Teachers' Beliefs and Decisions Regarding Artificial Intelligence Use

Muhammad Abdul Azis[1]*, Muhammad Numan[2]

[1] International Relations Study Program, Universitas Brawijaya, Indonesia
[2] Abdul Kadir Molla International School, Bangladesh
*Corresponding author's email: Muhabdulazis@ub.ac.id

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Abstract: The increasing integration of artificial intelligence (AI) into educational settings has raised important pedagogical and ethical questions, particularly regarding how teachers understand and decide to use AI in their instructional practices. This qualitative study explores teachers' beliefs about AI use in education and examines how these beliefs shape their instructional decisions. Drawing on semi-structured interviews with teachers working in formal educational contexts who have experience engaging with AI-supported tools, the study reveals that teachers hold nuanced and evaluative beliefs about AI, viewing it as a supportive pedagogical tool while expressing concerns about overreliance, learning quality, and professional responsibility. Rather than adopting AI uncritically, teachers exercise agency through selective integration and pedagogical regulation of AI use, particularly in relation to assessment and student accountability. Teachers' decisions are shown to be context-sensitive and grounded in humanistic values that emphasize ethical judgment and meaningful teacher–student interaction. The findings suggest that AI use in education is best understood as a belief-driven and value-laden practice rather than a purely technical innovation. This study contributes to educational and humanities-oriented discussions by foregrounding teachers' professional judgment in shaping responsible and pedagogically sound AI integration.

Keywords: Artificial intelligence, education, teacher agency, teacher beliefs, teacher decision-making

INTRODUCTION

The rapid development of artificial intelligence (AI) has brought profound changes to contemporary educational practices across diverse contexts. AI-powered tools, including automated feedback systems, adaptive learning platforms, intelligent tutoring systems, and generative language models, are increasingly integrated into classrooms to support teaching and learning processes (Davis, 2024). These technologies are often promoted for their potential to enhance efficiency, personalize instruction, and provide immediate support for learners (Evmenova et al., 2025). As a result, educational institutions and policymakers worldwide have begun to encourage the adoption of AI as part of broader digital transformation agendas in education (Garg et al., 2025). However, the growing presence of AI in educational settings has also raised critical pedagogical, ethical, and

professional questions, particularly regarding how teachers understand, interpret, and decide to use AI in their instructional practices.

While much of the existing discourse on AI in education emphasizes technological affordances and learning outcomes, there is a growing recognition that successful and meaningful AI integration cannot be separated from teachers' beliefs and professional judgments. Teachers are not passive recipients of technological innovation (Huertas-Abril, 2021); rather, they actively evaluate, adapt, and sometimes resist new tools based on their pedagogical values, contextual constraints, and perceptions of learners' needs (Arefian, 2022). From a humanistic educational perspective, teaching involves moral responsibility, relational engagement, and professional agency (Cronqvist, 2025). Consequently, as stated by Ofem et al. (2025), teachers' beliefs about AI, including their assumptions about its pedagogical usefulness, ethical implications, and impact on student learning, play a central role in shaping how AI is actually used in classrooms.

Research on teachers' beliefs has long demonstrated that beliefs influence instructional decision-making, curriculum implementation, and classroom interaction (Kehoe & McGinty, 2024). Beliefs act as interpretive frameworks through which teachers make sense of new policies, technologies, and pedagogical innovations. In the context of AI use in education, beliefs may relate to views on the role of technology in learning (Velander et al., 2024), perceptions of AI reliability and accuracy (Nazaretsky et al., 2022), concerns about academic integrity (Gustilo et al., 2024), and assumptions about the balance between human and machine involvement in teaching (Kamalov et al., 2023). These beliefs can either facilitate or constrain AI adoption, depending on how teachers align AI tools with their professional identities and instructional goals (Acosta-Enriquez et al., 2025). Understanding teachers' beliefs is therefore essential for moving beyond simplistic narratives of technological progress toward more nuanced accounts of AI use in educational practice.

Despite the increasing body of research on AI in education, many studies have predominantly focused on students' perceptions, learning outcomes, or technical performance of AI systems (Lin & Chen, 2024; Xu & Ouyang, 2022). Although these studies provide valuable insights, they often overlook the complex decision-making processes teachers engage in when determining whether, when, and how to use AI in their classrooms. Teachers' decisions are shaped not only by beliefs but also by contextual factors such as institutional expectations (Grønset et al., 2025), curriculum demands (Rushton & Walshe, 2025), assessment practices (Latif & Wasim, 2022), time constraints (Lei & Lei, 2025), and access to resources (Antonietti et al., 2022). In some cases, teachers may strategically limit or selectively adopt AI tools to maintain pedagogical control, uphold ethical standards, or preserve meaningful teacher–student interactions (Adiguzel et al., 2023; Al-Zahrani, 2024). Such decisions reflect professional judgment rather than resistance to innovation.

Recent qualitative studies have begun to highlight teachers' ambivalent and critical stances toward AI use in education. Teachers may simultaneously acknowledge the benefits of AI for efficiency and learner support while expressing concerns about

overreliance on automated systems, potential erosion of critical thinking, and the risk of diminishing the human dimension of teaching (Alwaqdani, 2025; Zhai et al., 2024). These tensions are particularly salient in contexts where AI is used for assessment, feedback, and language learning, as such practices directly relate to teachers' core pedagogical responsibilities. As AI systems increasingly mediate instructional processes, teachers are required to negotiate the boundaries between human expertise and technological assistance (Ghamrawi et al., 2024; Mouta et al., 2025), making belief-driven decisions that have significant implications for teaching quality and educational values.

From an educational and humanities perspective, examining teachers' beliefs and decisions regarding AI use is crucial for understanding the broader implications of AI integration in education. Education is not merely a technical enterprise but a deeply humanistic endeavor concerned with meaning-making, ethical responsibility, and the development of learners as individuals and members of society (Babayeva, 2025). Teachers' beliefs about AI reflect broader philosophical assumptions about knowledge, learning, and the purpose of education (Cabero-Almenara et al., 2024). Investigating these beliefs can therefore contribute to interdisciplinary conversations that bridge educational research, ethics, and cultural studies, aligning well with the scope of humanities-informed educational inquiry.

Moreover, global diversity in educational contexts necessitates context-sensitive research on AI use. Teachers working in different institutional, cultural, and policy environments may interpret and respond to AI technologies in distinct ways (Buele & Llerena-Aguirre, 2025). Factors such as national education policies, professional development opportunities, and sociocultural attitudes toward technology can shape teachers' beliefs and decisions (Chiu, 2024). Consequently, there is a need for empirical studies that foreground teachers' voices and experiences, particularly from underrepresented contexts, to provide a more balanced and inclusive understanding of AI use in education.

While existing research has examined teachers' acceptance, readiness, or attitudes toward artificial intelligence, much of this work adopts an adoption-focused perspective that frames AI use primarily in terms of uptake, implementation, or resistance. Such approaches tend to emphasize whether teachers use AI rather than how and why they make particular instructional decisions. In contrast, the present study adopts a belief-driven perspective, which conceptualizes AI use as a value-laden and interpretive practice shaped by teachers' pedagogical beliefs, ethical commitments, and professional judgment. This perspective moves beyond adoption as an outcome and instead examines how teachers' beliefs actively guide selective integration, regulation, and limitation of AI use in classroom practice.

