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Beyond the lesson plan: Reflective practice as a catalyst for teacher professional growth

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ABSTRACT

The rapid integration of artificial intelligence (AI) into education has shifted the paradigms of teaching and professional development. AI has been positioned not as a substitute for teachers but as a partner that relieves them from routine tasks, allowing greater focus on higher-order learning and reflective pedagogy. Professional standards and national regulations highlight the centrality of reflection and continuous professional growth as essential elements of teacher professionalism. Nevertheless, reflective practices backed by AI/technology lack empirical evidence, particularly for in-service teachers in primary and secondary education. To this end, this study employed an SLR design to investigate and synthesize how AI serves as a reflective partner in teachers' PD. The review included 9,083 articles chosen from searches in the SpringerLink database and resulted in the selection of 26 articles using the PRISMA protocol. Thematically, these papers indicate AI's contribution to enhanced reflective awareness, producing critical analyses of teaching practices, supporting reflection-informed decision making, prompting pedagogical innovation and experimentation, and promoting collaborative and continual professional learning. The results imply that AI supports teachers' professional development and helps develop teacher noticing, providing data-driven feedback, speeding up personalization, and fostering professional learning communities. Instead of replacing teachers, AI should become a reflective partner to facilitate evidence-based pedagogy in a supportive educational policy system.

Keywords: artificial intelligence, reflective practice, teacher professional development, systematic literature review, pedagogical innovation

1. INTRODUCTION

Artificial intelligence (AI) is increasingly embedded in global education today (Bond et al., 2024; Tripathi et al., 2025). This model is based on the potential that AI has to perform real time learning analytics, administer tasks, and give immediate feedback (Cabı & Türkoğlu, 2025; N. B. C. Nguyen et al., 2024). The discourse on AI's role in education spans from concerns that AI might replace teachers to optimism regarding its potential to support them (Haroud & Saqri, 2025). To date, AI has been framed alongside other media such as books, television, personal computers, and the internet, functioning as a tool that enables teachers to implement deep teaching and engage in intellectual dialogue with students (X. Li et al., 2025; Xiao et al., 2025). Evaluation in learning is currently undergoing major changes thanks to technological advancements such as Artificial Intelligence (Rahman & Dewantara, 2025). In other words, AI is viewed as a partner that frees teachers from routine tasks so that they may focus on higher-order learning and pedagogical reflection.

Normatively, regulations and professional standards emphasize the importance of reflection and continuous professional development. Indonesia's Law No. 14 of 2005 positions teachers as professionals obliged to enhance educational quality and relevance through career development and research capacity (Rasmitadila et al., 2024). At the international level, frameworks such as InTASC, NBPTS, CAEP, and ISTE position reflection as a core competence in shaping teacher professionalism (Kaloudis et al., 2025). Recent studies highlight reflection as a national standard priority due to its role in promoting metacognition, pedagogical reasoning, and professional judgment (Chaseley & Abercrombie, 2025). Teacher education programs commonly include critical reflection modules that connect teaching experiences with theory, grounded in frameworks such as Dewey-Schön's cycle and Kember's model, which view reflection as addressing problems without a singular solution (Vogelsang et al., 2025; Zhang et al., 2024).

Educational policy developments show that many countries, including Indonesia, are beginning to design AI curricula for schools. The Ministry of Education has prepared elective subjects in coding and AI for senior high schools starting in the 2025/2026 academic year, aligned with the digital transformation agenda and the use of big data to achieve the national long-term development plan (RPJPN) 2025–2045 (BSKAP, 2025; Duan & Zhao, 2024; Musthafa et al., 2025). Consequently, today's educational landscape demands that teachers develop reflective competencies in analyzing their own teaching practices, use technology (including AI) ethically and creatively, and continually improve their professionalism in line with existing regulations (Ding et al., 2025; Novoa-Echaurren et al., 2025).

