determined by the relationship among instrumental benefits, learner agency, pedagogical relationships, and ethical-contextual responsibility. Strength in one dimension does not guarantee appropriateness in another: high efficiency is insufficient to justify AI use if it eliminates essential learning opportunities or creates ethical risks that remain unaddressed. Conversely, additional examination and reflection can be valuable when they strengthen learners' understanding, independence, and responsibility. In other words, axiological evaluation does not merely question how much benefit AI generates, but also how those benefits relate to human development and educational objectives.

The conceptual novelty of this framework lies in connecting the four dimensions within a unified evaluative reasoning process: (1) identifying the instrumental benefits of AI, (2) examining whether these benefits support or diminish learner agency and the quality of pedagogical relationships, and (3) assessing the appropriateness of its use based on ethical responsibility and the context of implementation. This article does not claim that AI risks, agency, pedagogical relationships, or ethics have not previously been studied; rather, it offers a synthesis that connects these dimensions to evaluate whether efficiency genuinely serves educational objectives.

Conclusion

The main finding of this study is that the technological efficiency of AI does not always align with the achievement of educational objectives. Ease of access to information, personalization, and automation of learning activities can support the learning process, but they also have the potential to reduce learners' cognitive independence and opportunities to develop meaningful pedagogical relationships when used as substitutes for the learning process. The fundamental problem of AI use in education does not lie in efficiency itself, but in situations where successful task completion is prioritized over learners' intellectual development and independence.

Theoretically, this study extends the axiological perspective on AI-based education by viewing technological value as an assessment of the relationship among efficiency, educational objectives, learner agency, pedagogical relationships, and ethical-contextual responsibility. This framework emphasizes that the appropriateness of AI is determined not solely by its instrumental benefits, but also by its pedagogical and ethical consequences. This contribution constitutes a conceptual synthesis of the literature rather than an empirically validated evaluation model. The framework assesses the instrumental benefits of technology based on the alignment of its use with educational objectives and values.

The limitation of this study lies in its literature-synthesis approach, meaning that the resulting evaluation framework has not yet been directly tested in learning practices. The applicability of this framework across different educational levels, learner characteristics, and

institutional contexts cannot yet be established based on this study. Future research needs to examine the applicability of these four dimensions through empirical studies involving more diverse educational contexts. Such testing is necessary to deepen understanding of the conditions under which AI can support the humanization of learning while providing a basis for developing more appropriate educational policies and practice.

REFERENCES

Adhikari, D. P., & Pandey, G. P. (2025). Integrating AI in higher education: transforming teachers' roles in boosting student agency. *Educational Technology Quarterly, 2025*(2), 151–168. https://doi.org/10.55056/etq.943

Alfredo, R., Echeverria, V., Jin, Y., Yan, L., Swiecki, Z., Gašević, D., & Martinez-Maldonado, R. (2024). Human-centred learning analytics and AI in education: A systematic literature review. *Computers and Education: Artificial Intelligence, 6,* Article 100215. https://doi.org/10.1016/j.caeai.2024.100215

Asri, A., Misnawati, M., Yusriadi, Y., Sibali, A., & Munir, N. (2026). Preserving teacher agency and human connection in the era of automated learning ecosystems. *Discover Education, 5,* Article 883. https://doi.org/10.1007/s44217-026-01726-0

Biesta, G. J. J. (2010). *Good education in an age of measurement: ethics, politics, democracy.* Paradigm Publishers.

Bond, M., Khosravi, H., De Laat, M., Bergdahl, N., Negrea, V., Oxley, E., … Siemens, G. (2024). A meta systematic review of artificial intelligence in higher education: a call for increased ethics, collaboration, and rigour. *International Journal of Educational Technology in Higher Education, 21,* Article 4. https://doi.org/10.1186/s41239-023-00436-z

Castillo-Martínez, I. M., Flores-Bueno, D., Gómez-Puente, S. M., & Vite-León, V. O. (2024). AI in higher education: A systematic literature review. *Frontiers in Education, 9,* Article 1391485. https://doi.org/10.3389/feduc.2024.1391485

Chaaban, Y., Jung, S.-G., Medina, J., Azem, J. Y., Salminen, J., & Jansen, B. J. (2025). Examining student teachers' agency in an AI-supported learning environment: Q methodology research. *International Journal of Artificial Intelligence in Education, 35*(6), 4083–4107. https://doi.org/10.1007/s40593-025-00529-y

Chiu, T. K. F., Xia, Q., Zhou, X., Chai, C. S., & Cheng, M. (2023). Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education. *Computers and Education: Artificial Intelligence, 4,* Article 100118. https://doi.org/10.1016/j.caeai.2022.100118

Collin, S., Lepage, A., & Nebel, L. (2023). Ethical and critical issues of artificial intelligence in education: A systematic review of the literature. *Canadian Journal of Learning and Technology, 49*(4), 1–29. https://doi.org/10.21432/cjlt28448

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: The state of the field. *International Journal of Educational Technology in Higher Education, 20,* Article 22. https://doi.org/10.1186/s41239-023-00392-8

Darvishi, A., Khosravi, H., Sadiq, S., Gašević, D., & Siemens, G. (2024). Impact of AI assistance on student agency. *Computers & Education, 210,* Article 104967. https://doi.org/10.1016/j.compedu.2023.104967

Dewey, J. (1916). *Democracy and education: an introduction to the philosophy of education.* Macmillan.