In light of these considerations, the present study aims to explore teachers' beliefs and decisions regarding artificial intelligence use in education. By focusing on teachers' perspectives, this research seeks to move beyond instrumental accounts of AI integration and to highlight the pedagogical reasoning and professional values that underpin teachers' instructional choices. Specifically, the study examines what teachers believe about the role and value of AI in education and how these beliefs influence their decisions about

AI use in classroom practice. Through this focus, the study contributes to ongoing debates about the responsible, ethical, and pedagogically sound use of AI in education, offering insights that may inform teacher education, professional development, and policy-making.

LITERATURE REVIEW

Analytical Lens

The present study is informed by theoretical perspectives on teacher beliefs, professional judgment, and teacher agency in educational practice. Teacher beliefs are commonly understood as relatively stable yet contextually shaped systems of values, assumptions, and understandings that guide teachers' interpretations of teaching and learning situations (Flint et al., 2024; Kehoe & McGinty, 2024; Meij et al., 2025). These beliefs influence how teachers perceive pedagogical innovations, including emerging technologies such as AI, and how they translate these perceptions into classroom actions (Velli & Zafiropoulos, 2024). Rather than functioning as isolated cognitive constructs, beliefs are embedded in teachers' professional experiences, disciplinary knowledge, and sociocultural contexts.

Within technology-related research, teacher beliefs have been shown to play a central role in shaping technology adoption and use. Teachers do not simply implement technologies as designed but actively interpret their pedagogical relevance and compatibility with existing instructional practices (Bui, 2022). In the case of AI, this interpretive process becomes particularly complex due to the perceived autonomy of AI systems and their capacity to perform tasks traditionally associated with human expertise, such as providing feedback, evaluating performance, or generating instructional content. Teachers' beliefs about the nature of teaching and learning therefore, as stated by Williyan et al. (2024), influence whether AI is seen as a supportive tool, a pedagogical partner, or a potential threat to professional autonomy.

Closely related to teacher beliefs is the concept of professional judgment, which refers to teachers' capacity to make informed, context-sensitive decisions in complex instructional situations. Professional judgment involves weighing pedagogical goals, learners' needs, ethical considerations, and contextual constraints (Nezhad & Stolz, 2024). In AI-supported educational environments, professional judgment becomes especially salient, as teachers must decide how to balance efficiency and personalization offered by AI with concerns about fairness, transparency, and the preservation of meaningful human interaction (Bulathwela et al., 2024; Azman & Tümkaya, 2025; Zhang & Zhang, 2024). This perspective contrasts with instrumental approaches that frame AI use as a matter of technical optimization rather than professional deliberation. Accordingly, this study views teachers' decisions about AI use as expressions of professional judgment rather than mere compliance with technological trends or institutional mandates..

The notion of teacher agency further informs the analytical lens of this study. Teacher agency emphasizes teachers' active role in shaping educational practices through deliberate choices and actions (Williyan, Supriyono, et al., 2025). Agency is not exercised

in isolation but is mediated by structural conditions such as curriculum requirements, assessment regimes, institutional policies, and access to resources (Molla & Nolan, 2020). In the context of AI use, teacher agency is reflected in how teachers selectively adopt, adapt, or resist AI tools in response to their beliefs and contextual realities (Williyan et al., 2025). This agentive view challenges deterministic assumptions that the availability of AI technologies will automatically lead to their uniform adoption in classroom practice.

From a humanistic educational standpoint, the analytical lens also incorporates ethical and philosophical considerations related to AI use. Education is inherently value-laden, and decisions about AI use involve ethical judgments about responsibility, equity, and the purpose of education (Al-Zahrani & Alasmari, 2024; Sposato, 2025). Teachers' beliefs about AI often reflect broader humanistic concerns, such as the importance of teacher–student relationships, the development of critical thinking, and the moral dimensions of assessment and feedback (Haroud & Saqri, 2025). By foregrounding these concerns, the present study positions AI use as a pedagogical and ethical practice rather than a purely technical intervention.

Previous Studies

Previous Studies (Revised Version)

Much of the existing research on artificial intelligence in education has been dominated by an effectiveness- and outcomes-oriented position, which conceptualizes AI primarily in terms of its technical affordances and instructional efficiency. Empirical research on AI use in education has expanded rapidly in recent years, reflecting growing interest in the pedagogical potential of AI technologies. Many studies have examined the effectiveness of AI-powered systems, such as intelligent tutoring systems, adaptive learning platforms, and automated feedback tools, in improving student learning outcomes (Huang et al., 2025; Rakhmetov et al., 2025; Strielkowski et al., 2025). These studies often report positive effects on learner engagement, efficiency, and personalization. Taken together, this body of work establishes AI as a potentially powerful instructional resource. However, such outcome-oriented research frequently treats teachers as implementers rather than pedagogical decision-makers (Granström & Oppi, 2025; Ifenthaler et al., 2024), providing limited insight into how teachers interpret, evaluate, or regulate AI use in practice.

A second major strand of research shifts attention from technological performance to teachers' attitudes, readiness, and acceptance of AI. An emerging body of research has begun to address teachers' perspectives on AI in education, often through survey-based designs. These studies reveal a mixture of optimism and concern (Alshorman, 2024; Alshorman, 2024; Fteiha et al., 2025). Teachers commonly recognize the potential of AI to support administrative tasks, provide individualized feedback, and assist with assessment (Martin et al., 2025; Topping et al., 2025). At the same time, they express reservations about data privacy, algorithmic bias, reliability of AI-generated outputs, and the potential impact on students' critical thinking and academic integrity (Li & Huang, 2025). While this strand of research usefully documents teachers' general orientations

toward AI, it tends to conceptualize beliefs as static attitudes rather than as resources actively mobilized in instructional decision-making. As a result, the mechanisms through which beliefs shape concrete pedagogical choices remain insufficiently explored.

More recently, a third line of inquiry has emerged that adopts qualitative and interpretive approaches to examine teachers' judgment, ethics, and agency in AI-mediated contexts. Qualitative studies offer deeper insights into how teachers interpret and negotiate AI use in their professional practice. Interviews and case studies have shown that teachers often engage in selective and strategic AI use, aligning AI tools with specific pedagogical purposes while deliberately avoiding others (Filiz et al., 2025; Liu & Wang, 2024). For example, teachers may use AI to generate instructional materials or provide preliminary feedback but retain control over high-stakes assessment and evaluative judgment (Bower et al., 2024; Burner et al., 2025; Reinhold et al., 2025). These studies foreground teacher agency and professional responsibility, yet they often stop short of analytically distinguishing between teachers' underlying beliefs and the specific decisions through which those beliefs are enacted.

Research in language education further highlights this tension between pedagogical opportunity and ethical concern. Studies in EFL contexts indicate that teachers appreciate AI's potential to enhance learner autonomy and provide immediate support but remain cautious about its influence on language accuracy, originality, and communicative competence (Mohammed & Khalid, 2025; Praja Dinata et al., 2025). Teachers' decisions to limit or regulate AI use are often driven by concerns about overdependence, reduced learner effort, and the erosion of authentic language use (Cong-Lem et al., 2024). These findings underscore an unresolved tension in the literature: while teachers' beliefs about AI are widely acknowledged, how those beliefs are translated into pedagogical regulation and boundary-setting remains under-theorized.

