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Artificial Intelligence in Primary Education:
A Philosophy of Science Inquiry into the Ontological, Epistemological, and Axiological Roles of Elementary School Teachers

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Abstract
The rapid expansion of Artificial Intelligence (AI) in education has largely been framed through instrumental benefits such as efficiency and personalization, yet its deeper implications for primary education, where teaching is inherently relational, moral, and developmentally sensitive, remain underexplored. This study examines how AI reshapes the meaning of teaching, knowledge, and educational values for elementary school teachers through a philosophy of science lens. Using a thematic narrative review, literature from Scopus, Web of Science, and Google Scholar was screened, yielding 34 core sources that were analyzed through ontological, epistemological, and axiological dimensions. The findings indicate that AI operates as a set of socio-technical systems, including generative tools, adaptive platforms, and analytic dashboards, that mediate instructional decisions and subtly redistribute agency between teachers and technologies. Epistemologically, AI reshapes knowledge authority by privileging algorithmic outputs, although teacher-led AI literacy and critical mediation can strengthen rather than weaken teachers' epistemic roles. Axiologically, AI introduces ethical tensions related to teacher wellbeing, children's vulnerability, data privacy, and equity, particularly within the Indonesian primary education context characterized by uneven infrastructure and digital literacy. The study concludes that AI is not value-neutral in primary schooling; it actively participates in redefining who acts, who knows, and what is valued in the classroom. AI can contribute positively to learning only when positioned as a supportive resource under strong human oversight that preserves teachers' moral, relational, and epistemic functions, thereby safeguarding the human core of primary education in an increasingly algorithmic world.
Keywords: artificial intelligence; primary education; elementary school teachers; philosophy of science; educational ethics

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I. Introduction

The rapid expansion of Artificial Intelligence (AI) in education has generated an extensive body of research, particularly on learning analytics, adaptive systems, and instructional automation. In primary education, AI has been promoted to reduce teacher

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workload, personalize instruction, and increase efficiency (Kamalov et al., 2023; Yarlagadda, 2025). However, while these instrumental benefits are widely documented, a growing group of scholars has begun to question how AI is reshaping the meaning of teaching itself, especially in contexts where education is deeply relational, moral, and developmentally sensitive (Chen et al., 2020; Jauhiainen & Guerra, 2023).

Recent philosophical and critical studies on AI in education can be broadly grouped into three strands. The first examines AI as a pedagogical tool, focusing on its capacity to support learning and assessment (Kamalov et al., 2023). The second treats AI as a governance technology, analyzing how algorithms influence decision-making, accountability, and standardizations in schooling (Williamson & Eynon, 2024). The third, more critical strand interrogates AI as a socio-technical system that reconfigures power, knowledge, and professional identity in education (Jauhiainen & Guerra, 2023; Bahreoun et al., 2023). While this third strand has begun to raise ethical and epistemological concerns, it remains largely focused on secondary and higher education, where learners are assumed to be more autonomous and cognitively mature.

Primary education presents a fundamentally different case. At this level, teaching is not primarily a process of information delivery, but a relational practice through which children acquire not only academic skills but also emotional regulation, social norms, and moral orientation (Chen et al., 2020). Yet, most existing AI-in-education research treats teachers as instructional operators and students as data-producing learners, overlooking how AI may alter the ontological status of teachers and pupils in primary classrooms. This creates a significant theoretical gap: we lack a philosophical account of how AI reshapes the very *being* of teaching and learning in the formative years of schooling.

From an epistemological perspective, AI systems are built upon data-driven logics that privilege prediction, pattern recognition, and standardizations (Jauhiainen & Guerra, 2023). When these systems are used to recommend content, assess student performance, or generate learning materials, they implicitly redefine what counts as valid knowledge and who is

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authorized to produce it. Yet, few studies have examined how this epistemic shift affects the professional judgment and pedagogical authority of elementary school teachers, who are traditionally positioned as moral and epistemic guides for young learners.

Ontologically, AI also raises questions about how teachers and students are positioned within educational systems. Algorithmic infrastructures tend to represent learners and educators through measurable indicators, performance metrics, and behavioral data (Jauhiainen & Guerra, 2024). While such representations may support administrative efficiency, they risk narrowing the understanding of education to technical optimization, thereby marginalizing the relational, affective, and ethical dimensions that are central to primary teaching.

