

AI AS A TEACHING PARTNER, NOT A REPLACEMENT: REIMAGINING TEACHERS' ROLES FOR HUMAN DEVELOPMENT IN THE AGE OF INTELLIGENT TECHNOLOGY

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Abstract. The development of artificial intelligence (AI) has brought significant changes to education and has raised debates about whether technology may replace teachers' roles. This article aims to analyze the influence of AI on teachers' roles, explain the limitations of AI in replacing teachers, and formulate a conceptual model of teacher–AI collaboration in learning. This study employed a conceptual literature review, examining eight scientific articles and one professional seminar report obtained via Google Scholar using the keywords “Artificial Intelligence AND Teacher Role,” with publications limited to the last five years. The data were analyzed through theme identification, conceptual synthesis, and the development of a conceptual model based on the reviewed literature. The findings indicate that AI has shifted teachers' roles from information transmitters to learning facilitators, instructional designers, and managers of more personalized and adaptive learning experiences. AI can support learning efficiency through material development, assessment, feedback, learning analytics, and personalized learning. However, AI cannot replace teachers' human functions, including empathy, character formation, social relationships, contextual pedagogical judgment, and ethical decision-making. The main contribution of this article is the proposed Teacher–AI Partnership Model, which positions AI as a cognitive assistant and teachers as human development facilitators. This model emphasizes that the future of education in the era of intelligent technology should be understood as a human-centered collaboration between artificial intelligence and human intelligence to support students' holistic development.

Keywords: Artificial Intelligence; Teacher Role; AI Literacy; Human Development; Human–AI Collaboration.

INTRODUCTION

The development of artificial intelligence (AI) in recent years has brought major changes to various sectors of life, including education. The emergence of AI-based technologies, such as generative AI, large language models, and adaptive learning systems, enables users to access information, generate content, and complete tasks more quickly and in a more personalized manner. In the educational context, AI has begun to be used to support the preparation of learning materials, the development of assessments, the provision of feedback, the analysis of learning outcomes, and the personalization of students' learning experiences (Tan et al., 2025). This development indicates that AI has the potential to improve the efficiency and quality of the learning process.

The use of AI also creates new opportunities for teachers in carrying out their professional duties. Various studies have shown that AI can help teachers reduce administrative workloads, accelerate the development of learning resources, and support data-driven decision-making

(Chounta et al., 2022; Karataş & Yüce, 2024). In addition, AI enables more adaptive learning that corresponds to students' needs, abilities, and characteristics. This condition positions AI as an innovation that has received increasing attention in the development of 21st-century education.

Despite these benefits, the development of AI has also raised concerns about the future of the teaching profession. AI's ability to generate materials, answer questions, provide recommendations, and even simulate human-like interactions has raised the question of whether this technology may eventually replace teachers in the learning process. This view has grown stronger as AI systems have become increasingly capable of performing tasks previously considered exclusive to humans (Lan, 2024). As a result, debates have emerged regarding the position of teachers amid the rapid development of intelligent technology.

Nevertheless, various studies indicate that education is not merely concerned with the transmission of information and academic achievement. Education also encompasses character development, value formation, socio-emotional support, and the holistic development of human potential. These functions require empathy, pedagogical intuition, ethical judgment, and interpersonal relationships, which AI has not yet fully replicated (Lan, 2024; Mutlu et al., 2024). Therefore, AI should be viewed more appropriately as a technology that supports teachers' work rather than as a complete substitute for teachers' roles.

The literature on AI in education has largely focused on technological effectiveness, AI integration in learning, and the development of teachers' digital competence (Ding et al., 2024; Dogan et al., 2025). However, studies that specifically synthesize how AI affects the changing role of teachers, why AI cannot replace teachers, and how a collaborative relationship between teachers and AI can be established to support learning and human development remain limited. In fact, understanding these aspects is essential to formulating teachers' strategic position in the era of intelligent technology.