Taken together, existing studies suggest broad agreement that teachers' beliefs matter in shaping AI use, yet important analytical gaps persist. Many studies rely on large-scale surveys that capture general attitudes but do not sufficiently explore the reasoning processes behind teachers' decisions. Moreover, relatively few studies explicitly examine how pedagogical, ethical, and professional beliefs interact to structure teachers' concrete instructional choices. The relationship between belief and decision-making in AI-mediated teaching therefore remains conceptually underdeveloped, particularly from a humanistic perspective that foregrounds ethics, responsibility, and professional judgment.

In response to these unresolved tensions, the present study seeks to advance the literature by offering an in-depth qualitative examination of teachers' beliefs and decisions regarding AI use in education. By analytically distinguishing between what teachers believe about AI and how those beliefs are enacted through selective integration, regulation, and limitation, the study moves beyond descriptive accounts of attitudes or adoption. This approach contributes a more nuanced understanding of belief-driven decision-making and positions teacher agency as an ethical and pedagogical practice rather than a mere response to technological availability.

METHODS

Research Design

This study employed a qualitative research design to gain an in-depth understanding of teachers' beliefs and decision-making processes related to AI use in educational practice. A qualitative approach was deemed appropriate because the study sought to explore participants' perspectives, interpretations, and reasoning rather than to measure predefined variables or test hypotheses (Hall & Liebenberg, 2024). Teachers' beliefs about AI and their instructional decisions are complex, context-dependent, and value-laden phenomena that require rich, descriptive data to be meaningfully examined.

Specifically, the study adopted an interpretive qualitative design, grounded in the assumption that teachers construct meanings about AI use through their professional experiences and sociocultural contexts. This design allowed the researcher to capture how teachers articulate their beliefs about AI, how they justify their instructional choices, and how they navigate tensions between technological innovation and pedagogical responsibility (Abedi et al., 2024). By foregrounding participants' voices, the study aligns with humanistic and agency-oriented perspectives in educational research.

The qualitative design also enabled flexibility in data generation, allowing participants to elaborate on issues they considered salient (Denny & Weckesser, 2022). Rather than imposing rigid categories of AI use, the study invited teachers to reflect on their own experiences, concerns, and practices. This approach was particularly important given the evolving and context-sensitive nature of AI integration in education. Overall, the research design was intended to produce a nuanced account of teachers' beliefs and decisions, contributing depth and contextual understanding to the literature on AI use in education.

Participants

The participants of this study were practicing teachers who had experience with, or exposure to, artificial intelligence tools in their educational contexts. A purposive sampling strategy was used to select participants who could provide relevant and information-rich insights into AI use in teaching. The inclusion criteria required participants to be actively involved in teaching and to have at least some familiarity with AI-supported tools, such as automated feedback systems, generative AI applications, or adaptive learning platforms.

The study involved a total of six teachers from form formal education contexts. Participants represented diverse disciplinary backgrounds, teaching experiences, and institutional settings, which allowed for a broader exploration of beliefs and decisions related to AI use. Teaching experience among participants ranged from early-career to senior teachers, providing variation in professional perspectives and levels of technological engagement. The sample size was considered sufficient as the study aimed for depth of understanding rather than representativeness, and thematic saturation was reached as recurring patterns emerged across participants' accounts.

To ensure ethical research practice, participants were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time. Pseudonyms were used to protect participants' identities, and all data were anonymized during transcription and analysis. Ethical approval for the study was obtained from the relevant institutional review board prior to data collection.

Data Collection

Data were collected primarily through semi-structured interviews, which are well suited for exploring participants' beliefs, experiences, and decision-making processes. An interview guide was developed based on the research questions and the analytical lens of the study. The guide included open-ended questions that invited participants to reflect on their beliefs about AI in education, their experiences using or choosing not to use AI tools, and the factors influencing their instructional decisions.

Examples of interview prompts included questions about participants' understanding of AI in education, perceived benefits and challenges of AI use, and specific instances in which they decided to adopt, adapt, or limit AI tools in their teaching. Follow-up questions were used to probe participants' reasoning, clarify meanings, and encourage elaboration. This flexible structure allowed interviews to remain focused while accommodating participants' unique experiences and viewpoints.

Interviews were conducted in [language] and lasted approximately [duration] minutes each. Depending on participants' availability and preferences, interviews were conducted either face-to-face or online using video conferencing platforms. All interviews were audio-recorded with participants' consent and subsequently transcribed verbatim for analysis.

In addition to interviews, the study incorporated document analysis to enrich and triangulate the data. Relevant documents, such as instructional guidelines, lesson plans, or institutional policies related to AI use, were collected when available. These documents provided contextual information that helped to situate teachers' beliefs and decisions within broader institutional and policy frameworks.

Data Analysis

Data analysis followed a thematic analysis approach, which is widely used in qualitative research to identify and interpret patterns of meaning across data sets (Braun & Clarke, 2021). The analysis was conducted iteratively and involved several stages. First, all interview transcripts and documents were read multiple times to achieve familiarization with the data. Initial notes were taken to capture preliminary impressions and recurring ideas related to teachers' beliefs and decisions about AI use.

In the second stage, the data were coded using an inductive approach. Meaningful segments of text were assigned codes that reflected participants' expressed beliefs, concerns, justifications, and decision-making strategies. Coding was conducted systematically across all transcripts to ensure consistency. While the coding process was

primarily data-driven, it was informed by the analytical lens of teacher beliefs, professional judgment, and agency.

The third stage involved grouping related codes into broader themes that captured patterns across participants. These themes represented key dimensions of teachers' beliefs about AI, such as perceived pedagogical value, ethical considerations, and views on professional responsibility, as well as decision-making practices related to AI adoption and use. Themes were reviewed and refined through constant comparison, ensuring that they were grounded in the data and coherent in relation to the research questions.

To enhance the trustworthiness of the analysis, several strategies were employed. Peer debriefing was conducted with a colleague experienced in qualitative research to discuss emerging themes and interpretations. An audit trail was maintained to document analytic decisions and coding revisions. Additionally, representative excerpts from participants' accounts were selected to illustrate each theme and to maintain transparency in the interpretation of findings.

The data analysis process was designed to produce a credible and nuanced understanding of teachers' beliefs and decisions regarding AI use in education. By systematically analysing participants' narratives, the study sought to illuminate how beliefs, values, and contextual factors intersect in shaping teachers' instructional practices in AI-supported educational environments.

Researcher Positionality and Reflexivity

The researcher brings a professional background in education and teacher education, with a scholarly focus on teachers' beliefs, professional judgment, and agency in technology-mediated instructional contexts. This background informed not only the analysis but also the data collection process. During interviews, the researcher's familiarity with educational practice facilitated rapport with participants and enabled the use of pedagogically grounded follow-up questions. At the same time, the researcher remained attentive to the risk of assuming shared understandings and therefore encouraged participants to elaborate on their meanings and experiences rather than relying on implicit professional assumptions.