These concerns become particularly acute in developing countries such as Indonesia, where digitalization policies are expanding rapidly but institutional support, digital literacy, and ethical governance remain uneven (Al-Karasneh et al., 2025). In Indonesian primary schools, teachers are not only educators, but also moral exemplars embedded in strong cultural and religious expectations. However, existing research on AI in Indonesian education has focused almost exclusively on technological adoption and instructional outcomes, leaving unexamined how teachers interpret, negotiate, and ethically engage with AI in their everyday practice.

This article addresses this gap by offering a philosophy-of-science analysis of AI in primary education that foregrounds the position of elementary school teachers. Rather than evaluating AI in terms of effectiveness or efficiency, this study examines how AI reconfigures teaching through three interrelated dimensions: ontology (what teachers and learners are understood to be), epistemology (how knowledge is produced and authorized), and axiology (what values, ethics, and forms of wellbeing are prioritized). By situating AI within the lived and cultural realities of primary education in Indonesia, this article contributes a theoretically grounded framework for understanding how educational technologies shape, not merely support, the human practice of teaching.

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2. Method

2.1 Research Design

This study employed a thematic narrative review design to examine how Artificial Intelligence (AI) is conceptualized in relation to elementary school teachers from a philosophy of science perspective. Narrative review was selected because the purpose of this study was not to evaluate the effectiveness of AI interventions, but to synthesize and interpret theoretical, philosophical, and educational literature addressing how AI reshapes the meaning of teaching, knowledge, and values in primary education contexts (Yan et al., 2024).

The review was guided by a philosophy of science framework, which conceptualizes educational phenomena through three interrelated dimensions: ontology, epistemology, and axiology. These dimensions provided the analytical structure for organizing and interpreting the literature on AI in primary education.

2.2 Data Sources and Search Strategy

A broad but focused search of the literature was undertaken across major academic databases, including Scopus, Web of Science, and Google Scholar, to identify scholarship addressing Artificial Intelligence (AI) in education from both technological and philosophical perspectives. The search was guided by key thematic terms such as artificial intelligence, primary education, elementary school, teacher role, philosophy of education, ethics of AI, educational technology, and teacher identity, which were combined in various ways to capture the diversity of relevant discussions (Yan et al., 2024).

This process resulted in an initial pool of approximately 140 publications. Through iterative reading of titles, abstracts, and subsequently full texts, the literature was gradually refined to a set of 34 core works that most directly illuminated the philosophical and educational issues under investigation. Selection was guided by the extent to which each source engaged with AI in educational contexts, addressed theoretical or ethical dimensions of

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teaching and learning, and considered the implications for teachers, particularly within compulsory and primary schooling (Mulyani et al., 2025).

Recent literature from the past decade was prioritized to reflect the rapidly evolving nature of AI and digital education, while a small number of earlier philosophical texts were retained where they provided essential conceptual foundations. This narrative selection process enabled the study to draw upon a coherent yet diverse body of scholarship while remaining attentive to both contemporary debates and enduring theoretical concerns (Aperstein et al., 2025).

2.3 Analytical Framework

The primary sources of data for this conceptual study consisted of peer-reviewed journal articles, scholarly books, and policy-related documents relevant to AI in education, philosophy of education, and primary schooling. The literature was selected based on its relevance to (1) AI technologies in educational contexts, (2) philosophical analyses of technology and knowledge, and (3) the role and professional identity of elementary school teachers. Priority was given to publications from the last ten years to ensure conceptual relevance to contemporary developments in AI and digital education (Mulyani et al., 2025). Seminal philosophical works were also included where necessary to provide theoretical grounding.

2.4 Data Analysis

Data analysis was conducted through critical interpretative analysis and argumentative synthesis. The selected literature was systematically reviewed to identify key philosophical arguments, assumptions, and tensions related to AI in primary education. These arguments were then analysed across the ontological, epistemological, and axiological dimensions to construct a coherent interpretative framework. Rather than seeking consensus, the analysis intentionally engaged with contrasting perspectives to highlight areas of philosophical tension

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and conceptual ambiguity. This process enabled the development of a reflective model that articulates the implications of AI for elementary school teachers beyond instrumental or technical considerations (Aperstein et al., 2025).