Based on these conditions, this article aims to analyze the influence of AI on teachers' roles, explain the limitations of AI in replacing teachers, and formulate a model of teacher–AI collaboration in learning. Through a synthesis of the literature, this article argues that the future of education does not lie in replacing teachers with AI, but rather in a partnership between human and artificial intelligence to support students' holistic development.

METHODS

This article employed a conceptual literature review method. Data were collected on May 30, 2026, through a search of scientific articles on Google Scholar published within the last five years (2021–2025) using the keywords “Artificial Intelligence AND Teacher Role.” Relevant articles were selected based on their alignment with the topics of the influence of AI on teachers' roles, the limitations of AI in replacing teachers, and the opportunities for teacher–AI collaboration in learning. The data were analyzed through theme identification, conceptual synthesis, and the formulation of a teacher–AI collaboration model.

RESULTS AND DISCUSSION

Characteristics of the Analyzed Literature

The literature search using the keywords “Artificial Intelligence AND Teacher Role” on Google Scholar returned 9 documents that met the relevance criteria for the research topic. The literature consisted of eight scientific articles published between 2022 and 2025 and one professional seminar report published by European Schoolnet in 2024. All documents discussed

the use of artificial intelligence (AI) in education, focusing on teachers' roles, teacher professional development, AI literacy, teachers' professional identity, and the integration of AI into learning.

The analysis shows that most of the literature positions AI as a technology with the potential to improve learning effectiveness through personalization, automation of administrative tasks, provision of feedback, and support for pedagogical decision-making. At the same time, various studies also highlight the limitations of AI in replacing teachers' human functions, such as empathy, character formation, ethical judgment, and social relationships with students. In addition, almost all of the literature emphasizes the importance of developing teachers' AI competence so that technology can be used effectively, responsibly, and in ways that are oriented toward students' needs.

Table 1. Characteristics of the Literature

No.	Author(s) (Year)	Focus of Study	Main Findings
1	Tan et al. (2025)	AI and teacher professional development	AI supports learning and teachers' professional development
2	Guan et al. (2025)	Pre-service teachers' readiness for AI	Teachers need AI competence and AI literacy
3	Karataş & Yüce (2024)	Pre-service teachers' reflections on AI	AI improves efficiency but raises ethical challenges
4	Ding et al. (2024)	Teachers' AI literacy	Training improves teachers' ability to integrate AI
5	Chounta et al. (2022)	Teachers' perceptions of AI	AI is viewed as a supporting tool for learning
6	Lan (2024)	Teachers' professional identity	AI influences teachers' professional identity and practices
7	Ghiasvand & Seyri (2025)	Reconstruction of teacher identity	AI encourages the transformation of teachers' roles
8	Dogan et al. (2025)	AI-related professional development	Teachers' AI competence is a key factor
9	European Schoolnet (2024)	Teacher professional development in the AI era	The focus is on ethics, digital pedagogy, and AI literacy

The Influence of AI on the Changing Role of Teachers

The literature indicates that the development of artificial intelligence (AI) has significantly changed teachers' roles in learning. Traditionally, teachers have functioned as the primary source of information, deliverers of subject matter, and controllers of the learning process. However, advances in AI now enable students to access information quickly and personally through various digital platforms, thereby reducing teachers' roles as the sole source of knowledge. This condition has encouraged a shift in teachers' roles from information transmitters to facilitators, mentors, and managers of learning experiences (Karataş & Yüce, 2024; Tan et al., 2025).

Various studies show that AI can support teachers' professional tasks. AI can assist in preparing learning materials, developing assessments, providing feedback, analyzing learning outcomes, and personalizing learning according to students' needs (Tan et al., 2025). Similar findings were reported by Chounta et al. (2022), who showed that teachers view AI as a tool with the potential to support lesson planning, the provision of learning resources, and the adaptation of learning based on students' characteristics. In addition, Karataş and Yüce (2024) found that AI improves the efficiency, accessibility, and personalization of learning. These findings indicate that

AI has the potential to reduce teachers' administrative workload, allowing them to focus more on high-value pedagogical activities.