This study is informed by a humanistic and agency-oriented perspective that views AI not as a neutral technological tool, but as a pedagogical and ethical practice shaped by teachers' values and contextual constraints. To address reflexivity during analysis, reflexive memo writing was used throughout the coding process to document emerging assumptions and interpretive decisions. Peer debriefing was conducted with a colleague experienced in qualitative educational research at the stage of theme development and interpretation. This process involved discussing preliminary codes, reviewing theme coherence, and challenging analytic claims to ensure that interpretations remained grounded in participants' accounts rather than the researcher's prior theoretical orientation. These strategies were employed to enhance methodological transparency and credibility.

FINDINGS

This study contributes conceptually to research on AI in education by making explicit the relationship between teachers' beliefs and their instructional decision-making in AI-mediated contexts. While prior studies have established that teachers' beliefs influence technology use, the present findings deepen this understanding by showing how beliefs function as interpretive and ethical resources that guide selective, regulated, and context-sensitive AI use. Teacher agency, in this sense, is not expressed solely through adoption or innovation but through deliberate pedagogical restraint and ethical boundary-setting. By foregrounding these belief-driven decisions, the study nuances existing belief–practice models and situates AI use within teachers' ongoing professional judgment rather than technological compliance.

Findings Related to RQ1: Teachers' Beliefs About Artificial Intelligence Use in Education

Analysis of the interview data indicates that teachers' beliefs about AI use in education are complex, evaluative, and grounded in pedagogical and ethical considerations. Three overarching belief-oriented themes were identified: AI as pedagogical support, AI as a potential challenge to educational values, and AI as a catalyst for redefining the teacher's professional role.

First, teachers generally perceived AI as a supportive pedagogical tool rather than a replacement for teaching expertise. AI was believed to be useful for assisting with lesson preparation, generating instructional materials, and providing preliminary feedback. Teachers emphasized efficiency and practicality, framing AI as a means to reduce workload and support instructional planning. However, this belief was consistently accompanied by the view that AI should remain subordinate to teacher judgment.

Second, teachers expressed concerns about the potential negative consequences of AI use for core educational values. These concerns included overreliance on AI by students, reduced cognitive engagement, threats to academic integrity, and ethical issues related to fairness and responsibility. Teachers believed that unchecked AI use could undermine learning processes that require effort, reflection, and critical thinking.

Third, teachers viewed AI as prompting a reconsideration of the teacher's role in contemporary education. Rather than diminishing the teacher's importance, AI was believed to heighten the need for professional discernment, ethical oversight, and human interaction. Teachers emphasized that relational aspects of teaching, such as understanding learners' needs and providing meaningful guidance, could not be replicated by AI systems. Table 1 presents representative excerpts illustrating these belief patterns, along with corresponding interpretations.

Table 1

Teachers' Beliefs About Artificial Intelligence Use in Education

Excerpt from Participants	Interpretation
"AI is helpful for preparing materials and ideas, but it cannot decide what my students really need."	AI is viewed as a supportive resource, while pedagogical decisions remain the teacher's responsibility.
"If students rely too much on AI, they stop thinking for themselves."	Belief that AI may hinder critical thinking and learner autonomy if overused.
"Technology can assist, but teaching is still about understanding students as humans."	Teaching is framed as a humanistic practice that cannot be replaced by AI.
"AI gives quick answers, but education is not only about speed."	Concern that efficiency-oriented AI use may conflict with deeper learning values.

These findings show that teachers' beliefs about AI use are characterized by cautious optimism. Teachers recognize the potential benefits of AI but evaluate these benefits through the lens of pedagogical responsibility and educational values. Importantly, these belief systems function as interpretive frameworks that shape how teachers subsequently judge appropriate and inappropriate uses of AI in their instructional practice.

Findings Related to RQ2: Teachers' Decisions About Artificial Intelligence Use in Teaching and Learning

While the previous section focused on teachers' beliefs about AI and its role in education, this section examines how those beliefs are enacted through concrete instructional decisions. Specifically, it explores how teachers interpret their beliefs in relation to contextual constraints and translate them into practices of adoption, regulation, or limitation of AI use.

The findings related to RQ2 reveal that teachers' beliefs directly inform their instructional decisions regarding AI use. Teachers did not adopt AI in a uniform or unconditional manner. Instead, their decisions reflected agency, selectivity, and contextual sensitivity. Three decision-oriented themes emerged: selective integration of AI, pedagogical regulation of AI use, and contextual negotiation of institutional conditions.

The first theme concerns selective integration. Teachers deliberately chose to use AI for specific instructional purposes while excluding it from others. AI was commonly used for low-stakes or preparatory activities, such as brainstorming, material development, and formative feedback. In contrast, teachers avoided using AI for summative assessment, final grading, or evaluative judgment. This pattern illustrates a clear belief- decision mechanism, because teachers viewed assessment as a core expression of professional

responsibility, they interpreted AI as inappropriate for high-stakes evaluative contexts and therefore limited its use accordingly.

The second theme involves pedagogical regulation. Teachers actively established rules and guidelines to control how students used AI. Rather than banning AI outright, teachers defined acceptable and unacceptable uses based on learning objectives. Common strategies included restricting AI use to early stages of task completion, requiring transparency about AI use, and emphasizing student reflection on AI-generated outputs. Here, teachers' ethical beliefs about learning, accountability, and fairness were translated into regulatory classroom practices rather than technological rejection.

The third theme highlights contextual negotiation. Several teachers described how their decisions were shaped by institutional expectations, curriculum requirements, and the absence or presence of formal AI policies. In contexts where institutional guidance was unclear, teachers consistently reported relying on personal judgment and professional experience. In contexts where innovation was encouraged, some teachers adapted AI use in ways that aligned with policy demands while safeguarding pedagogical principles. These decisions reflect how beliefs are interpreted situationally, with teachers exercising agency within, rather than outside of, structural constraints. Table 2 summarizes key excerpts related to teachers' decisions about AI use and their interpretations.

Table 2
Teachers' Decisions About Artificial Intelligence Use in Teaching

Excerpt from Participants	Interpretation
"I use AI for drafts and ideas, but the final work must come from the students."	AI is integrated selectively to support learning without replacing student effort.
"Students can use AI, but they must explain their thinking in their own words."	Pedagogical rules are used to regulate AI use and promote accountability.
"There is no clear policy, so I decide based on what I think is best for learning."	Teachers exercise professional judgment in the absence of institutional guidance.
"AI helps with feedback, but assessment is my responsibility as a teacher."	Teachers retain control over high-stakes pedagogical decisions.

An important cross-cutting finding is that teachers' decisions about AI use were dynamic and reflective. Across interviews, teachers described adjusting their practices over time as they observed students' responses to AI and reflected on its pedagogical impact. This

ongoing adjustment process further illustrates how beliefs do not determine decisions in a linear manner but inform continuous interpretation and re-evaluation in practice.

Across participants, several belief–decision patterns were consistently observed, particularly the view of AI as a supportive tool rather than a replacement for teacher judgment, and the tendency to restrict AI use in high-stakes assessment contexts. However, variations were also evident in how strongly these beliefs were enacted and in the specific forms of pedagogical regulation adopted. Differences emerged in relation to teaching experience, institutional expectations, and disciplinary context. For example, some teachers articulated more cautious and restrictive approaches to AI use, while others adopted a more experimental stance within clearly defined boundaries. These variations suggest that while shared belief orientations exist, teachers' decisions are not uniform but are mediated by contextual conditions and individual professional trajectories.

