TEACHING IN THE AGE OF ARTIFICIAL INTELLIGENCE: BETWEEN PARADIGM SHIFT AND THE "FRANKENSTEIN COMPLEX" IN EDUCATIONAL PRACTICES. A CRITICAL PEDAGOGICAL INQUIRY

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ABSTRACT
This critical narrative review examines the pedagogical, professional, and ethical implications of integrating Artificial Intelligence (AI) into education, with a particular focus on teachers' instructional practices and professional agency. Framed within the heuristic metaphor of a paradigm shift (Kuhn, 1962), AI is interpreted not merely as a technical disruption, but as a challenge to established educational epistemologies and human-centred teaching relationships, while teachers' resistance is read through the "Frankenstein complex" as a tension between control and delegation to technological systems. Within this framework, the study aims to: (A) identify and critically discuss pedagogical uses of AI, outlining benefits and risks; (B) analyze current tools available for teachers, evaluating their affordances and limits through an illustrative taxonomy; (C) explore ethical challenges, including data privacy, equity, and algorithmic bias; and (D) contextualize these dynamics through the theoretical lens of didactic design and criterion-referenced assessment rooted in the Italian pedagogical tradition. By synthesizing contemporary literature and proposing a docimologically grounded perspective, the paper argues that AI adoption must remain subordinate to professional pedagogical intentionality, transforming hesitation into informed educational judgment.

KEYWORDS: Artificial intelligence in education; teacher agency; educational ethics; didactic design; docimology;

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1. Introduction

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The acceleration of artificial intelligence in education has prompted a profound reassessment of what it means to teach, assess, and support learning in contemporary schools and universities. AI systems are no longer confined to experimental laboratories or speculative scenarios; they are embedded in mainstream educational platforms, writing assistants, assessment tools, analytics dashboards, tutoring environments, and generative systems that increasingly mediate instructional decisions (UNESCO, 2024; Zawacki-Richter et al., 2019). This diffusion has created both enthusiasm and concern: enthusiasm because AI promises personalization, efficiency, and scalability; concern because critical literature highlights the concrete risks of compromising professional autonomy, intensifying surveillance, and standardizing educational practices (Biesta, 2020; Röhl, 2025; Selwyn, 2021; Williamson, 2021). A useful way to frame this transformation is through the idea of a paradigm shift. According to Kuhn (1962), a paradigm shift occurs when anomalies accumulate to the point that an established explanatory model undergoes revolutionary replacement. In this paper, rather than asserting a literal, empirical scientific revolution in the strict Kuhnian sense, the concept is employed as a heuristic metaphor to capture the destabilization of traditional educational assumptions. In education, the rapid emergence of AI represents precisely such an anomaly: tools now perform functions once reserved exclusively for teachers, tutors, and assessors, thereby challenging established assumptions about expertise, interaction, and authority (Kasneci et al., 2023; Zawacki-Richter et al., 2019). This does not mean that human teaching becomes obsolete. Rather, it means that teachers' roles must be reinterpreted within an evolving ecology in which algorithmic systems increasingly participate in pedagogical work (Biesta & Tedder, 2007; Röhl, 2025). Yet the introduction of AI into education cannot be reduced to a technical transition. It also carries symbolic and ethical weight. The "Frankenstein complex" is a particularly useful metaphor for describing the anxiety that emerges when a human creation