An increasing need for new competencies also accompanies the changing role of teachers. Teachers are no longer required to master only subject matter and conventional teaching strategies; they also need AI literacy to understand how AI works, its benefits and risks, and the ethical implications of its use in education. Ding et al. (2024) emphasize that AI literacy is an essential prerequisite for teachers to integrate AI effectively into learning. Guan et al. (2025) found that many pre-service teachers still perceive AI merely as a supporting tool and have not yet fully understood its collaborative potential in education. These findings suggest that teacher professional development should focus on strengthening AI competence so that teachers can use technology critically and responsibly.

In addition to influencing learning practices, AI also encourages the reconstruction of teachers' professional identity. Lan (2024) explains that AI integration creates tensions between human and technological aspects, ultimately prompting teachers to reconsider their professional identity. Ghiasvand & Seyri (2025) further state that AI can support the transformation of teacher identity through enhanced self-reflection, pedagogical innovation, and continuous professional development. This argument is consistent with recent bibliometric evidence showing that technology in inclusive education has shifted from access support toward systemic digital transformation that strengthens teacher competence and institutional responsiveness (Zulfikasari et al., 2026).

These findings are consistent with the European Schoolnet report, which states that the presence of AI requires an evolution of teachers' roles through competence development, adaptation to technology, and continuous professional learning (Mutlu et al., 2024). In this context, teachers become lifelong learners who continually adapt their competencies to technological developments and students' needs.

Overall, the literature synthesis shows that the main influence of AI on the teaching profession is not the replacement of human roles by technology, but the transformation of teachers' roles into learning facilitators, pedagogical decision-makers, designers of learning experiences, and mentors of students' development. Therefore, AI is more appropriately understood as a technology that reconstructs and strengthens teachers' roles rather than replacing them.

Table 2. The Influence of AI on the Changing Role of Teachers

Aspect of Change in Teachers' Roles	Findings
Teachers are no longer the sole source of information	AI enables students to access information quickly, in a personalized, interactive manner, thereby shifting teachers' roles toward learning facilitators.
Teachers become designers of learning experiences	AI assists teachers in preparing learning materials, assessments, and feedback, as well as in providing personalized learning.
Teachers become managers and evaluators of AI use	Teachers need to evaluate the accuracy, relevance, ethics, and suitability of AI for learning needs.
Teachers need AI literacy	Teachers need to understand how AI works, its benefits, risks, and limitations.

Teachers experience a reconstruction of professional identity	AI changes the way teachers perceive their roles, responsibilities, and professional competencies.
Teachers become lifelong learners	The development of AI requires teachers to continuously adapt, improve their competencies, and engage in professional development.

Based on the literature synthesis, AI influences teachers' roles by shifting them from information transmitters to facilitators, designers of learning experiences, evaluators of technology use, and lifelong learners. AI can enhance teachers' efficiency by supporting the preparation of materials, assessments, and feedback, as well as personalized learning. However, this transformation also requires teachers to possess AI literacy, ethical awareness, and pedagogical competence to ensure that technology is used appropriately and critically, and in ways oriented toward students' needs.

The shift in teachers' roles from information transmitters to learning facilitators indicates a paradigmatic transformation from teacher-centered to learner-centered learning. From the perspective of social constructivism, knowledge is not directly transferred by teachers but is actively constructed by students through interaction, experience, problem-solving, reflection, and collaboration. Students are no longer positioned as passive listeners, but as active thinkers and co-constructors of knowledge (Saleem et al., 2021). Therefore, teachers serve as facilitators, mentors, reflective companions, and assessors of students' thinking processes. Keiler (2018) showed that teachers in student-centered STEM classrooms experienced an identity transformation from content deliverers to mentors, assessors, and learning companions. Similarly, Mishra (2023) emphasized that the constructivist approach positions teachers as guides who facilitate student autonomy, discussion, scaffolding, debate, and problem-solving. This transformation also reinforces the view that teachers are no longer the central authority on knowledge, but learning partners who help students actively and meaningfully construct understanding.