3. Findings and Discussion

3.1 Ontological Implications of Artificial Intelligence for Elementary School Teachers

From an ontological perspective, the integration of Artificial Intelligence (AI) into primary education challenges existing assumptions about the nature of teaching, learning, and the role of elementary school teachers. Ontology, as a branch of the philosophy of science, concerns questions of being and existence, what entities are recognized as legitimate actors, what roles they occupy, and how their identities are constituted within systems of knowledge and practice (Gentile et al., 2023). In this study, AI is not treated as a single, unified agent but as a set of socio-technical systems, including generative tools, adaptive learning platforms, and analytic dashboards, each of which interacts differently with teachers and students within classroom ecologies.

Traditionally, elementary school teachers have been ontologically positioned as the central human agents in the learning process. Their role extends beyond content delivery to include emotional guidance, moral modelling, and the cultivation of social relationships that support children's holistic development (Aravantinos et al., 2024). Teaching at the primary level is therefore inseparable from relational presence, empathy, and contextual judgment. However, when AI-driven systems, such as automated assessment tools, adaptive learning software, and generative instructional platforms, are introduced, they begin to mediate instructional decisions that were previously made exclusively by teachers.

The ontological question, therefore, is not whether AI possesses agency in a human sense, but how different forms of AI function as quasi-actors within instructional processes. While AI lacks consciousness and moral intentionality, its capacity to recommend learning pathways, generate feedback, and classify student performance positions it as an influential non-human participant in classroom decision-making (Tao & Nasri, 2025). In primary

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education, where authority and trust are closely tied to the teacher's embodied presence, this can blur the boundaries between human and technological agency in subtle but significant ways.

This blurring is particularly consequential for young learners, who are in a formative stage of cognitive, emotional, and moral development. Children at this level do not simply acquire information; they construct understandings of self, others, and the social world. When AI systems structure learning through continuous data extraction, performance tracking, and optimisation, there is a risk that students become framed primarily as data-producing subjects rather than developing human beings (Sperling et al., 2025). This reflects a reductionist ontology in which measurable outputs are privileged over the complexity of lived educational experience.

For elementary school teachers, such reductionism can have implications for professional identity. When AI-generated outputs, such as risk scores, performance predictions, or content recommendations, are treated as objective or neutral, they may implicitly be granted greater ontological authority than teachers' experiential knowledge of students' emotional states, family contexts, and learning trajectories (Kong & Yang, 2024). In this way, AI does not replace teachers, but it can subtly reorder the hierarchy of what counts as a legitimate basis for pedagogical decision-making.

Ontological tensions also arise in relation to how teaching itself is defined. If teaching is conceptualized primarily as the efficient delivery, monitoring, and assessment of content, then many AI systems appear well-suited to perform these functions. Yet such a definition neglects the ontological reality that teaching in primary schools is fundamentally a relational, embodied, and ethical practice. Teachers respond to unpredictable emotional needs, social conflicts, and moral dilemmas that cannot be reduced to algorithmic parameters or historical data patterns (Gibson et al., 2023).

These issues are further complicated by questions of responsibility. Although AI systems may influence instructional decisions, teachers remain ethically and professionally

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accountable for students' learning and wellbeing. When AI-generated recommendations shape classroom practices, teachers may be held responsible for outcomes they did not fully control, creating ontological ambiguity regarding who or what, acts in educational decision-making (Kong & Yang, 2024).

In developing country contexts such as Indonesia, these ontological tensions are intensified by cultural expectations that position teachers as moral exemplars, caregivers, and community figures rather than mere instructional technicians (Sperling et al., 2022). At the same time, many schools operate with uneven digital infrastructure and limited professional development related to AI. Under such conditions, AI systems may be introduced without sufficient institutional capacity to critically mediate their role, increasing the risk of ontological dissonance between culturally embedded understandings of teaching and technologically driven models of education.

This analysis does not imply that AI should be rejected in primary education. Rather, from an ontological standpoint, AI must be clearly positioned as a supportive socio-technical tool rather than as a substitute for human educational presence. Teachers should remain recognized as the primary educational beings whose work encompasses moral judgment, relational engagement, and contextual understanding. Within this framework, AI functions as an auxiliary system that can enhance teachers' capacities without redefining the essence of teaching itself (Mulyani et al., 2025).

In summary, the ontological implications of AI for elementary school teachers reveal a fundamental tension between technological optimization and human-centered education. Different forms of AI reshape who is seen to act, decide, and hold authority in the primary classroom. If left unexamined, these shifts risk narrowing education to mechanistic processes. However, by critically articulating these ontological boundaries, educators and policymakers can integrate AI in ways that preserve the teacher's role as a relational, moral, and professional agent.