Research trends on the use of AI in reflective practice have revealed both opportunities and challenges for educators. While reflection is acknowledged as essential in professional standards, beginning teachers still require structured pedagogical instruments to facilitate reflective practice (Chaseley & Abercrombie, 2025). One study developed an AI-based video platform that helped teachers uncover unnoticed teaching problems, though its success depended heavily on user-friendly design and interpretive support for meaningful feedback (Wang et al., 2025). Despite being hailed as an educational innovation, debates about AI as a teacher replacement persist, although it should instead be regarded as a tool that enriches learning and allows teachers to focus on higher-level intellectual dialogue and professional development (Hashem et al., 2024).

Ideally, reflective and technologically proficient teachers would operate within supportive policy ecosystems. However, two gaps remain. First, much of the empirical evidence centers on pre-service teachers or student teachers (Chaseley & Abercrombie, 2025; Wang et al., 2025), with limited research exploring how in-service teachers at primary and secondary levels leverage AI as a reflective partner for sustained professional growth. Second, the various AI components used have not been systematically synthesized to identify which are most effective (and under what conditions), as existing studies often describe individual technologies in isolation without comparing their strengths, limitations, and implementation requirements (Amofa et al., 2025; Ogunleye et al., 2024).

The urgency of this study is underpinned by three interconnected factors. First, the accelerated integration of AI in schools—through AI and coding subjects starting in 2025/2026—demands AI-based

reflective strategies to build teacher confidence; however, without reflective guidelines, such initiatives may risk confusion or overreliance. Second, teachers' increasing workload necessitates the use of AI to reduce administrative burdens and provide emotional support. Third, Indonesia's Law No. 14 of 2005 mandates continuous competence enhancement via research. Against this backdrop, the present study aims to explore AI as a reflective partner in teacher professional development. More specifically, it seeks to systematically explore and synthesize AI components that function as reflective partners for teachers through a Systematic Literature Review (SLR) approach. In addition, this study contributes theoretically by formulating a taxonomy of AI components as reflective partners in teacher professional development.

2. METHOD

This study employed a systematic literature review (SLR) design. The selection of the SLR was based on its ability to collect and synthesize findings from prior studies, thereby producing a comprehensive understanding of the research topic. Data acquisition was performed by a literature review that included papers published in high-quality, Scopus-indexed journals; SpringerLink was the main source. The PRISMA method was used as our search strategy to obtain quality articles. This enabled the identification, title/abstract screening, and assessment of article relevance to the research questions to be undertaken systematically. The procedures involved identification, screening, eligibility, and inclusion.

A three-stage qualitative approach to analysis was adopted: data reduction, coding, and concept mapping. Atlas assisted the process of analysis. ti version 24 software to support structured data storage and decoding. The rationale for using Atlas. ti falls through its capacity for researchers to organise and store qualitative data in a structured fashion such that it becomes easier to retrieve data and to analyse it (Mahmudah, 2021). The detailed procedure, following the PRISMA protocol, is presented in Figure 1.