Farrelly, T., & Baker, N. (2023). Generative artificial intelligence: implications and considerations for higher education practice. *Education Sciences, 13*(11), Article 1109. https://doi.org/10.3390/educsci13111109

Floridi, L. (2023). *The ethics of artificial intelligence: principles, challenges, and opportunities*. Oxford University Press.

Freire, P. (2000). *Pedagogy of the oppressed* (30th anniversary ed.; M. B. Ramos, Trans.). Continuum. (Original work published 1970)

Fu, Y., & Weng, Z. (2024). Navigating the ethical terrain of AI in education: A systematic review on framing responsible human-centered AI practices. *Computers and Education: Artificial Intelligence, 7,* Article 100306. https://doi.org/10.1016/j.caeai.2024.100306

Gatley, J. (2021). Intrinsic value and educational value. *Journal of Philosophy of Education, 55*(4–5), 675–687. https://doi.org/10.1111/1467-9752.12555

Guan, L., Lee, J. C.-K., Zhang, Y., & Gu, M. M. (2025). Investigating the tripartite interaction among teachers, students, and generative AI in EFL education: A mixed-methods study. *Computers and Education: Artificial Intelligence, 8,* Article 100384. https://doi.org/10.1016/j.caeai.2025.100384

Hasanah, U., Putra, R. W. P., Dzulfikri, D., & Mistar, J. (2025). Who programs the teacher? Rethinking bias and inclusion in AI-powered Indonesian classrooms. *Journal of Research on English and Language Learning, 6*(2), 330–341. https://doi.org/10.33474/j-reall.v6i2.23880

Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.

Lan, M., & Zhou, X. (2025). A qualitative systematic review on AI empowered self-regulated learning in higher education. *npj Science of Learning, 10,* Article 21. https://doi.org/10.1038/s41539-025-00319-0

Lim, T., Gottipati, S., & Cheong, M. (2025). What students really think: Unpacking AI ethics in educational assessments through a triadic framework. *International Journal of Educational Technology in Higher Education, 22,* Article 56. https://doi.org/10.1186/s41239-025-00556-8

Miao, F., & Cukurova, M. (2024). *AI competency framework for teachers.* UNESCO. https://doi.org/10.54675/ZJTE2084

Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research.* UNESCO. https://www.unesco.org/en/articles/guidance-generative-ai-education-and-research

Mouta, A., Pinto-Llorente, A. M., & Torrecilla-Sánchez, E. M. (2024). Uncovering blind spots in education ethics: Insights from a systematic literature review on artificial intelligence in education. *International Journal of Artificial Intelligence in Education, 34*(3), 1166–1205. https://doi.org/10.1007/s40593-023-00384-9

Nguyen, A., Ngo, H. N., Hong, Y., Dang, B., & Nguyen, B.-P. T. (2023). Ethical principles for artificial intelligence in education. *Education and Information Technologies, 28*(4), 4221–4241. https://doi.org/10.1007/s10639-022-11316-w

Noddings, N. (2013). *Caring: a relational approach to ethics and moral education* (2nd ed.). University of California Press.

Selwyn, N. (2019). *Should robots replace teachers? AI and the future of education*. Polity Press.

Sperber, L., MacArthur, M., Minnillo, S., Stillman, N., & Whithaus, C. (2025). Peer and AI review + reflection (PAIRR): A human-centered approach to formative assessment.

Computers and Composition, 76, Article 102921. https://doi.org/10.1016/j.compcom.2025.102921

Tan, S. C., Tan, Y. Y., Teo, C. L., & Yuan, G. (2026). Teachers' professional agency in learning with AI: A case study of a generative AI-based knowledge building learning companion for teachers. *British Journal of Educational Technology, 57,* 943–964. https://doi.org/10.1111/bjet.70013

Topali, P., Ortega-Arranz, A., Rodríguez-Triana, M. J., Er, E., Khalil, M., & Akçapınar, G. (2025). Designing human-centered learning analytics and artificial intelligence in education solutions: A systematic literature review. *Behaviour & Information Technology, 44*(5), 1071–1098. https://doi.org/10.1080/0144929X.2024.2345295

Williyan, A., Rohmah, N., Ramdani, J. M., Dewi, E. W., & Fadhilah, N. (2026). Moral teacher agency in AI integration: An interpretative phenomenological study of writing instruction by Indonesian English as a foreign language (EFL) lecturers. *Asia Pacific Journal of Educators and Education, 41*(1), 219–245. https://doi.org/10.21315/apjee2026.41.1.10

Xing, W., Kim, T., Song, Y., Li, H., Li, C., & Kim, J. (2026). Unveiling interaction patterns between students and generative AI teachable agent: Focusing on students' agency and AI agents' authority. *British Journal of Educational Technology, 57,* 896–923. https://doi.org/10.1111/bjet.70038

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—where are the educators? *International Journal of Educational Technology in Higher Education, 16,* Article 39. https://doi.org/10.1186/s41239-019-0171-0

Zhu, H., Sun, Y., & Yang, J. (2025). Towards responsible artificial intelligence in education: A systematic review on identifying and mitigating ethical risks. *Humanities and Social Sciences Communications, 12,* Article 1111. https://doi.org/10.1057/s41599-025-05252-6