appears to exceed or escape the intentions of its maker. In the present contribution, the concept is employed as an interpretive lens rather than as an empirically derived category, helping to frame teachers' concerns regarding delegation, automation, and professional judgment. In educational settings, this anxiety manifests as hesitation about delegating pedagogical authority to systems that are powerful but opaque, adaptive but not always transparent, and efficient but not always accountable (Buckingham, 2011; Selwyn, 2021). The tension is not simply between innovation and resistance. It is between control and delegation, between human responsibility and automated suggestion, between agency and dependence (Biesta, 2020; Mouta et al., 2025). From this perspective, teacher resistance to AI should not be interpreted merely as conservatism or technophobia. It can instead be read as a professional response to unresolved questions about legitimacy, trust, and educational purpose. Teachers are asked not only to adopt new tools, but to integrate them into practices that remain pedagogically coherent, ethically defensible, and socially meaningful (Nazaretsky et al., 2022; International Task Force on Teachers for Education 2030, 2025). Their concerns are especially relevant in relation to student data, algorithmic bias, automated feedback, and the risk of reducing learning to a series of measurable micro-performances (Biesta, 2020; Tzimas & Demetriadis, 2021). To examine these tensions, this article advances an interpretive argument: artificial intelligence becomes pedagogically sustainable only when it remains subordinate to teacher intentionality and embedded within a reflective framework of didactic design and criterion-referenced assessment. In developing this argument, the paper distinguishes evidence emerging from recent scholarship from the authors' theoretical and normative reflections. From a methodological perspective, this contribution is conceived as a critical narrative review and conceptual essay. Rather than aiming at an exhaustive or systematically reproducible synthesis of literature, the study seeks to critically examine and interpret major scholarly

debates concerning the integration of Artificial Intelligence (AI) into educational contexts. Literature was identified through purposive and iterative searches conducted across major academic databases, including Scopus, Web of Science, ERIC, and Google Scholar, complemented by relevant institutional publications from UNESCO and OECD. Searches focused primarily on contributions published between 2015 and 2025 and employed combinations of terms such as *artificial intelligence in education*, *teacher agency*, *AI literacy*, *educational assessment*, *algorithmic bias*, *professional development*, and *instructional design*. The corpus includes peer-reviewed journal articles, scholarly books, book chapters, and institutional reports written in English and Italian. Earlier contributions were considered only when necessary to establish the theoretical and epistemological foundations of the discussion. Sources were selected according to their relevance to four interconnected thematic areas: pedagogical uses of AI, AI tools and educational applications, ethical and professional agency concerns, and pedagogical design and assessment. The reviewed literature was subsequently organized and interpreted through a critical pedagogical lens rather than through a systematic review protocol. As a narrative and conceptual contribution, this paper does not claim exhaustive coverage of the available literature nor adherence to a systematic review methodology. Its purpose is interpretive and theoretical, aiming to stimulate critical reflection on the pedagogical implications of AI in education. Accordingly, the article is organized into four interconnected thematic areas: pedagogical applications of AI, teacher agency and ethical challenges, professional development and AI literacy, and the broader implications of AI for educational design, assessment, and reflective practice.

2. AI and Pedagogical Practice

Artificial intelligence in education encompasses a range of systems that support content generation, personalization, assessment, and learning analytics.

Although these tools differ technically, they share the capacity to model, predict, generate, classify, or recommend at scale (Luckin, 2018; Zawacki-Richter et al., 2019). Their presence is increasingly evident in activities such as lesson planning, quiz creation, automated feedback, adaptive tutoring, plagiarism detection, and learner analytics. For teachers, AI is attractive because it can reduce workload and broaden instructional possibilities. Generative systems can create lesson plans, worksheets, assessments, rubrics, summaries, and teaching scenarios, while helping adapt materials to different levels of proficiency and complexity (Kasneci et al., 2023). However, the quality and educational value of these outputs depend on user expertise, prompt quality, and pedagogical judgment (Selwyn, 2021; UNESCO, 2024). AI also supports differentiation and personalization. Adaptive platforms can recommend content or activities based on learner performance, potentially benefiting students who require additional support or greater challenge (Nazaretsky et al., 2022; Zawacki-Richter et al., 2019). Yet personalization becomes problematic when it relies on limited indicators of ability or restricts learners to predefined algorithmic pathways, thereby reducing autonomy and opportunities for exploration (Biesta, 2020; Tzimas & Demetriadis, 2021). Feedback is another promising application. AI systems can rapidly identify errors, suggest revisions, and generate explanations. Nevertheless, effective feedback must be informative, actionable, and aligned with learning goals rather than merely immediate (Hattie & Timperley, 2007; Wisniewski et al., 2020). Because AI-generated feedback may be generic or insufficiently contextualized, teachers remain essential in interpreting and adapting it to specific learning situations (Biesta, 2020; Röhl, 2025). Assessment is one of the most sensitive areas of AI adoption. AI can assist in item generation, automated scoring, rubric development, and performance analysis, reducing administrative workload while improving scalability (Tzimas & Demetriadis, 2021; UNESCO, 2024). However, concerns regarding validity, fairness,