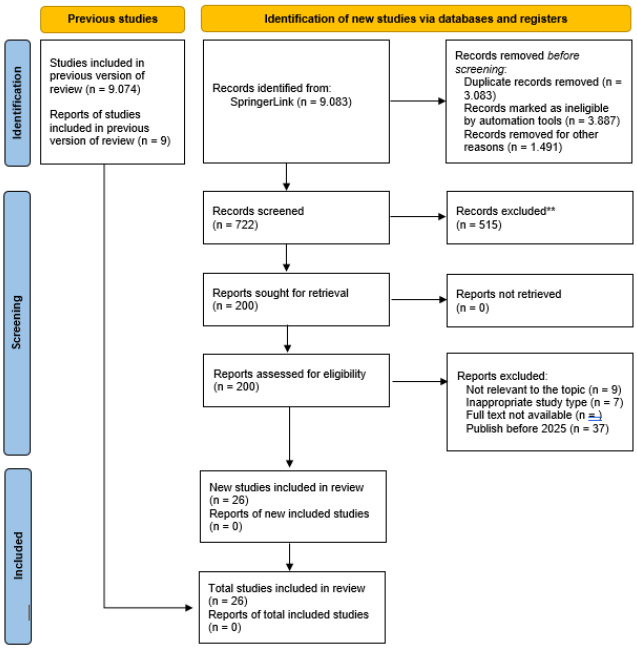

Figure 1. PRISMA Flowchart

As illustrated in Figure 1, the search and selection process adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow. Articles were retrieved from the SpringerLink database using keywords derived from the research title "Beyond the Lesson Plan: Reflective Practice as a Catalyst for Teacher Professional Growth." These keywords were broken down into several components: "lesson plan" and "teaching preparation" to represent lesson planning aspects; "reflective practice,"

"reflective teaching," and "teacher reflection" to capture reflective practices; "catalyst for change" and "driver of growth" to emphasize the role of reflection as a catalyst; and "teacher professional growth," "teacher professional development," and "educator professional improvement" to target the literature on teacher professional development.

The initial search yielded 9,083 articles. After removing duplicates (3,083 articles), excluding non-eligible articles through automated filtering tools (3,887 articles), and discarding for other reasons (1,491 articles), 722 articles remained for screening. At this stage, 515 articles were eliminated due to irrelevance, leaving 200 articles for eligibility assessments. Of these, 53 were excluded: 9 for being irrelevant, 7 due to unsuitable study types, and 37 for being published before 2025. Finally, 26 articles met the criteria and were included in the final analysis. These results indicate that although the initial search identified a large number of studies, only a small fraction directly addressed the focus of this review: reflective practice as a catalyst for teacher professional growth. These 26 articles formed the analytical foundation for this review.

3. RESULT AND DISCUSSION

3.1 Result

The literature search process conducted under the PRISMA protocol yielded 26 articles that were deemed relevant and met the inclusion criteria. All of these studies focused on reflective practice in the context of education and teacher professional development. The selected articles emphasize that reflective practice not only supports the improvement of pedagogical skills but also functions as a catalyst for teachers' professional growth. Reflection is regarded as a vital strategy that enables teachers to understand their teaching experiences, identify strengths and weaknesses in instructional practices, and stimulate innovation in teaching.

In addition, reflection has been widely discussed in the context of higher education and teacher education programs, particularly in developing critical thinking, collaborative learning, and adapting to curricular and technological changes. The introduction of reflective practice can empower the professionalization of teachers, increase the effectiveness of learning, and offer teachers the possibility to respond to students' needs and societal challenges of the day and age. Thus, the 26 articles analyzed in this study provide a comprehensive picture of reflective practice as a core strategy that simultaneously improves teaching quality and accelerates professional growth.

Table 1. Results of Article Screening

No.	Author	Title
1	McCaw et al., (2024)	From "Am I just too old for this?" To "Hey – I think I could do that!": a collaborative self-study of the implementation of blended synchronous learning in initial teacher education
2	Prenger et al., (2021)	Professional learning networks: From teacher learning to school improvement?
3	Baker, (2022)	Learning to design effective professional development: The influence of integrating a coaching tool with an elementary mathematics specialist course assignment
4	(Thomas et al., 2025)	Navigating Pedagogical Innovation in Higher Education: Education Academics'Experiences with Active and Inquiry-Based Learning in Intensive Teaching
5	(Qin, 2024)	Collaborative inquiry in action: a case study of lesson study for intercultural education
6	(Mufti et al., 2025)	Reflective practices among postgraduate medical students to improve their learning outcomes-a qualitative exploratory study
7	(Paiva & Silva, 2024)	Reflective practice of nurse residents in the teaching-learning process in teaching hospitals
8	(ElSayary et al., 2025)	Exploring reflective practices in blended learning: a deep dive into educators' in-action and on-action perspectives in interdisciplinary courses
9	(Walkerden, 2024)	Learning to catalyse socio-ecological change: Reflective practice experiments
10	(Coutts et al., 2024)	A reflective practice learning experience with higher education exercise physiology students
11	(Ho & Lau, 2025)	Role of reflective practice and metacognitive awareness in the relationship between experiential learning and positive mirror effects: A serial mediation model