The findings demonstrate a clear relationship between teachers' beliefs and their instructional decisions regarding AI use. Teachers' beliefs about pedagogy, ethics, and professional responsibility shape how they integrate, regulate, and sometimes limit AI in classroom practice. By analytically distinguishing between beliefs and enacted decisions while showing their interaction, the findings position teacher agency as an ongoing process of ethical and pedagogical judgment rather than a fixed stance toward technology. These results underscore the importance of understanding AI use not merely as a technological issue, but as a pedagogical and humanistic practice grounded in teachers' beliefs and values.

DISCUSSION

By analytically separating teachers' beliefs from their enacted instructional decisions while showing their interaction, this study advances existing research that has largely treated beliefs as static attitudes or adoption predictors. This study set out to explore teachers' beliefs and decisions regarding artificial intelligence (AI) use in education, with particular attention to how beliefs inform instructional choices. Rather than reiterating the findings, this discussion interprets the results by situating them within broader theoretical and empirical conversations on technology integration, teacher agency, and humanistic education (Flint et al., 2024; Kehoe & McGinty, 2024; Williyan et al., 2025). The discussion highlights the significance of teachers' belief-driven decision-making and considers its implications for educational practice, teacher education, and AI-related policy.

In relation to RQ1, which examined teachers' beliefs about AI use in education, a central insight emerging from the study is that teachers' engagement with AI cannot be adequately understood through adoption-oriented or deficit-based frameworks that frame teachers as either resistant to or supportive of innovation. Instead, the findings align with research on teacher cognition and agency, which emphasizes that teachers actively interpret and negotiate innovations based on pedagogical values and contextual realities (Bui, 2022; Molla & Nolan, 2020; Nezhad & Stolz, 2024). Teachers in this study did not reject AI outright, nor did they embrace it uncritically. Their beliefs reflected a reflective stance in which AI was evaluated for its pedagogical usefulness, ethical implications, and

alignment with professional responsibility. This challenges narratives that equate limited or selective AI use with technological reluctance and instead positions such practices as expressions of informed professional judgment (Huertas-Abril, 2021; Arefian, 2022).

Further addressing RQ1, **t**he finding that teachers viewed AI primarily as a supportive tool resonates with existing studies that conceptualize technology as an instructional aid rather than a substitute for teaching expertise (Adiguzel et al., 2023; Cabero-Almenara et al., 2024). However, this study extends previous research by showing how this belief is closely tied to teachers' understanding of their professional role. Teachers' emphasis on retaining control over pedagogical decisions and assessment underscores a humanistic view of teaching, in which relational, moral, and contextual knowledge remains central (Cronqvist, 2025; Babayeva, 2025). From this perspective, AI use is not merely a technical choice but a value-laden pedagogical act. This interpretation contributes to humanities-informed educational scholarship by foregrounding the ethical and relational dimensions of AI-mediated instruction (Al-Zahrani & Alasmari, 2024; Sposato, 2025).

Addressing RQ2, which focused on teachers' instructional decisions regarding AI use**,** another important contribution of this study lies in its analysis of teachers' concerns about overreliance on AI and its potential impact on learning processes. Rather than framing these concerns as fear of change, the findings suggest that teachers' caution reflects deeply held beliefs about learning as an active, effortful process (Kehoe & McGinty, 2024; Meij et al., 2025). Teachers' decisions to regulate AI use, such as limiting it to certain stages of task completion or requiring student accountability, can be understood as attempts to preserve pedagogical principles related to critical thinking and learner autonomy. This interpretation aligns with constructivist views of learning that emphasize cognitive engagement and meaning-making (Lei & Lei, 2025; Liu & Wang, 2024). It also highlights the role of teachers as mediators who shape how technological tools are pedagogically framed and experienced by learners (Filiz et al., 2025; Williyan et al., 2025).

In further relation to RQ2, the study's findings also contribute to ongoing discussions about teacher agency in technology-rich environments. Teachers' selective integration and regulation of AI use illustrate how agency is exercised within, rather than outside of, structural constraints such as curriculum demands, assessment regimes, and institutional expectations (Molla & Nolan, 2020; Grønset et al., 2025). In contexts where institutional guidance on AI use was limited or ambiguous, teachers relied on personal beliefs and professional experience to make decisions. This reliance underscores the importance of teacher agency as a resource for navigating uncertainty and change (Nezhad & Stolz, 2024; Williyan et al., 2025). At the same time, it raises questions about the uneven distribution of responsibility placed on teachers in the absence of clear policy frameworks (Ifenthaler et al., 2024).

However, the findings also reveal persistent tensions in teachers' AI-related decision-making that resist neat theoretical resolution. Teachers' ethical concerns about fairness, authenticity, and meaningful learning often coexisted with pragmatic compromises driven by workload pressures, time constraints, and institutional expectations to engage with digital innovation. While teachers exercised agency in regulating AI use, this agency was

not enacted in conditions of full autonomy but within policy ambiguities and accountability structures that sometimes compelled partial or reluctant accommodation of AI tools. These tensions suggest that belief-driven decision-making is not a linear enactment of values but an ongoing negotiation between pedagogical ideals, ethical commitments, and structural realities. Rather than portraying teachers' agency as uniformly empowering, the findings highlight its contingent and sometimes constrained nature, underscoring the need to understand AI use as a site of unresolved professional and moral tension rather than coherent alignment.

Importantly, the dynamic nature of teachers' decision-making observed in this study suggests that beliefs and practices related to AI use are not fixed. Teachers described adjusting their approaches over time in response to student behavior and pedagogical outcomes. This finding aligns with sociocultural perspectives on teacher learning, which view professional knowledge as evolving through reflection and experience (Flint et al., 2024; Meij et al., 2025). It also suggests that professional development related to AI use should be ongoing and dialogic, allowing teachers to share experiences, reflect on challenges, and collectively negotiate best practices (Nazaretsky et al., 2022; Mouta et al., 2025). One-off training sessions focused solely on technical skills are unlikely to address the belief-oriented and ethical dimensions highlighted in this study.

From the perspective of both research questions, the findings point to the need for AI integration strategies that recognize teachers as key decision-makers rather than implementers of predetermined solutions (Chiu, 2024; Ifenthaler et al., 2024). Policies that promote AI use without engaging with teachers' beliefs risk creating misalignment between institutional expectations and classroom practice. This misalignment may lead to superficial or symbolic adoption of AI tools, rather than meaningful pedagogical integration (Granström & Oppi, 2025). By contrast, policies that acknowledge teachers' professional judgment and provide space for contextual adaptation are more likely to support responsible and sustainable AI use (Azman & Tümkaya, 2025).

The study also contributes to interdisciplinary discussions at the intersection of education and the humanities. Teachers' emphasis on ethical responsibility, human interaction, and the moral dimensions of teaching reflects concerns that extend beyond technical effectiveness (Al-Zahrani, 2024; Haroud & Saqri, 2025). These concerns resonate with philosophical debates about the role of technology in shaping human values and social relationships (Al-Zahrani & Alasmari, 2024; Sposato, 2025). By examining AI use through teachers' beliefs and decisions, the study highlights education as a humanistic practice that involves ethical deliberation and value negotiation, challenging techno-centric approaches to educational innovation.