transparency, and potential bias remain significant. Consequently, assessment should continue to be guided by human judgment, even when supported by automated tools (Biesta, 2020; Röhl, 2025). AI applications in education can be broadly categorized as operational, instructional, analytic, or creative. Their educational value depends less on the technology itself than on how they are embedded within pedagogical practice and whether they enhance learner engagement, critical thinking, and teacher decision-making (Luckin, 2018; Selwyn, 2021). The key issue is therefore not whether AI is useful, but what kind of educational relationship it fosters. While AI can increase efficiency, its greatest value lies in supporting reflective, differentiated, and responsive teaching. This requires teachers to remain active authors of educational processes rather than passive recipients of algorithmic recommendations (Biesta & Tedder, 2007; Mouta et al., 2025).

3. Teacher Agency and Resistance

Teacher agency is a decisive concept for understanding how AI enters education. Agency refers not simply to individual autonomy, but to the capacity to act purposefully within a set of material, social, and institutional conditions (Biesta & Tedder, 2007). In educational settings, agency is shaped by curriculum expectations, assessment regimes, policy constraints, technological infrastructures, and professional cultures. AI therefore does not enter a neutral field; it enters a field already structured by power, norms, and accountability (Röhl, 2025; Williamson, 2021). From this standpoint, teacher resistance to AI can be interpreted as a form of professional discernment. Teachers often ask whether a tool genuinely improves learning or merely automates procedures. They question whether the system respects student privacy, whether its outputs are explainable, whether it aligns with curricular goals, and whether it preserves room for pedagogical improvisation (International Task Force on

Teachers for Education 2030, 2025; Nazaretsky et al., 2022). Such questions are not peripheral; they are central to educational responsibility. The literature on trust is particularly relevant here. Teachers are more likely to adopt AI when they trust the technology, but trust is not the same as enthusiasm. It emerges when teachers understand how a system works, perceive its limitations, and feel capable of using it without surrendering professional judgment (Nazaretsky et al., 2022). Training and professional development therefore matter greatly. Without them, AI can appear as an external imposition. With them, it may become a manageable and critically usable resource (Mouta et al., 2025). Professional learning is essential because AI literacy is not merely technical. It involves understanding pedagogical implications, ethical risks, data governance, and the limits of automation (UNESCO, 2024). Teachers need to know not only how to operate tools, but also when not to rely on them. This critical dimension is increasingly emphasized in contemporary scholarship, which argues that educators must be empowered to make informed decisions about AI rather than simply adopt whatever the market offers (International Task Force on Teachers for Education 2030, 2025; Selwyn, 2021). In this sense, agency and literacy reinforce one another: the more teachers understand AI, the better they can exercise judgment; the more they exercise judgment, the more they remain agents rather than users. The Frankenstein complex helps clarify why some teachers remain cautious. It expresses the fear that the tool designed to support human work may eventually displace it, normalize dependency, or obscure responsibility. In education, this fear is particularly acute because teaching is relational and normative, not merely technical. Teachers do not just transmit information; they interpret needs, structure experiences, build trust, and judge quality. If these functions are increasingly mediated by AI, then educators may worry that the profession is being redefined from within (Buckingham, 2011; Selwyn, 2021). This concern is not irrational. Studies on algorithmic tools in education show that professional

agency can be constrained when systems are introduced without meaningful teacher participation or adequate explanation (Röhl, 2025). A tool that makes decisions for teachers, rather than with them, may erode confidence and create dependence. Conversely, when teachers are involved in selecting, adapting, and evaluating tools, AI is more likely to enhance rather than diminish agency (Mouta et al., 2025). The key issue is therefore governance: who decides, on what basis, and with what accountability.