12	(Heymann et al., 2024)	Towards design principles for an online learning platform providing reflective practices for developing employability competences
13	(Sheppick, 2024)	Unveiling the benefits of reflective learning in professional legal practice
14	(Lucas & Hains-Wesson, 2025)	Enriching work-integrated learning: conceptions of integrating Indigenous reflective practices
15	(Archer et al., 2024)	'It really has made me think': Exploring how informal STEM learning practitioners developed critical reflective practice for social justice using the Equity Compass tool
16	(Tobin et al., 2024)	Impacting teaching and learning through collaborative reflective practice
17	(H. Nguyen & Nguyen, 2024)	Reflective Practices and Self-Regulated Learning in Designing with Generative Artificial Intelligence: An Ordered Network Analysis
18	(Sheridan et al., 2025)	Learning ecologies and collaborative reflective practices in higher education
19	(Prete et al., 2025)	Reflective learning and reflective practice: foundational education theories and applications in surgery
20	(Paloniemi et al., 2024)	Reflective capacity and context of reflections: qualitative study of second-year medical students' learning diaries related to a general practice course
21	(Mohajer et al., 2024)	Effect of holistic reflective learning program on development of nursing students' professional competency in geriatric clinical practice: a quasi-experimental study
22	(Daryanto et al., 2025)	Conversate: Supporting Reflective Learning in Interview Practice Through Interactive Simulation and Dialogic Feedbac
23	(Spaska, 2025)	Systematic theoretical study on the application of reflective practice in enhancing medical students' learning experience
24	(Thomas Murphy & Martin, 2024)	Situating Reflective Practice in Experiential Learning: A Case Study of Educators' Professional Learning through Tinkering at Home
25	(Yadav & Bhatia, 2024)	Effect of Reflective Practices on Student Learning in Higher Education—A Real Life Approach
26	(Rost et al., 2025)	Using Computational Grounded Theory to Analyze Pre-service Chemistry Teachers' Reflective Practice Regarding Technology Integration in Classrooms Within a Service-Learning–Oriented Seminar

Based on Table 1, thematic mapping was conducted to facilitate the analysis of the literature review. The mapping, focused specifically on the educational context, resulted in the following categories: (1) Reflection for Pedagogical Improvement, which discusses how reflective practice helps teachers enhance lesson planning, methods, and strategies. Reflection serves as a tool for evaluating teaching experiences, understanding student needs, and improving pedagogical competence, with professional growth emerging through daily instructional improvements; (2) Reflection in Higher Education and Teacher Education Programs, this category emphasizes reflection in higher education, particularly in teacher education. Reflection strengthens pre-service teachers' learning, enhances professional awareness, and develops critical and collaborative thinking skills. (3) Collaboration-Based Reflection: Articles in this category examine reflection as a collaborative process among teachers or students in learning groups. Collaborative reflection enriches perspectives, broadens understanding, and generates more creative instructional strategies while building professional learning communities. (4) Technology-Based Reflection: Several studies have explored how reflection is integrated with technology, such as digital platforms, self-regulated learning, and AI applications. Technology-based reflection provides flexible, documented, and sustainable avenues for teachers and pre-service teachers to reflect on their practices more systematically.

The thematic mapping demonstrates that reflective practice plays a broad role in education, spanning pedagogical improvement, higher education, collaborative approaches and technology-based innovation. Collectively, the 26 analyzed studies illustrate that reflection is not merely an additional activity but a central strategy for fostering teachers' professional growth and enhancing instructional quality (see Figure 2).