While the findings offer valuable insights, they also raise important questions for future research. For example, how do teachers' beliefs about AI evolve over longer periods of sustained use (Nazaretsky et al., 2022)? How do differences in institutional policy, disciplinary context, or cultural setting shape belief-driven decision-making (Buele & Llerena-Aguirre, 2025; Praja Dinata et al., 2025)? Additionally, further research could examine how students interpret and respond to teachers' regulation of AI use, providing

a more holistic understanding of AI-mediated educational environments (Zhai et al., 2024).

In interpreting the findings, it is also important to acknowledge that teachers' belief-driven decisions may sometimes reinforce existing practices rather than transform them. While this can support pedagogical stability and ethical consistency, it may also limit opportunities for innovative uses of AI that align with educational values (Adiguzel et al., 2023; Kamalov et al., 2023). This tension underscores the need for critical dialogue among teachers, researchers, and policymakers about what constitutes pedagogically sound AI use.

In conclusion, responding directly to both research questions, this study contributes to the growing body of research on AI use in education by foregrounding teachers' beliefs and professional decision-making. The discussion underscores that AI integration is not a purely technical endeavour but a complex pedagogical and ethical process shaped by teacher agency (Molla & Nolan, 2020; Williyan et al., 2025). By interpreting teachers' selective and reflective AI use as expressions of professional responsibility, the study offers a nuanced perspective that aligns with both educational research and humanistic inquiry. These insights can inform more thoughtful approaches to AI integration that respect teachers' expertise and uphold the core values of education.

CONCLUSION

This study explored teachers' beliefs and decisions regarding artificial intelligence use in education, highlighting how AI integration is shaped by pedagogical values, ethical considerations, and professional judgment. The findings demonstrate that teachers do not approach AI as a neutral or purely technical tool. Instead, they interpret its role through deeply held beliefs about learning, responsibility, and the human dimensions of teaching. Teachers' selective and regulated use of AI reflects an agentive stance in which instructional decisions are guided by concerns for meaningful learning, fairness, and the preservation of teacher–student relationships. By foregrounding teachers' voices, this study contributes to a more nuanced understanding of AI use in education that moves beyond binary narratives of acceptance or resistance.

From an applied perspective, the findings suggest that teacher education and professional development initiatives should move beyond technical training in AI tools and explicitly engage teachers in ethical deliberation, pedagogical reasoning, and decision-making related to AI use. Rather than emphasizing tool proficiency alone, professional learning opportunities should support teachers in reflecting on how AI aligns with educational values, learning goals, and professional responsibility. At the institutional level, AI-related policies would benefit from recognizing teachers as professional agents capable of contextual judgment, rather than positioning AI integration as a uniform or compliance-driven mandate. Such approaches may better support responsible, sustainable, and pedagogically meaningful AI use in educational settings.

As a qualitative and interpretive study situated within specific educational contexts, the findings should be understood in relation to their scope and purpose. The study does not seek statistical generalization; rather, it offers context-sensitive insights that may be transferable to similar settings through analytical comparison. Interpretations are shaped by participants' self-reported accounts and the analytical lens adopted, which foregrounds teacher beliefs, professional judgment, and ethical considerations. While this approach enables a nuanced understanding of belief-driven decision-making, it may not fully capture all dimensions of classroom enactment or institutional dynamics. These limitations reflect the interpretive nature of the study and delineate the boundaries of the claims advanced.

The study also points to several directions for future research. Further studies could examine how teachers' beliefs and AI-related decisions evolve over time through longitudinal designs, particularly as AI technologies and institutional policies continue to develop. Future research could also explore AI use across different disciplines, educational levels, and cultural contexts to better understand contextual variations in belief-driven decision-making. Additionally, investigating students' perspectives on teacher-regulated AI use may offer valuable insights into how pedagogical intentions are experienced in practice. Together, such research efforts can contribute to more ethically grounded, context-sensitive, and pedagogically meaningful approaches to artificial intelligence use in education.

REFERENCES

Abedi, E. A., Prestridge, S., & Hodge, S. (2024). Teachers' beliefs about technology integration in Ghana: A qualitative study of teachers', headteachers' and education officials' perceptions. *Education and Information Technologies*, *29*(5), 5857–5877. https://doi.org/10.1007/s10639-023-12049-0

Acosta-Enriquez, B. G., Ballesteros, M. A. A., de los Angeles Guzman Valle, M., Angaspilco, J. E. M., Blanco-García, L. E., Ventura, G. C., Requejo, J. D. C., & Torre, M. C. (2025). Determinants of AI use in university teachers: The role of leadership, teaching concerns, and constructivist pedagogical beliefs. *Human Behavior and Emerging Technologies*, *2025*(1). https://doi.org/10.1155/hbe2/4834893

Adiguzel, T., Kaya, M. H., & Cansu, F. K. (2023). Revolutionizing education with AI: Exploring the transformative potential of ChatGPT. *Contemporary Educational Technology*, *15*(3), ep429. https://doi.org/10.30935/cedtech/13152

Al-Zahrani, A. M. (2024). Unveiling the shadows: Beyond the hype of AI in education. *Heliyon*, *10*(9), e30696. https://doi.org/10.1016/j.heliyon.2024.e30696

Al-Zahrani, A. M., & Alasmari, T. M. (2024). Exploring the impact of artificial intelligence on higher education: The dynamics of ethical, social, and educational implications. *Humanities and Social Sciences Communications*, *11*(1), 912. https://doi.org/10.1057/s41599-024-03432-4

Alshorman, S. (2024). The readiness to use AI in teaching science: Science teachers' perspective. *Journal of Baltic Science Education*, *23*(3), 432–448. https://doi.org/10.33225/jbse/24.23.432

Alwaqdani, M. (2025). Investigating teachers' perceptions of artificial intelligence tools in education: Potential and difficulties. *Education and Information Technologies*, *30*(3), 2737–2755. https://doi.org/10.1007/s10639-024-12903-9

Antonietti, C., Cattaneo, A., & Amenduni, F. (2022). Can teachers' digital competence influence technology acceptance in vocational education? *Computers in Human Behavior*, *132*, 107266. https://doi.org/10.1016/j.chb.2022.107266

Arefian, M. H. (2022). Perceptions of self-assessment literacy and self-directed reflection during online learning for Iranian EFL student teachers. *Reflective Practice*, *23*(6), 623–634. https://doi.org/10.1080/14623943.2022.2096584

Azman, Ö., & Tümkaya, S. (2025). Navigating the ethical landscape of AI integration in education: Balancing innovation and responsibility. *F1000Research*, *14*, 299. https://doi.org/10.12688/f1000research.160011.1

Babayeva, F. (2025). Humanization of education as a priority of the contemporary pedagogical process. *Bulletin of Postgraduate Education (Series)*, *33*(62), 12–27. https://doi.org/10.58442/3041-1831-2025-33(62)-12-27

Bower, M., Torrington, J., Lai, J. W. M., Petocz, P., & Alfano, M. (2024). How should we change teaching and assessment in response to increasingly powerful generative Artificial Intelligence? Outcomes of the ChatGPT teacher survey. *Education and Information Technologies*. https://doi.org/10.1007/s10639-023-12405-0