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3.2 Epistemological Shifts in Knowledge Construction in AI-Supported Primary Classrooms

From an epistemological perspective, the increasing integration of Artificial Intelligence (AI) into primary education introduces significant shifts in how knowledge is produced, accessed, validated, and transmitted within the classroom. Epistemology, as a central domain of the philosophy of science, concerns the nature, sources, and legitimacy of knowledge, as well as the processes through which individuals come to know and understand the world (Cheung et al., 2024). In AI-supported primary classrooms, these epistemological questions are particularly consequential because young learners are in the formative stages of developing their understandings of truth, authority, and justification.

Traditionally, elementary school classrooms have operated within an epistemological framework in which teachers function as primary epistemic authorities. Teachers are not merely sources of information but interpreters of knowledge who contextualise content, evaluate understanding, and guide students in constructing meaning through interaction, dialogue, and scaffolding (Zagkotav, 2025). Within this model, knowledge is co-constructed through relational pedagogy rather than passively received. The introduction of AI systems—including intelligent tutoring systems, automated feedback tools, and generative content platforms—reconfigures this epistemic ecology by mediating how information is accessed, prioritized, and presented to students.

AI systems are frequently perceived as objective, efficient, and data-driven. Their ability to generate rapid responses, personalize recommendations, and standardize feedback can create the impression that AI produces more accurate or neutral knowledge than human teachers (Dai, 2022). In primary education, however, such perceptions carry epistemological risks. When students associate correctness and credibility primarily with algorithmic outputs, the epistemic authority of teachers may be weakened, shifting their role from authoritative knowers to facilitators of AI-mediated information.

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Yet this is not the only possible epistemic trajectory. The presence of AI can also enable teachers to expand and strengthen their epistemic authority by explicitly teaching students how AI systems work, where their outputs come from, and what their limitations are. When teachers engage in AI literacy education, they can reposition themselves not as competitors to AI, but as epistemic mediators who help students critically interpret algorithmic information (Sperling et al., 2022). In this way, AI becomes a catalyst for deeper epistemological reflection rather than a simple substitute for human knowledge.

This tension highlights that epistemic authority in AI-supported classrooms is not determined solely by technology, but by how institutional structures, curricula, and assessment systems frame the use of AI (Chen, 2025). When schools privilege AI-generated data, predictive analytics, and automated assessments in formal decision-making, authority tends to shift toward algorithmic systems. By contrast, when teachers are supported to contextualize, challenge, and supplement AI outputs, their epistemic role may be reinforced.

AI also introduces a new form of epistemic mediation. Most AI systems rely on large datasets and probabilistic models, which means that their outputs are shaped by historical patterns, implicit assumptions, and opaque algorithmic processes. For young learners, who are still developing critical and reflective capacities, this opacity can lead to uncritical acceptance of AI-generated information as factual or neutral (Kwon & Lee, 2024). Without teacher guidance, students may struggle to differentiate between information, understanding, and wisdom, an epistemological distinction that remains central to meaningful education.

At the same time, AI can provide access to sources of information, representations, and examples that may not be readily available to teachers, particularly in resource-constrained environments. In such cases, AI has the potential to broaden students' epistemic horizons rather than narrow them. The epistemological challenge, therefore, lies not in AI itself but in whether teachers are positioned and supported to curate, interpret, and critically integrate these expanded knowledge sources into pedagogical practice (Gibson et al., 2023).

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For elementary school teachers, navigating these epistemological shifts entails a reconfiguration of professional roles rather than their displacement. Teachers must increasingly act as epistemic guides who help students question, contextualize, and evaluate AI-generated information. This requires fostering epistemic virtues such as curiosity, skepticism, and reflective judgment, capacities that are essential for lifelong learning but not inherently cultivated by AI systems (Sperling et al., 2022).

However, this expanded epistemic role also increases professional demands. Teachers are expected to monitor the accuracy of AI outputs, address misconceptions, and adapt AI-mediated content to diverse learners. This additional epistemic labour can intensify cognitive and emotional workload, particularly in primary settings where teachers already carry significant pedagogical and pastoral responsibilities (Gentile et al., 2023). Without institutional investment in professional development and epistemic support, teachers may find it difficult to sustain their authority in AI-rich classrooms.

These challenges are especially pronounced in contexts marked by educational inequality and digital divides. Unequal access to AI tools and uneven digital literacy can generate forms of epistemic injustice, whereby some students and teachers are better positioned than others to benefit from algorithmic knowledge systems (Mulyani et al., 2025). In such contexts, epistemological issues intersect with broader concerns of equity, cultural relevance, and educational justice.