Figure 2. Concept Map of Reflective Practice as a Catalyst for Teacher Professional Growth

3.2 Discussion

Based on the data analysis conducted with the assistance of Atlas.ti version 24, it can be explained that AI as the Reflective Partner consists of five main components. Each component comprises distinct indicators.

3.2.1 Reflective Awareness

The first component of AI as a reflective partner is *reflective awareness*, which refers to teachers' ability to recognize what works well and what does not in their teaching practices (Mohamed et al., 2022; Myllykoski-Laine et al., 2024). This awareness arises not only from daily experiences but also from critical engagement with data and narratives generated by AI (Pozdniakov et al., 2025; van Leeuwen et al., 2023). According to (Tammets & Ley, 2023), AI improves teachers' noticing by blending observation with knowledge-driven reasoning. Similarly, (Karataş & Yüce, 2024) explain how ChatGPT helps pre-service teachers to study different teaching techniques and in the process expand their notion of advantages and disadvantages. AI technologies (e.g., learning analytics systems, intelligent tutors) act similar to digital mirrors, providing reflections of student actions, learning outcomes, and teacher reactions (Sousa et al., 2021). In other words, AI enables teachers' reflective consciousness by reflecting their experience through data, indicating their greatest strengths and areas that need more work.

Three reflective awareness indicators are the identification of strengths, recognition of gaps and the making of connections to support AI in teaching practice (Salas-Pilco et al., 2022; Tammets & Ley, 2023). First, we identified the strengths. Findings indicate that ChatGPT supports finding out for pre-service

teachers when determining different strategies, and when personalizing knowing (Abualrob, 2025; Bettayeb et al., 2024; van den Berg & du Plessis, 2023). Automated feedback from learning analytics and adaptive systems can also highlight strong competencies and foster teacher autonomy. Second, spotting gaps. Combining teacher noticing with knowledge-based reasoning enhances the ability to recognize fewer effective strategies (Gegenfurtner et al., 2020). The issues of accuracy and ethics in the use of Generative AI remind users of the limitations of their knowledge. In line with this, Bond et al. (2024) emphasized the importance of considering social and policy contexts so that pedagogical gaps are not overlooked. Ketiga, *linking experiences*, narasi digital dan storytelling membantu guru menyusun pengalaman mengajar mereka (J. W. Li et al., 2025; Tafazoli & Meihami, 2023). Longitudinal dashboards map data periodically to connect planning, practice, and outcomes (Kaliisa & Dolonen, 2023). Narrative approaches, the promotion of learner autonomy, as well as AI literacy and prompt engineering within the curriculum, serve to bridge teachers' personal reflective experiences with student learning (Lan & Zhou, 2025), thereby shaping a sharper and more sustainable professional vision.

Drawing on these sources, *reflective awareness* emerges when teachers employ AI to understand their strengths and weaknesses and holistically connect their experiences. AI enables real-time analysis of outcomes and adaptation to individual needs, helping teachers identify successes and areas requiring improvement. Engagement with digital storytelling and understanding AI further support teachers in linking past experiences with new practices, while awareness of ethical considerations and challenges motivates continuous knowledge enhancement. Thus, reflective awareness constitutes the initial step for teachers in utilizing AI as a reflective partner for professional growth.

3.2.2 Critical Analysis of Teaching Practice

The second aspect focuses on the responsibilities of teachers to critically examine what they are doing (Susnjak et al., 2022). This transcends the question of whether or not a method is effective to why it is effective and what might underlie its effectiveness and its relevance in different learning environments (Alalawi et al., 2024; Wen et al., 2023). Using AI, teachers can review the pre- and post-intervention data, assess the effectiveness of an intervention and determine if they should continue or change their teaching practices (Contrino et al., 2024). This second building block focuses on designing evidence-informed practice through AI technologies to develop data and insights that support teachers in evaluating their practice and the factors that impact learning and critically reflect on their approach to sections in comparison to others.