Braun, V., & Clarke, V. (2021). Thematic analysis: A practical guide. In *Sage Publications* (p. 320). https://books.google.se/books?id=Hr11DwAAQBAJ&hl=sv

Buele, J., & Llerena-Aguirre, L. (2025). Transformations in academic work and faculty perceptions of artificial intelligence in higher education. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1603763

Bui, T. H. (2022). English teachers' integration of digital technologies in the classroom. *International Journal of Educational Research Open*, *3*, 100204. https://doi.org/10.1016/j.ijedro.2022.100204

Bulathwela, S., Pérez-Ortiz, M., Holloway, C., Cukurova, M., & Shawe-Taylor, J. (2024). Artificial intelligence alone will not democratise education: On educational inequality, techno-solutionism and inclusive tools. *Sustainability*, *16*(2), 781. https://doi.org/10.3390/su16020781

Burner, T., Lindvig, Y., & Wærness, J. I. (2025). "We Should Not Be Like a Dinosaur"—Using AI technologies to provide formative feedback to students. *Education Sciences*, *15*(1), 58. https://doi.org/10.3390/educsci15010058

Cabero-Almenara, J., Palacios-Rodríguez, A., Loaiza-Aguirre, M. I., & Rivas-Manzano, M. del R. de. (2024). Acceptance of educational artificial intelligence by teachers

and its relationship with some variables and pedagogical beliefs. *Education Sciences*, *14*(7), 740. https://doi.org/10.3390/educsci14070740

Chiu, T. K. F. (2024). The impact of Generative AI (GenAI) on practices, policies and research direction in education: A case of ChatGPT and Midjourney. *Interactive Learning Environments*, *32*(10), 6187–6203. https://doi.org/10.1080/10494820.2023.2253861

Cong-Lem, N., Tran, T. N., & Nguyen, T. T. (2024). Academic integrity in the age of generative AI: Perceptions and responses of Vietnamese EFL teachers. *Teaching English With Technology*, *2024*(1). https://doi.org/10.56297/FSYB3031/MXNB7567

Cronqvist, M. (2025). Teachers' ethical responsibility in teaching; to guide the children about right and wrong. *Scandinavian Journal of Educational Research*, *69*(4), 857–870. https://doi.org/10.1080/00313831.2024.2360901

Davis, A. J. (2024). AI rising in higher education: Opportunities, risks and limitations. *Asian Education and Development Studies*, *13*(4), 307–319. https://doi.org/10.1108/AEDS-01-2024-0017

Denny, E., & Weckesser, A. (2022). How to do qualitative research? *BJOG: An International Journal of Obstetrics & Gynaecology*, *129*(7), 1166–1167. https://doi.org/10.1111/1471-0528.17150

Evmenova, A. S., Regan, K., Mergen, R., & Hrisseh, R. (2025). Educational games and the potential of AI to transform writing across the curriculum. *Education Sciences*, *15*(5), 567. https://doi.org/10.3390/educsci15050567

Filiz, O., Kaya, M. H., & Adiguzel, T. (2025). Teachers and AI: Understanding the factors influencing AI integration in K-12 education. *Education and Information Technologies*, *30*(13), 17931–17967. https://doi.org/10.1007/s10639-025-13463-2

Flint, A., Rubie-Davies, C. M., & Peterson, E. (2024). Teacher views of relationships between their teaching practices and beliefs, the school context, and student achievement. *New Zealand Journal of Educational Studies*, *59*(1), 157–173. https://doi.org/10.1007/s40841-024-00321-x

Fteiha, M., Al-Rashaida, M., & Ghazal, M. (2025). General and special education teachers' readiness for artificial intelligence in classrooms: A structural equation modeling study of knowledge, attitudes, and practices in select UAE public and private schools. *PLOS One*, *20*(9), e0331941. https://doi.org/10.1371/journal.pone.0331941

Garg, N., Kaur, A., Ahmad, F., & Dutta, R. (2025). Augmenting education: The transformative power of AR, AI, and emerging technologies. *Human Behavior and Emerging Technologies*, *2025*(1). https://doi.org/10.1155/hbe2/5681184

Ghamrawi, N., Shal, T., & Ghamrawi, N. A. R. (2024). Exploring the impact of AI on teacher leadership: Regressing or expanding? *Education and Information*

Technologies, *29*(7), 8415–8433. https://doi.org/10.1007/s10639-023-12174-w

Granström, M., & Oppi, P. (2025). Assessing teachers' readiness and perceived usefulness of AI in education: An Estonian perspective. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1622240

Grønset, T. L., Eide, L., & Kvam, E. K. (2025). The role of assessment in teachers' curriculum making: Insights from Norwegian history teachers. *The Curriculum Journal*. https://doi.org/10.1002/curj.70009

Gustilo, L., Ong, E., & Lapinid, M. R. (2024). Algorithmically-driven writing and academic integrity: Exploring educators' practices, perceptions, and policies in AI era. *International Journal for Educational Integrity*, *20*(1), 3. https://doi.org/10.1007/s40979-024-00153-8

Hall, S., & Liebenberg, L. (2024). Qualitative description as an Introductory method to qualitative research for master's-level students and research trainees. *International Journal of Qualitative Methods*, *23*. https://doi.org/10.1177/16094069241242264

Haroud, S., & Saqri, N. (2025). Generative AI in higher education: Teachers' and students' perspectives on support, replacement, and digital literacy. *Education Sciences*, *15*(4), 396. https://doi.org/10.3390/educsci15040396

Huang, X., Xu, W., & Liu, R. (2025). Effects of intelligent tutoring systems on educational outcomes. *International Journal of Distance Education Technologies*, *23*(1), 1–25. https://doi.org/10.4018/IJDET.368420

Huertas-Abril, C. A. (2021). Developing speaking with 21st Century digital tools in the English as a foreign language classroom: New literacies and oral skills in primary education. *Aula Abierta*, *50*(2), 625–634. https://doi.org/10.17811/RIFIE.50.2.2021.625-634

Ifenthaler, D., Majumdar, R., Gorissen, P., Judge, M., Mishra, S., Raffaghelli, J., & Shimada, A. (2024). Artificial intelligence in education: Implications for policymakers, researchers, and practitioners. *Technology, Knowledge and Learning*, *29*(4), 1693–1710. https://doi.org/10.1007/s10758-024-09747-0

Kamalov, F., Santandreu Calonge, D., & Gurrib, I. (2023). New era of artificial intelligence in education: Towards a sustainable multifaceted revolution. *Sustainability*, *15*(16), 12451. https://doi.org/10.3390/su151612451

Kehoe, K. F., & McGinty, A. S. (2024). Exploring teachers' reading knowledge, beliefs and instructional practice. *Journal of Research in Reading*, *47*(1), 63–82. https://doi.org/10.1111/1467-9817.12440

Latif, M. W., & Wasim, A. (2022). Teacher beliefs, personal theories and conceptions of assessment literacy—A tertiary EFL perspective. *Language Testing in Asia*, *12*(1), 11. https://doi.org/10.1186/s40468-022-00158-5

Lei, W., & Lei, Z. (2025). Exploring EFL teachers' beliefs and practices of formative assessment in Chinese context. *PLOS One*, *20*(9), e0333678.