The presence of AI strengthens this transformation by enabling students to access information independently and receive more personalized, adaptive, and reflective learning support. Within the framework of human-centered generative AI, teachers no longer merely deliver content; they design differentiated instruction, manage individualized learning, and maintain humanistic values in the learning process (Kong & Yang, 2024). AI can support self-regulated learning, provide rapid feedback, increase engagement, and expand access to learning resources. The integration of AI is also consistent with constructivist principles because it can provide personalized, adaptive, and interaction-rich learning experiences. Moreover, when AI is integrated consciously, it can strengthen reflective metacognition and students' conceptual change (Grubaugh et al., 2023). AI does not diminish the role of teachers; rather, it strengthens teachers' pedagogical function as learning facilitators who ensure that information is understood, critically examined, and meaningfully interpreted. Thus, in the era of intelligent technology, the role of teachers is moving toward that of facilitators, mentors, assessors, and humanistic storytellers who integrate technology with learner-centered learning and human development.

Limitations of AI in Replacing Teachers

The results of the literature synthesis indicate that although AI can support various learning activities, it has fundamental limitations that prevent it from fully replacing teachers. Most studies agree that AI is effective in processing data, generating information, and automating certain tasks,

but it has not yet been able to perform the human functions that lie at the core of the teaching profession (Lan, 2024; Mutlu et al., 2024).

The first limitation relates to the ability to build emotional relationships and empathy. The educational process focuses not only on academic achievement but also on psychological support, motivation to learn, and students' social development. Mutlu et al. (2024) emphasize that the emotional and social aspects of learning still require meaningful human interaction. Similar findings were reported by Lan (2024), who showed that teachers continue to perceive human relationships as a core element of their professional identity. Thus, AI may provide responses that resemble human communication, but it cannot develop authentic empathy as it does in relationships between teachers and students.

The second limitation concerns character and value education. Teachers not only transmit knowledge; they also serve as role models in shaping students' attitudes, ethics, and character. This process involves modeling, social interaction, and moral judgment, all of which develop through real-life experiences. AI can generate information on values and ethics, but it does not possess moral consciousness or serve as a behavioral model for students (Lan, 2024; Mutlu et al., 2024).

The third limitation lies in contextual pedagogical decision-making. AI operates based on data patterns and algorithms. In contrast, teachers consider various factors that are often not reflected in data, such as students' emotional conditions, family backgrounds, school culture, and classroom dynamics. Chounta et al. (2022) showed that teachers still view AI as a supporting tool that assists the decision-making process, rather than as a substitute for pedagogical decision-making itself. This finding is supported by Ding et al. (2024), who emphasize the importance of teachers' pedagogical competence in integrating AI appropriately into learning.

In addition, AI has limitations in creativity and pedagogical intuition. Teachers often need to make spontaneous decisions when facing unexpected classroom situations, adjust instructional strategies, and create approaches that suit students' needs. Such adaptive abilities are derived from professional experience, reflection, and an understanding of the learning context, which are difficult for AI systems to replicate (Karataş & Yüce, 2024; Lan, 2024).

The literature also shows that the use of AI in education still requires human agency or human control. Mutlu et al. (2024) emphasize that the use of AI must preserve the role of humans in decision-making because AI does not possess ethical or professional responsibility. Dogan et al. (2025) further state that teachers' competence in understanding the pedagogical and ethical aspects of AI is an important factor in ensuring responsible use of the technology.