The Critical Analysis of Teaching Practice comprises three main indicators. First, evaluation methods—assessing teaching practices through both quantitative and qualitative approaches with the support of AI (e.g., ChatGPT, learning analytics, and adaptive systems). These tools help monitor participation and task performance, provide personalized learning, foster student autonomy, and deliver meaningful feedback (Shi & Aryadoust, 2024). Second**,** finding factors—identifying elements that influence teaching effectiveness through teacher noticing mediated by knowledge-based reasoning, enabling the analysis of classroom cues (e.g., student behaviors and task contexts). This process also considers external factors such as ethics and the accuracy of Generative AI, policy contexts, students' AI literacy, organizational changes (e.g., the role of AI tutors or technical staff), teacher training needs, and educator well-being (García-López & Trujillo-Liñán, 2025; Newton & Jones, 2024). Third, comparing approaches—contrasting traditional teaching with AI-enhanced methods by examining the functions of AI (adaptation, profiling, prediction), the varied effectiveness of GenAI tools, associated risks and benefits, and the integration of AI literacy, prompt engineering, and narrative approaches. These comparisons help teachers make more accurate instructional decisions that are responsive to individual learner needs and supportive of sustained professional growth (Carrasco-Sáez et al., 2025; George-Reyes et al., 2024; Granström & Oppi, 2025; Jo, 2024).

Overall, AI strengthens teachers' ability to critically analyze their teaching practices by providing sufficient data to evaluate instructional methods, uncover key factors influencing success, and compare various approaches. Teachers using AI can assess strategies based on student outcomes and system

feedback while also considering contextual elements such as students' AI competence, ethical implications, and teachers' own professional needs. Thus, AI-enabled analysis aids teachers in evidence-driven decision-making and enhances the quality of teaching.

3.2.3 Reflection Based Decision Making

When teachers have come to understand who they are and in what ways they work best, and when they have reflected critically upon their practice, it becomes a matter of choosing what to do (Rozimela et al., 2025; To & Shih, 2025). Deciding to accept or reject a child based on reflective practice exposes teachers to the necessity of turning abstract and critical realizations into concrete decision-making. AI can add value by providing predictions and recommendations based on adaptive models that will help teachers adapt their lesson planning (Bhatt et al., 2025; Kabudi et al., 2021; Kohnke et al., 2025). AI has the potential of alleviating teachers' digital workload, thereby allowing them to devote more time to planning and reflective decision-making (Lee et al., 2024; Mai et al., 2024). Meanwhile, previous research states the significance of teachers' awareness concerning AI and on-demand engineering approaches to make use of the suggestions produced by AI system properly (Sperling et al., 2024). Accordingly, this dimension encompasses actualizing reflective thoughts into ethical decisions built on a sound base and emphasizes decision-making as a deliberate and evidence-based process.

Reflection-Based Decision Making states that instructional decisions are based on three fundamental actions: modifying plans, selecting strategies, and focusing on changes (Adams et al., 2023; Dülger et al., 2025; Ning et al., 2024). With AI's help, teachers could make active curriculum adjustments using data from the classroom – minimizing digital exhaustion, increasing student agency to allow for more thinking time, and depending on digital narratives to make plans more flexible through story (Ng et al., 2022). AI-powered personalization also augment decisions strategically, as adaptation, personalization belong to terms of deployment and adoption of AI applications, and it could be added with AI literacy and prompt engineering can be more optimized (Knoth et al., 2024; Z. Li et al., 2024; Matos et al., 2025). Finally, prioritizing changes means considering matters such as ethics and inclusivity, collaboration, co-design of AI tools, academic integrity, easing of workloads, data management, curricula, and teacher training adjustments. (An et al., 2024; Bittle & El-Gayar, 2025; Chang et al., 2025).

In summary, decision-making based on reflection assumes the support of AI to help teachers adapt plans, choose strategies, and establish priorities for change. Data are given for teachers using AI for both student performance and action feedback. The combination of teachers' professional skills and AI-literate literacy allows them to employ strategies that combine content knowledge, pedagogical approaches, and ethical aspects. Furthermore, instructors must identify shifts to maximize human potential, participate in AI design, and consider ethical and well-being dimensions. In this sense, AI takes on a consultative role, enhancing teachers' reflections and informing evidence-based decision-making.