In response to these dynamics, this study argues for an epistemological framework that situates AI as an informational and analytical resource rather than as an autonomous epistemic authority. Teachers must remain recognized as central human epistemic agents who help students understand not only what to know, but how knowledge is produced, validated, and ethically used. Such a framework preserves the relational and interpretative foundations of primary education while enabling teachers to harness AI as a tool for deeper epistemic engagement rather than epistemic replacement.

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In summary, AI introduces complex epistemological shifts in primary classrooms by altering how knowledge, authority, and learning processes are structured. While algorithmic systems can increase access to information and analytical capacity, they also risk narrowing epistemology to technical correctness and efficiency. By recognising and actively managing these tensions, educators and policymakers can design AI-supported learning environments that strengthen, rather than erode, the teacher's epistemic authority and the development of reflective, critically minded learners.

3.3 Axiological and Ethical Dimensions of Artificial Intelligence in Primary Education

From an axiological perspective, the integration of Artificial Intelligence (AI) into primary education raises critical questions concerning values, ethics, and the moral purposes of schooling. Axiology, as a branch of philosophy of science, examines what is considered valuable, desirable, and ethically appropriate within human practices, including education (Rochnyak & Solovtsova, 2025). In primary education, axiological considerations are particularly significant because schooling at this level is inherently value-laden, oriented not only toward cognitive achievement but also toward character formation, emotional development, and the cultivation of moral dispositions in young learners.

The introduction of AI into primary classrooms carries implicit value assumptions that may not always align with these normative goals. Many AI systems are designed around principles of efficiency, standardization, and performance optimization, reflecting values embedded in technological rationality and managerial logics (Azman & Tümkaya, 2025). In Indonesian primary schools, these logics increasingly appear in the form of data-driven reporting systems, digital assessment platforms, and centrally mandated learning analytics that prioritise measurable outputs over relational pedagogical processes. For elementary school teachers, this creates ethical tension between institutional demands for compliance with digital systems and their moral responsibility to attend to students' emotional, social, and developmental needs.

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One of the most pressing axiological issues concerns teacher wellbeing and moral burden. Indonesian primary teachers are already required to perform multiple roles, educator, caregiver, moral guide, and administrative worker. The addition of AI systems, particularly those that generate automated reports, risk scores, and instructional recommendations, often expands rather than reduces their workload. Teachers must not only implement AI tools but also interpret their outputs, justify their decisions to school leaders, and remain accountable for students' outcomes when algorithmic recommendations prove inadequate (Mouta et al., 2023). When AI outputs conflict with teachers' professional judgment about a child's emotional state or learning context, teachers face moral stress, torn between institutional compliance and ethical responsibility.

Ethical concerns are further heightened by the vulnerability of young learners in AI-mediated environments. Primary school students lack the cognitive maturity to critically evaluate the reliability, bias, or intent of algorithmic systems. In Indonesian classrooms, where digital literacy education is unevenly implemented, children may develop uncritical trust in AI-generated feedback, automated scores, or learning recommendations, perceiving them as inherently correct or authoritative (Karpouzis, 2024). From an axiological standpoint, this raises serious questions about children's right to epistemic protection and the ethical obligation of teachers to prevent harm arising from misinformation, bias, or the premature outsourcing of thinking to machines.

Data ethics constitutes another major axiological challenge. In Indonesia, many AI-supported educational platforms collect detailed student data, including attendance records, test scores, behavioral indicators, and in some cases biometric or location-based information. These data are often stored and processed by third-party vendors, with limited transparency for schools, parents, or teachers regarding how the data are used, shared, or monetized (Alamin & Sauri, 2024). Elementary school teachers are frequently expected to facilitate these systems without having meaningful control over consent procedures or data governance. This places

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them in ethically precarious positions, responsible for protecting children's privacy while operating within opaque technological infrastructures.

Issues of equity and justice further complicate the axiological landscape. In Indonesia, disparities in access to devices, internet bandwidth, and technical support remain pronounced between urban and rural schools, and between public and private institutions. Even within the same school, students' home access to technology varies widely, affecting their ability to engage with AI-supported learning tools (Ding, 2025). At the same time, teachers' digital literacy and training in AI use differ substantially, creating unequal capacities to interpret, adapt, or resist algorithmic systems. These inequalities risk producing new forms of educational advantage and disadvantage, undermining the ethical principle of fairness that underpins public primary education.