4. AI Tools for Teachers

The current ecosystem of AI tools for education is broad and rapidly evolving. It includes general-purpose generative systems, AI-enhanced learning platforms, authoring tools, assessment applications, simulation environments, and learning analytics systems (UNESCO, 2024; Zawacki-Richter et al., 2019). For teachers, AI is therefore not a single technology but a diverse ecosystem of tools that support different phases of educational practice. To map this evolving territory, Table 1 provides an illustrative typology of prominent commercial AI tools currently deployed in instructional settings. Rather than presenting an exhaustive market census, this taxonomy categorizes representative platforms according to their primary pedagogical affordance, the instructional phase they support, and their prevailing economic model.

Table 1: Typology of Commercial AI Tools for Training

Category	Examples of Tools	Prevalent Function	Supported Phase	Indicative Economic Model
General-Purpose Generative AI	ChatGPT, Microsoft Copilot, Claude, Gemini	Text generation, summaries, ideas, quizzes, rubrics, cases	Design, material development, tutoring	Freemium / subscription / enterprise
LMS/LXP with AI	Docebo, 360Learning, Absorb LMS, LearnUpon, Sana Labs	Pathway management, analytics, recommendations, authoring	Delivery, monitoring, evaluation	Predominantly enterprise, pricing upon request
AI Authoring	Articulate AI, Synthesia, Canva AI, Gamma, iSpring AI	Production of content, slides, videos, microlearning	Material development	Subscription
Simulation and Role-play	Virti, Mursion, Talespin, Whatfix Mirror	Simulations, soft skills, conversational scenarios	Delivery, practice, behavioral evaluation	SaaS / enterprise
AI Assessment and Quizzes	Question Well, Quizizz AI, Kahoot AI, Gradescope	Quizzes, grading, feedback, item generation	Evaluation	Freemium / subscription

Category	Examples of Tools	Prevalent Function	Supported Phase	Indicative Economic Model
Learning Analytics / Skills Intelligence	Degreed, Cornerstone, EdCast, Workday Learning	Skills analysis, recommendations, skill gaps	Needs analysis, monitoring, development	Enterprise

Note. Methodological documentation: Tools were selected purposively selected as illustrative examples discussed in international EdTech literature(2020–2025) and professional adoption reports (e.g., EDUCAUSE, UNESCO). Descriptions of functionalities and pricing models were compiled from official vendor technical specifications, product documentation, and verified public platform data. Data updated: March 2026. This table serves as an illustrative taxonomy to contextualize the pedagogical functions discussed in the narrative review and does not constitute a commercial endorsement or an exhaustive inventory.

A useful way to compare these tools is to focus on their affordances and limits. Generative systems are powerful for drafting and ideation, but weak in verification. Adaptive systems are strong in personalization but may narrow learner pathways. Assessment tools are efficient in processing volume, but less reliable in nuanced judgment. Analytics systems are useful for pattern detection, but insufficient for educational interpretation. Simulation tools are strong for practice, but require careful pedagogical framing (Selwyn, 2021; UNESCO, 2024). The practical question for teachers is therefore not which tool is best in absolute terms, but which tool is appropriate for a specific pedagogical purpose. This requires a reflective stance. Teachers need to ask whether a tool supports explanation, practice, feedback, or differentiation; whether it preserves learner agency; whether it aligns with the curriculum; and whether it can be supervised responsibly (International Task Force

on Teachers for Education 2030, 2025; Nazaretsky et al., 2022). In this sense, tool selection becomes part of pedagogy itself.