3.2.4 Pedagogical Innovation and Experimentation

Pedagogical innovation is an essential aspect of teachers' professional growth (Cordero et al., 2025). Innovations and experiments in teaching push scholars to abandon traditional to more advanced methods, client technology, which involves new teaching plans etc (Walter, 2024). A lot of educational AI apps are about adaptive learning and personalisation so it opens up a wide field for new approaches (du Plooy et al., 2024; Merino-Campos, 2025). Overall, this component fosters a culture of experimentation, revision, and learning from failure in the integration of AI, while maintaining ethical standards and student engagement (Francis et al., 2024). AI brings new possibilities to pedagogy development and testing, in new methods as well as effects on learning (Deng et al., 2025; Jauhiainen & Garagorry Guerra, 2025). The design of this item encourages teachers to try out new technologies and appraise their usage.

Pedagogical innovation and experimentation rests on three related types of evidence: the testing of methods, the use of technology, and evaluation of impact (Belkina et al., 2025; Kamalov et al., 2023). Collectively, these indicators create an evidence-based innovation process for instruction. During the challenging methods phase, teachers try out new ways of working with AI — for example students that

work with ChatGPT for three weeks in narrative assignments; cooperation between researchers and teachers in creating suitable AI tools, or a training program that creates space for new practices and autonomy in teaching (Bies et al., 2025; Seo, 2024). The multiple roles of AI, for example adaptation, prediction and personalisation, extend the scope for experimentation, which may encompass digital storytelling for conceptualising ecosystems, playing with GenAI tools, in line with learning purposes, or crafting prompts to produce outcomes that vary (Y. Liu, 2025). In the using technology stage, innovation requires the effective application of AI for personalization and support of special needs, offering individualized learning experiences, integrating adaptive teaching practices, enhancing professional progress, and reducing digital fatigue (Kalniņa et al., 2024). Finally, the **monitoring impact** stage emphasizes that experimentation does not end with novelty; rather, the outcomes of AI integration are measured in terms of autonomy, professional advancement, and digital fatigue (Duan & Zhao, 2024). Teachers apply attention and knowledge-based reasoning, conduct evaluations scientifically and ethically, incorporate user perceptions of various tools, employ digital narratives to document changes, use prompt quality as a monitoring instrument, and remain vigilant about accuracy and ethical concerns (Dekerlegand et al., 2025).

Integrating these results, AI facilitates teaching reforms beyond traditional teaching. Educators can experiment with different teaching practices, use AI tools such as ChatGPT, adaptive learning robots, and digital stories, and measure the results through data analysis and self-assessment. Doing so will require teachers to be experts not just in their content area, but also in how to best utilize AI and design carefully planned prompt questions to maximize its potential. Innovations of this kind should be conducted on ethical grounds, as well as on issues of competence and well-being in teachers, to ensure that technology integration provides authentic learning gains.

3.2.5 Collaborative and Continous Professional Learning

The last piece centers around the collaborative aspect and continued professional development in exploiting AI. AI is not just a personal tool but a space for developing well-being teacher communities (J. Liu et al., 2024; Olmo-Extremera et al., 2025). Another review noted that "AI research must be interdisciplinary" and the same is true for teaching (Ifenthaler et al., 2024; A. Nguyen et al., 2023). Through AI-platforms and online communities, teachers can reflect, collate challenges, receive feedback and develop their own practice (Karataş & Yüce, 2024). Ongoing professional learning will ensure that teachers' competence in AI applications, ethical understanding, and pedagogical innovation is developed in accordance with technological developments. (Tan et al., 2025). This element therefore highlights teacher collaboration and ongoing professional development, whereby AI acts as a catalyst to enhance professional communities through collaborative reflection, dialogue, and the use of feedback.