Overall, the literature synthesis indicates that AI can support various professional tasks of teachers, but it cannot replace the human functions inherent in the teaching profession. Empathy, character education, pedagogical decision-making, creativity, and moral responsibility still require human presence. Therefore, the future of education does not lie in replacing teachers with AI, but in using AI to strengthen teachers' capacity to support students' holistic development.

Table 3. Limitations of AI in Replacing Teachers

Aspects That AI Cannot Replace	Findings
Empathy and emotional relationships	AI cannot understand emotions, build interpersonal relationships, or provide authentic emotional support to students.
Character and value education	AI can present information, but it cannot serve as a real-life model of values, morality, and character.

Aspects That AI Cannot Replace	Findings
Contextual pedagogical decision-making	AI generates recommendations based on data, but it does not fully understand students' social and cultural contexts or individual conditions.
Creativity and pedagogical intuition	Teachers can adjust instructional strategies spontaneously in response to classroom dynamics that AI struggles to predict.
Human agency and professional responsibility	Final decisions in learning must remain with teachers because AI lacks moral or professional responsibility.
Identity formation and human development	Education aims to develop the whole person, including social, emotional, and moral aspects that require human interaction.

The finding that AI cannot replace empathy, social relationships, and character formation indicates that education is essentially a human process. Teachers possess unique qualities, such as emotion, creativity, critical thinking, moral sensitivity, and the ability to build trust, which cannot be fully replicated by AI (Chan & Tsi, 2024; Fitria, 2023; Guilherme, 2019). Teacher–student relationships, interactions among students, and connections with families and communities form the social milieu in which meaningful learning takes place. Within these relationships, teachers do not merely transmit knowledge; they also guide students, serve as role models, manage behavior, and address students' moral and affective development. This function affirms that although AI can answer questions and provide information, it cannot replace human encounters in education. A humanistic perspective positions the holistic development of human beings as the primary goal of education. Education is concerned not only with the mastery of cognitive skills but also with the formation of character, values, motivation, ethics, personality, mental health, and social awareness (Berberoglu, 2024). Values, social norms, and virtues cannot be reduced to algorithms or numerical data because their formation requires experience, modeling, reflection, and social relationships (Chan & Tsi, 2024; Fitria, 2023). Therefore, although AI is effective in supporting personalized learning, providing feedback, automating routine tasks, and improving learning efficiency, it still needs to be positioned as a supporting tool or cognitive prosthesis that assists teachers' work. AI can strengthen certain cognitive functions, but affective, social, moral, and humanistic functions still require the presence of human teachers.

Teacher–AI Collaboration Model in Learning

The results of the literature synthesis indicate that the most appropriate relationship between teachers and AI is not competitive, but collaborative. Various studies emphasize that AI has strong capabilities in processing data, generating information, and automating learning-related tasks, whereas teachers have strengths in pedagogical, social, emotional, and ethical aspects that technology cannot replicate (Lan, 2024; Tan et al., 2025). Therefore, the future of education is better understood as a collaboration between artificial and human intelligence rather than as the replacement of teachers by machines.

At the learning planning stage, AI can assist teachers in preparing materials, generating ideas for learning activities, developing assessments, and providing various alternative learning resources in a relatively short time (Tan et al., 2025). However, decisions regarding learning objectives, instructional strategies, and the suitability of materials for students' characteristics remain the responsibility of teachers. In other words, AI serves as a support system in the planning process, while teachers act as pedagogical decision-makers.

During the implementation stage, AI can support personalized learning by analyzing learning needs and recommending materials aligned with students' abilities (Chounta et al., 2022). However, teachers continue to play a central role in building interaction, motivating students, managing classroom dynamics, and creating an inclusive learning environment. Mutlu et al. (2024) emphasize that the social and emotional aspects of learning require human involvement that AI systems cannot replace.