5. Ethical Challenges

The ethical challenges associated with AI in education include privacy, bias, transparency, accountability, equity, and the broader consequences of data-driven educational governance (Tzimas & Demetriadis, 2021; UNESCO, 2024). These issues directly affect teaching practices, student experiences, and institutional decision-making. Privacy remains a central concern because many AI systems rely on student data to generate recommendations, feedback, or learning insights. Even when intended to support learning, data collection raises questions regarding consent, data minimization, and secure management (UNESCO, 2024). Teachers may not control these systems directly, yet they share responsibility for their educational use. Bias is equally significant. Because AI systems are trained on existing datasets, they may reproduce social inequalities related to language, disability, socioeconomic status, gender, or cultural background (Tzimas & Demetriadis, 2021). In educational settings, such distortions can influence feedback, opportunities, and expectations, potentially affecting learners in unequal ways. Transparency and explainability are also essential. Teachers and students should be able to understand how recommendations, feedback, or evaluations are generated. Without a reasonable degree of transparency, trust is weakened and errors become difficult to identify or challenge (Nazaretsky et al., 2022). Equity deserves particular attention. While AI is often presented as a mechanism for personalization and inclusion, Critical scholarship and international policy frameworks warn that uneven access to high-end technologies and the algorithmic normalization of dominant linguistic standards risk exacerbating existing divides (International Task Force on Teachers for Education 2030, 2025; Selwyn, 2021). As a result, AI may reinforce rather than reduce educational inequalities. Accountability presents a further challenge. The use of AI distributes responsibility across teachers,

institutions, developers, and vendors, making it difficult to determine who is answerable when problems occur (Röhl, 2025; Williamson, 2021). Clear governance frameworks are therefore necessary to define oversight mechanisms and maintain meaningful human control. Ethical governance should also include teacher participation, ensuring that educational values are not subordinated to technological imperatives (Biesta, 2020; Mouta et al., 2025). The most constructive response is neither uncritical adoption nor rejection, but informed and critical use. AI can support educational practice when teachers are able to understand its limitations, question its outputs, and integrate it within a human-centered pedagogy (UNESCO, 2024). In this sense, ethics is not a barrier to innovation but a condition for its educational legitimacy.

6. Professional Development and AI Literacy

If teachers are expected to engage responsibly with AI, professional development becomes essential. AI literacy is not merely the ability to use a tool, but the capacity to understand its functions, assumptions, limitations, and implications for teaching and learning (International Task Force on Teachers for Education 2030, 2025; UNESCO, 2024). Without this competence, teachers risk either over trusting AI or rejecting it altogether. Professional development should therefore address technical, pedagogical, ethical, and reflective dimensions. Teachers need to learn how to use and evaluate AI outputs, assess their alignment with learning objectives, consider issues of privacy and fairness, and reflect on how these technologies influence educational practice and professional identity (Mouta et al., 2025). Research suggests that trust in AI grows when teachers receive structured support and when systems operate transparently (Nazaretsky et al., 2022). Consequently, professional development should be conceived as an ongoing process rather than a one-time intervention, providing opportunities for experimentation, collaboration, and critical reflection. AI literacy is developed through both individual learning and professional dialogue. Importantly, AI literacy should not be

reduced to operational competence. Teachers may know how to use a platform without understanding its pedagogical consequences, creating an appearance of innovation without meaningful change. A more comprehensive approach connects AI literacy to curriculum design, assessment, ethics, and institutional governance (International Task Force on Teachers for Education 2030, 2025; Selwyn, 2021). This broader perspective is increasingly necessary because AI systems can influence educational decisions by recommending content, interventions, or performance classifications (Röhl, 2025). Teachers therefore need sufficient literacy to critically assess automated recommendations rather than simply follow them. Professional autonomy depends on this capacity for informed judgment. Professional development also strengthens collective agencies. Through discussion and shared practice, teachers can establish common criteria for appropriate AI use and contribute to school-level policies regarding transparency, assessment integrity, and student engagement (Mouta et al., 2025; UNESCO, 2024). The objective is not to frame AI as a threat, but to ensure that its adoption is guided by literacy, professional agency, and governance structures that keep human judgment at the center of educational decision-making (Biesta, 2020; Selwyn, 2021).