Beyond these structural concerns, AI also shapes the moral purpose of teaching itself. Teaching in primary education involves continual ethical judgment about what knowledge is worth teaching, how children should be treated, and what kind of persons they are encouraged to become. When AI systems influence curriculum sequencing, assessment practices, or behavioral monitoring, they implicitly participate in these moral decisions (Mouta et al., 2023). Yet AI systems lack moral reasoning, empathy, and contextual sensitivity, making it ethically problematic to allow them to guide value-laden aspects of children's education without robust human oversight.

Despite these challenges, an axiological analysis does not require the rejection of AI in primary education. Rather, it calls for value-conscious integration that explicitly prioritises human wellbeing, ethical responsibility, and educational purpose. Elementary school teachers play a central role in this process as moral agents who interpret, negotiate, and sometimes resist technological practices that conflict with core educational values. Supporting teachers in this role requires institutional recognition of the ethical dimensions of AI use and professional development that includes ethical, cultural, and philosophical reflection, not only technical training (Karpouzis, 2024).

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In summary, the axiological dimensions of AI in Indonesian primary education reveal deep tensions between technological rationality and human-centered educational values. AI introduces ethical challenges related to teacher wellbeing, children's vulnerability, data privacy, equity, and moral responsibility. Without a robust axiological framework, the integration of AI risks prioritizing efficiency and control over care, justice, and relational trust. Preserving the moral purpose of primary education, therefore requires positioning elementary school teachers as ethical decision-makers who actively shape how AI is used in ways that align with educational values and the wellbeing of young learners.

4. Conclusion

This article has examined the integration of Artificial Intelligence (AI) in primary education through a philosophy of science lens, focusing on how AI reshapes the ontological, epistemological, and axiological foundations of elementary school teaching. Rather than treating AI as a neutral instructional tool, the analysis has shown that different forms of AI, such as generative systems, adaptive platforms, and analytic dashboards, operate as socio-technical forces that influence how teachers, students, and knowledge are positioned within classroom practice. Across these dimensions, the central philosophical insight of this study is that AI does not simply assist teaching; it actively participates in redefining what teaching, knowing, and valuing mean in primary education.

Ontologically, the findings indicate that AI introduces new non-human participants into classroom life, altering how agency and responsibility are distributed between teachers and technological systems. While AI does not possess moral or pedagogical agency, its role in recommending, evaluating, and structuring learning activities can subtly shift how teachers are understood, from primary educational actors to supervisors of algorithmic processes. Epistemologically, the study shows that AI reshapes knowledge authority by mediating what counts as valid information and how students encounter truth claims. Yet this shift is not inevitable: when teachers are supported to teach AI literacy and to critically interpret

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algorithmic outputs, their epistemic authority can be strengthened rather than diminished. Axiologically, the analysis demonstrates that AI is never value-neutral in primary education. Its design and implementation carry assumptions about efficiency, performance, and control that may conflict with educational values such as care, equity, moral development, and teacher wellbeing.

At the same time, this study does not argue that AI should be excluded from primary education. Its claim is more limited and more precise: AI can contribute positively to teaching and learning only when it is framed as a supportive resource rather than an autonomous educational authority. The moral, epistemic, and relational functions of elementary school teachers cannot be automated without undermining the very purposes of primary education. This paper therefore does not predict specific outcomes of AI adoption, nor does it evaluate particular technologies. Its contribution lies in clarifying the philosophical conditions under which AI integration can remain compatible with human-centred education.

These philosophical insights point directly to a concrete research agenda. Future studies should investigate how elementary school teachers in different contexts negotiate their epistemic authority when working with AI systems, how they experience ethical tension or moral stress when algorithmic recommendations conflict with professional judgment, and how primary students come to trust, question, or defer to AI as a source of knowledge. Empirical research is also needed to examine how data practices in AI-supported classrooms affect children's privacy, wellbeing, and sense of agency, and under what institutional conditions AI strengthens rather than erodes teacher professionalism.

In conclusion, AI represents not only a technological innovation but a philosophical intervention into the meaning of education itself. In primary schooling, where learning is inseparable from relationships, values, and human development, the integration of AI must be guided by careful ontological, epistemological, and axiological reflection. A philosophy-informed approach is therefore essential if AI is to support, rather than displace, the deeply human work of elementary school teachers in an increasingly algorithmic world.

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