Teacher–AI collaboration is also evident in the assessment and evaluation process. AI can help generate questions, check answers, identify patterns in learning achievement, and provide initial feedback to students (Tan et al., 2025). However, the interpretation of learning outcomes, the diagnosis of students' difficulties, and the determination of follow-up learning actions still require teachers' professional judgment. In this context, AI functions as a provider of information and analysis, while teachers serve as decision-makers who consider various aspects of learning holistically.

The literature also shows that effective collaboration between teachers and AI requires new competencies, including AI literacy, digital pedagogy, and ethical awareness (Ding et al., 2024; Dogan et al., 2025). The European Schoolnet report (Mutlu et al., 2024) identifies three main areas that teachers need to develop in the AI era: ethics and humanity, digital pedagogy, and understanding how AI works. These three areas serve as the foundation for enabling teachers to use AI responsibly while maintaining human values in education.

Table 4. Teacher–AI Collaboration Model in Learning

Learning Component	Role of AI	Role of Teachers
Learning planning	Assists in preparing materials, activities, and learning resources	Determines objectives, strategies, and suitability for students' needs
Assessment and feedback	Generates questions, analyzes learning outcomes, and provides initial feedback	Interprets results and determines follow-up learning actions
Learning personalization	Identifies learning needs and recommends appropriate content	Adjusts recommendations to students' conditions and characteristics
Material development	Generates drafts of materials, media, and learning activities	Validates, revises, and contextualizes materials
Learning support	Provides information and learning assistance quickly	Provides guidance, motivation, and socio-emotional support
Decision-making	Provides data and recommendations	Makes pedagogical and ethical decisions

Based on this synthesis, this article proposes a teacher–AI Partnership model that positions AI as a cognitive assistant and teachers as human development facilitators. In this model, AI supports technical and analytical activities, such as information processing, personalized learning, and the analysis of learning data. In contrast, teachers play a role in pedagogical decision-making, character formation, socio-emotional support, and the development of students' potential. This model shows that the success of learning in the era of intelligent technology is not determined solely by AI's capabilities, but by teachers' ability to integrate technology with human values to support students' holistic development.

Table 5. Conceptual Roles of AI and Teachers

AI as a Cognitive Assistant	Teachers as Human Development Facilitators
Processes learning data	Understand students' needs
Prepares drafts of materials and assessments	Design learning experiences
Provides recommendations and initial feedback	Make pedagogical decisions
Supports learning personalization	Guide character and values development
Automates administrative tasks	Build social and emotional relationships
Output: Effective, personalized, ethical, and human-development-oriented learning.	

Based on the literature synthesis, this article proposes a teacher–AI Partnership Model for Human Development in the Era of Intelligent Technology. This model positions AI as a cognitive assistant that supports technical and analytical tasks, such as learning personalization, data analysis, assessment, and material development. In contrast, teachers serve as human development facilitators who are responsible for pedagogical decision-making, character formation, socio-emotional support, and ethical judgment. Collaboration between AI and teachers produces a human-centered learning environment that supports students' holistic development. This model emphasizes that AI does not replace teachers; rather, it strengthens teachers' capacity to achieve educational goals and support human development.

CONCLUSION

Artificial intelligence (AI) has transformed teachers' roles from information transmitters into learning facilitators, instructional designers, and managers of more personalized and adaptive learning experiences. The use of AI offers various benefits in supporting lesson planning, assessment, feedback, learning analytics, and personalized learning, thereby improving the efficiency and effectiveness of educational processes. Nevertheless, AI cannot replace the human functions inherent in the teaching profession, such as building empathy, instilling values and character, understanding students' contexts, and making pedagogical and ethical decisions. Therefore, the relationship between teachers and AI should be understood as a complementary partnership rather than a substitutive relationship. In the proposed partnership model, AI serves as a cognitive assistant that supports technical and analytical tasks, while teachers serve as human development facilitators who guide students' holistic development. These findings indicate that educational reconstruction in the era of intelligent technology should focus on strengthening collaboration between human and artificial intelligence while maintaining human values as the core of education.

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