7. Paradigm Shift and Educational Change

As introduced earlier**,** the growing presence of AI in education can be understood through the metaphorical lens of a paradigm shift (Kuhn, 1962). While not denoting an incommensurable theoretical rupture in empirical science, this metaphor illuminates how algorithmic mediation challenges foundational tenets of didactic practice. Traditional educational practice has been built around human mediation, disciplinary explanation, and teacher-led evaluation. AI complicates this model by introducing systems that can generate content, predict performance, and propose instructional decisions at scale (Kasneci et al., 2023; Zawacki-Richter et al., 2019). As a result, educational work increasingly takes place in a hybrid environment where human and algorithmic contributions coexist. This shift does not eliminate

the teacher's role. Rather, it changes the nature of professional work. Teachers are asked to move from being sole providers of explanation toward becoming curators, interpreters, and evaluators of AI-supported processes (Röhl, 2025). They must decide when to trust a tool, how to supervise its use, and how to ensure that it supports rather than substitutes for learning. This new role requires stronger reflexivity and a more explicit understanding of pedagogy as decision-making under conditions of uncertainty (Biesta, 2020). The educational implications are substantial. AI can support planning, feedback, differentiation, and analysis, but it can also encourage standardization if its use is not carefully framed. This is why the question of paradigm shift should not be interpreted as a celebration of technological novelty. A shift in paradigm becomes educationally valuable only when it leads to better learning opportunities, more meaningful teacher work, and more equitable access to support (UNESCO, 2024). Without these conditions, AI risks becoming a technical layer added to unchanged pedagogical routines. In practice, the shift is uneven. Some schools and universities have integrated AI into daily routines, while others remain cautious or under-resourced. Some teachers use generative tools experimentally; others avoid them because of privacy, quality, or ethical concerns (International Task Force on Teachers for Education 2030, 2025; Nazaretsky et al., 2022). This unevenness matters because it suggests that AI adoption is not a neutral or universal process. It depends on institutional culture, professional training, policy frameworks, and access to infrastructure. The "Frankenstein complex" captures the ambivalence of this transition. Teachers may recognize AI's usefulness while still fearing that it may erode human expertise or reduce teaching to a managed workflow. These anxieties are not simply conservative reactions. They are signs that educational change must be negotiated carefully, with attention to values as well as efficiency (Buckingham, 2011; Selwyn, 2021).

8. Reflective Educational Practice

A reflective approach to AI adoption requires teachers to consider not only what a tool can do, but also how it shapes educational relationships, learner agency, and professional decision-making (Biesta & Tedder, 2007). AI systems are often presented as objective or inevitable, yet they embody specific assumptions that require critical examination (Williamson, 2021). Teachers should therefore evaluate whether AI-generated recommendations align with curricular goals, remain sufficiently transparent, and support rather than weaken meaningful teacher-student interactions (Tzimas & Demetriadis, 2021; UNESCO, 2024). Reflective practice also involves experimentation and professional dialogue. Through the practical use of AI tools and the exchange of experiences, teachers can move beyond uncritical enthusiasm or resistance and develop informed judgments about appropriate educational applications (Mouta et al., 2025). Because the value of a tool depends on context, educational decisions cannot be reduced to simple choices between adoption and rejection. Collective reflection further supports responsible AI governance. Shared criteria concerning acceptable uses, assessment practices, and data protection can strengthen consistency and professional agency while ensuring that educational values remain central to decision-making (Röhl, 2025). Ultimately, reflective practice transforms AI from a technological solution into an object of pedagogical judgment, helping ensure that innovation serves educational rather than merely operational goals (International Task Force on Teachers for Education 2030, 2025; Selwyn, 2021).