https://doi.org/10.1371/journal.pone.0333678

Li, J., & Huang, Q. (2025). Navigating ethical dilemmas in AI-enhanced education. *International Journal of Knowledge Management*, *21*(1), 1–21. https://doi.org/10.4018/IJKM.382384

Lin, H., & Chen, Q. (2024). Artificial intelligence (AI)-integrated educational applications and college students' creativity and academic emotions: Students and teachers' perceptions and attitudes. *BMC Psychology*, *12*(1), 487. https://doi.org/10.1186/s40359-024-01979-0

Liu, W., & Wang, Y. (2024). The Effects of Using AI Tools on Critical Thinking in English Literature Classes Among EFL Learners: An Intervention Study. *European Journal of Education*, *59*(4). https://doi.org/10.1111/ejed.12804

Martin, F., Kim, S., Bolliger, D. U., & DeLarm, J. (2025). Assessment types, strategies, and feedback in online higher education courses in the age of artificial intelligence: Perspectives of instructional designers. *TechTrends*, *69*(6), 1330–1346. https://doi.org/10.1007/s11528-025-01115-8

Meij, E., Smits, A., & Meeter, M. (2025). Exploring teachers' beliefs about learning principles. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1576123

Mohammed, S. J., & Khalid, M. W. (2025). Under the world of AI-generated feedback on writing: Mirroring motivation, foreign language peace of mind, trait emotional intelligence, and writing development. *Language Testing in Asia*, *15*(1), 7. https://doi.org/10.1186/s40468-025-00343-2

Molla, T., & Nolan, A. (2020). Teacher agency and professional practice. *Teachers and Teaching: Theory and Practice*, *26*(1), 1–21. https://doi.org/10.1080/13540602.2020.1740196

Mouta, A., Torrecilla-Sánchez, E. M., & Pinto-Llorente, A. M. (2025). Comprehensive professional learning for teacher agency in addressing ethical challenges of AIED: Insights from educational design research. *Education and Information Technologies*, *30*(3), 3343–3387. https://doi.org/10.1007/s10639-024-12946-y

Nazaretsky, T., Ariely, M., Cukurova, M., & Alexandron, G. (2022). Teachers' trust in AI-powered educational technology and a professional development program to improve it. *British Journal of Educational Technology*, *53*(4), 914–931. https://doi.org/10.1111/bjet.13232

Nezhad, P. M., & Stolz, S. A. (2024). Unveiling teachers' professional agency and decision-making in professional learning: The illusion of choice. *Professional Development in Education*, 1–21. https://doi.org/10.1080/19415257.2024.2349058

Ofem, U. J., Orim, F. S., Edam-Agbor, I. B., Amanso, E. O. I., Eni, E., Ukatu, J. O., Ovat, S. V., Osang, A. W., Dien, C., & Abuo, C. B. (2025). Teachers' preparedness for the utilization of artificial intelligence in classroom assessment: the contributory effects of attitude toward technology, technological readiness, and pedagogical beliefs with

perceived ease of use and perceived usefulness as. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1568306

Praja Dinata, R., Suryati, N., Kholilurrahman Jailani, M., Paulus Keli, Y., Rovikasari, M., & Hasymi, M. (2025). Exploring rural EFL lecturers' perspectives on the integration of Artificial Intelligence (AI) in foreign language pedagogy. *LEARN Journal: Language Education and Acquisition Research Network*, *18*(2), 633–654. https://doi.org/10.70730/OVMA8060

Rakhmetov, M., Sadvakassova, A., Saltanova, G., Kuanbayeva, B., & Zhusupkalieva, G. (2025). Evaluation of an AI-based feedback system for enhancing self-regulated learning in digital education platforms. *Electronic Journal of E-Learning*, *23*(4), 126–141. https://doi.org/10.34190/ejel.23.4.4150

Reinhold, L., Händel, M., & Naujoks-Schober, N. (2025). AI-teacher agreement in evaluating learning diaries. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1601789

Rushton, E. A. C., & Walshe, N. (2025). Curriculum making and climate change and sustainability education: A case study of school teachers' practices from England, UK. *Environmental Education Research*, *31*(5), 1083–1097. https://doi.org/10.1080/13504622.2025.2471990

Sposato, M. (2025). Artificial intelligence in educational leadership: A comprehensive taxonomy and future directions. *International Journal of Educational Technology in Higher Education*, *22*(1), 20. https://doi.org/10.1186/s41239-025-00517-1

Strielkowski, W., Grebennikova, V., Lisovskiy, A., Rakhimova, G., & Vasileva, T. (2025). AI-driven adaptive learning for sustainable educational transformation. *Sustainable Development*, *33*(2), 1921–1947. https://doi.org/10.1002/sd.3221

Topping, K. J., Gehringer, E., Khosravi, H., Gudipati, S., Jadhav, K., & Susarla, S. (2025). Enhancing peer assessment with artificial intelligence. *International Journal of Educational Technology in Higher Education*, *22*(1), 3. https://doi.org/10.1186/s41239-024-00501-1

Velander, J., Taiye, M. A., Otero, N., & Milrad, M. (2024). Artificial intelligence in K-12 education: Eliciting and reflecting on Swedish teachers' understanding of AI and its implications for teaching & learning. *Education and Information Technologies*, *29*(4), 4085–4105. https://doi.org/10.1007/s10639-023-11990-4

Velli, K., & Zafiropoulos, K. (2024). Factors that affect the acceptance of educational AI tools by Greek teachers—A structural equation modelling study. *European Journal of Investigation in Health, Psychology and Education*, *14*(9), 2560–2579. https://doi.org/10.3390/ejihpe14090169

Williyan, A., Fitriati, S. W., Pratama, H., & Sakhiyya, Z. (2024). AI as co-creator: Exploring Indonesian EFL teachers' collaboration with AI in content development. *Teaching English With Technology*, *24*(2), 5–21. https://doi.org/10.56297/vaca6841/LRDX3699/RZOH5366

Williyan, A., Puspitasari, D., Putri, A. R., Rahmawati, Y., Budiyanto, & Muthmainnah. (2025). EFL teachers' inquisitive agency in AI-enhanced writing instruction. *Lecture Notes in Networks and Systems*, *1270 LNNS*, 277–289. https://doi.org/10.1007/978-981-96-2015-9_19

Williyan, A., Supriyono, Y., & Dewi, N. S. N. (2025). Deliberative teacher agency: A phenomenological study on ICT integration in writing instruction by Indonesian EFL educators. *Pedagogika*, *159*(3), 5–29. https://doi.org/10.15823/p.2025.159.1

Xu, W., & Ouyang, F. (2022). The application of AI technologies in STEM education: A systematic review from 2011 to 2021. *International Journal of STEM Education*, *9*(1), 59. https://doi.org/10.1186/s40594-022-00377-5

Zhai, C., Wibowo, S., & Li, L. D. (2024). The effects of over-reliance on AI dialogue systems on students' cognitive abilities: A systematic review. *Smart Learning Environments*, *11*(1), 28. https://doi.org/10.1186/s40561-024-00316-7

Zhang, J., & Zhang, Z. (2024). AI in teacher education: Unlocking new dimensions in teaching support, inclusive learning, and digital literacy. *Journal of Computer Assisted Learning*, *40*(4), 1871–1885. https://doi.org/10.1111/jcal.12988