As with the (in) components, CoPL is based on three interrelated elements: sharing reflections, participating in discussions, and implementing feedback. Reflective sharing is supported through narrative and digital storytelling narratives involving routine for pre-service teachers and professionals to share their experiences, work with researchers to create new AI tools with relevance, and to exploit their increasing agency to share best practices (Trevisan et al., 2024). The process of engagement includes a range of participants, faculty, students, administrators, AI tutors, and technical staff, and involves the themes of AI literacy, ethics and policy, and the translation of theory into practice (Ifenthaler et al., 2024; A. Nguyen et al., 2023). Ultimately, the use of feedback is realised through learning analytics, and knowledge-based reasoning (facilitated by the user evaluations of a variety of tools, curriculum changes, and teacher development) so that the system provides accurate and reliable information (Kaliisa et al., 2023; Lai & Lin, 2025; Masiello et al., 2024; Muangprathub et al., 2020).

In brief, skills sharing and lifelong professional development utilize AI for sharing reflections, discussions, and applying feedback. Digital storytelling and discussion boards provide opportunities for teachers to share experiences, while teacher-researcher collaboration spreads conversations to an academic and professional audience. AI-based training supports teacher autonomy and participation in communities of practice and encourages data-driven feedback. Here, ethical and AI competence and providers underpin

such collaboration to ensure that reflective and professional learning occurs in a responsible and sustainable way.

4. CONCLUSION

This study synthesized empirical evidence through a systematic literature review supported by *Atlas.ti v24* and explicitly demonstrated that AI functions as a reflective partner for teachers across five interrelated components. These components include reflective awareness, critical analysis of teaching practices, reflection-based decision-making, pedagogical innovation and experimentation, and collaborative and continuous professional learning. The synthesis reveals that AI as a reflective partner strengthens teachers' noticing, provides data-driven feedback, accelerates personalization, and activates learning communities. Importantly, AI does not replace teachers; rather, it serves as a partner in reflective pedagogical practice and evidence-based decision making within a supportive educational policy ecosystem. Theoretically, this study contributes to the literature by mapping a taxonomy of five AI components as reflective partners for teachers. Practically, it offers implementation guidelines for teacher professional development, particularly in strengthening AI literacy and ethics, utilizing learning analytics as feedback, and integrating digital storytelling to document reflective practice. From a policy perspective, the findings can support the development of continuous training guidelines aligned with regulations and teachers' professional needs in the field. Nonetheless, this study acknowledges a limitation in the absence of direct empirical validation of the proposed taxonomy in classroom practices. Therefore, future research should further explore reflective practices by considering the identified AI components as reflective partners.

Ethical Approval

This study is a systematic literature review that relied exclusively on previously published sources and did not involve human or animal participants or identifiable personal data. In accordance with institutional and national guidelines, formal ethical approval and informed consent were not required. The review was conducted in line with good research and publication ethics.

Informed Consent Statement

This study is a systematic literature review that used only publicly available secondary data and involved no human or animal subjects or identifiable personal information. Accordingly, informed consent was not applicable. The review adhered to good research and publication ethics (PRISMA, COPE).

Authors' Contributions

AMBH conceived the study, supervised the SLR stages, coordinated manuscript development, and acted as corresponding author. FNM contributed to the research framework, refinement of PRISMA screening procedures, and interpretation aligned with educational policy contexts. ECSP conducted database searches, data extraction, and thematic coding of selected articles. AR supported literature analysis, synthesis of findings, and drafting of several manuscript sections. BAD contributed to validating inclusion–exclusion criteria and cross-checking article classifications for methodological rigor. MZT assisted in refining the discussion, ensuring theoretical alignment between AI-supported pedagogy and teacher professional development models. FA handled proofreading, formatting, and final manuscript preparation in accordance with journal requirements.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data Availability Statement

The data presented in this study are available on request from the corresponding author due to privacy reasons.

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