9. Pedagogical Design, Evaluation, and the Italian Tradition: A Theoretical Lens

To move beyond purely operational or techno-centric assessments of AI, the international debate benefits from being grounded in established traditions of instructional design and docimology. In this section, rather than offering a localized national case study, the Italian pedagogical tradition—and specifically the docimological scholarship developed at the University of Salerno—is mobilized as

a specific theoretical and epistemological lens. The discussion of AI in education becomes more robust when it is anchored in the pedagogical tradition that treats design and evaluation not as secondary technical phases, but as constitutive dimensions of educational action. In the Italian scholarship associated with the University of Salerno, pedagogical planning is not a neutral sequence of operations; it is a reflective process in which objectives, methods, criteria, and outcomes must be coherently aligned. This is particularly relevant for AI, because many digital tools appear efficient precisely where pedagogical rigor is weakest: they can generate content, tests, or feedback without guaranteeing educational meaning (Tammaro, 2011). The contribution of Notti, Marzano, and Tammaro **(**2011**)** is especially useful here because it frames didactic design as a structured but flexible process grounded in explicit educational intentions. Their work on design and evaluation highlights that assessment is not merely the final moment of checking results, but a pedagogical function that informs the entire training cycle. This is compatible with the current debate on AI because automated systems are often introduced directly into assessment or feedback workflows without sufficient attention to validity, criterion quality, or interpretive responsibility (Tzimas & Demetriadis, 2021; UNESCO, 2024). This tradition also helps clarify why teacher agency matters so much. If design is understood as a professional act of judgment, then AI cannot simply replace or automate it. At most, it can support it. Teachers and trainers must decide what counts as a need, how objectives are formulated, what evidence is credible, and how learning should be interpreted (Biesta, 2020; Röhl, 2025). In this sense, AI is pedagogically meaningful only when it remains subordinate to a reflective design logic rather than imposing an opaque logic of its own. The Italian research on AI in education reinforces this point. Recent scoping reviews show that the pedagogical debate in Italy has expanded significantly, but also that there is still a need for stronger conceptual integration between technological innovation and educational theory. The review by Fiorucci and Bevilacqua is particularly important because it documents a growing but still heterogeneous field, suggesting that

Italian pedagogical research is increasingly attentive to AI while remaining concerned with the quality of educational mediation (Bevilacqua & Fiorucci, 2024). This aligns well with the present article's concern for reflective and professionally grounded adoption. A further relevant contribution comes from the recent University of Salerno-linked work by Ferrantino and Tiso on educating with AI in the learning environment. Their analysis of possibilities and critical issues shows that AI can support personalization, flexibility, and access, but only if the pedagogical environment preserves human intentionality and ethical awareness. This is an important corrective to techno-optimistic narratives. The point is not to ask whether AI can be used in education, but how educational contexts can remain pedagogically meaningful when AI is introduced (Ferrantino & Tiso, 2025). From this perspective, evaluation must be understood as part of a larger educational architecture. The docimological tradition associated with Notti and Tammaro stresses that assessment should be aligned with educational goals, student characteristics, and the quality of instruction itself. That insight is crucial in the AI era, because many systems prioritize what is easy to measure rather than what is educationally important. A learning analytics dashboard may offer useful signals, but it cannot by itself interpret the deeper significance of those signals for educational growth (Biesta, 2020; International Task Force on Teachers for Education 2030, 2025; Ferrantino & Tiso, 2025). In the same vein, the pedagogical value of AI tools depends on whether they support reflection rather than merely optimization. A tool that saves time may still be pedagogically weak if it narrows the teacher's capacity to interpret, adapt, and judge. Conversely, a tool that slows the process slightly but improves diagnostic clarity, feedback quality, or inclusion may be far more valuable (Mouta et al., 2025). This is why the University of Salerno perspective is so relevant: it keeps attention on the educational form of the practice, not only on its technical efficiency. If we read AI through this pedagogical lens, the "Frankenstein complex" becomes more than a metaphor for fear. It becomes a warning against delegating educational responsibility to systems that do

not bear it. Teachers' hesitation is therefore not a barrier to innovation; it is often the sign of a professional culture that still recognizes the ethical and pedagogical seriousness of teaching (Buckingham, 2011; Selwyn, 2021). The task is not to eliminate this caution, but to transform it into informed judgment supported by literacy, training, and participatory governance (Nazaretsky et al., 2022; UNESCO, 2024).

10. Discussion and Final Conclusions

This contribution presents some limitations. As a narrative review and conceptual essay, it does not claim exhaustive coverage of the available literature and does not follow a systematic review protocol. Nevertheless, the critical examination of the literature considered suggests that AI in education may be understood as a significant transformation of pedagogical practice, professional agency, and educational assessment. Its significance lies not only in the novelty of the tools but in the way they reshape pedagogical design, assessment practices, professional identity, and the distribution of authority in educational settings (UNESCO, 2024; Zawacki-Richter et al., 2019). This means that the debate about AI cannot be confined to questions of efficiency or automation. It must also address educational meaning, ethical legitimacy, and teacher agency (Biesta, 2020; Röhl, 2025). A primary theoretical proposition of this paper concerns the role of teachers. Across several contributions reviewed here, teachers are portrayed not as passive recipients of technological innovation but as the professionals who decide whether AI becomes a pedagogical resource or a mechanical shortcut (Mouta et al., 2025; Nazaretsky et al., 2022). Their agency is crucial because AI systems do not operate in a vacuum: they are embedded in curricula, institutional policies, assessment cultures, and local educational values (Biesta & Tedder, 2007; Williamson, 2021). If teachers are excluded from this process, AI may intensify standardization and external control. If they are included, AI can support more responsive and reflective

practice. A second contribution of this paper is to propose the value of the Italian and University of Salerno pedagogical tradition as an interpretive compass. The literature on didactic planning and evaluation shows that education has long emphasized intentionality, coherence, and criterion-based judgment. This tradition is especially useful for AI because it counters the tendency to reduce learning to what can be automatically generated or measured. The emphasis on design as a reflective act and on evaluation as an educational function helps preserve the pedagogical depth that AI systems often lack. In this sense, the UNISA perspective strengthens the article's central argument: AI is useful only when it is subordinated to pedagogical judgment rather than substituting for it (Tammaro, 2011).Thirdly, from an ethical standpoint**,** privacy, equity, bias, transparency, and accountability remain central concerns because AI can intensify existing inequalities if it is used uncritically (International Task Force on Teachers for Education 2030, 2025; Tzimas & Demetriadis, 2021). These issues are not peripheral technical problems. They are part of the educational mission itself. An institution that adopts AI without ethical governance risks undermining trust, narrowing opportunity, and weakening democratic educational values (Selwyn, 2021; Williamson, 2021). The Frankenstein complex remains a useful interpretive frame because it captures the feeling that accompanies many educators' responses to AI: the sense that a system created to assist teaching may eventually define its limits. This concern should not be dismissed as irrational. Rather, it should be treated as a prompt for deeper inquiry into control, delegation, and responsibility (Buckingham, 2011). When interpreted carefully, the complex reminds us that the problem is not whether AI is present in education, but whether educational actors remain in a position to govern it meaningfully. The broader implication is that AI should be incorporated into education through reflective, participatory, and professionally grounded practices. Teachers need AI literacy, institutional support, and opportunities for critical dialogue in order to decide how and when to use these tools (International Task Force on Teachers for Education 2030, 2025; Nazaretsky et al., 2022; UNESCO,

2024). Without these conditions, AI risks becoming a source of dependency. With them, it can contribute to richer instructional design, more responsive feedback, and more inclusive learning environments. In final terms, the educational challenge is not to choose between human teaching and artificial intelligence. It is to build forms of teaching in which AI remains a support for judgment, not a replacement for it. That is the point at which innovation becomes pedagogically meaningful and ethically sustainable (Biesta, 2020; Mouta et al., 2025**)**.

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