

# Exploring English as a Foreign Language Teachers' Competencies in using AI for Teaching and Learning

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**Abstract**—Artificial Intelligence (AI) has become a dominant technological trend in education and has proven effective in enhancing the learning process and promoting learner engagement. Consequently, the effective use of AI requires skillful teachers who possess the necessary pedagogical and conceptual competencies to use AI applications appropriately. Therefore, the present research seeks to explore English as a Foreign Language (EFL) teachers' competencies in using AI for teaching and learning. Using a descriptive-analytical method, the study employs an observation sheet as the main instrument to assess the competencies of fifteen university teachers in integrating AI applications into EFL instruction. These teachers are staff members at Salahaddin University–Erbil who teach 1<sup>st</sup>-year EFL courses in the faculties of Engineering, Science, Agriculture, Economics, and Management. The results of the observation sheet reveal that the teachers demonstrated strong practices in using AI applications, particularly in content development, lesson planning, test generation, lesson delivery, language skills development, vocabulary and grammar instruction, classroom automation, and providing self-directed and personalized learning through adaptive platforms. However, the observations also indicate weak performance and limited ability in foundational AI knowledge, especially concerning core concepts such as machine learning, natural language processing, and algorithmic bias.

**Keywords**—Artificial intelligence, English as a Foreign Language teachers, Teaching and learning, Teaching competencies.

## I. INTRODUCTION

As educational technology continues in progress and innovation, artificial intelligence (AI) has been increasingly recognized as a transformative trend in English as a Foreign Language (EFL) education. AI applications and systems such as intelligent tutoring systems, automated feedback tools, and adaptive language platforms have revolutionized how EFL is taught and learned. These tools support not only individualized instruction and real-time feedback but also enhance the efficiency and quality of teaching by offering innovative ways to engage students in authentic, interactive, and personalized learning environments (Pokrivcakova, 2019).

The integration of AI into education has commonly opened new approaches for curriculum design, assessment, and pedagogical innovation. AI can support a range of educational tasks, from diagnosing learner needs and providing immediate corrective feedback to automating grading and improving pronunciation and writing (Chen et al., 2024; Tlili et al., 2021). During the latest years, AI has played a pivotal role in sustaining the quality of online EFL learning, and further

highlighting its potential in distant and blended educational settings (Jiang, 2022).

In EFL classrooms, AI provides new opportunities for EFL teachers to improve their teaching efficiency and quality (An, et al. 2023). In this respect, AI is able to promote differentiated learning and present feedback and progress reports that meet learners' needs and satisfaction (Pokrivcakova, 2019). Research in this regard, indicates that learning tasks that EFL teachers do in their classrooms could be supported through the use of AI applications and tools. These include analyzing learners, checking assignments, scoring and designing tests, and correcting oral performance and writing (Tlili et al., 2021).

Hazaymeh et al. (2024) explore the views of EFL teachers in some UAE universities about the impact of AI applications in the EFL classroom. The results revealed that EFL teachers in universities depend highly on using AI applications to perform learning tasks, provide suggestions to improve the teaching strategies and adapt the learning process for each student. Those teachers additionally valued the positive benefits of AI applications in their classrooms, as they improve the learning and teaching processes.

Despite these advancements, the effective use of AI in EFL classrooms is not solely a matter of technological availability. More widely, it requires the teachers' possession of specific competencies that combine technological awareness, pedagogical, and content adaptability to make pedagogical decisions about selecting, integrating, and evaluating AI in the light of the instructional goals (Ng et al., 2022). Teachers should understand core AI concepts and be able to apply them through tools such as speech and text recognition, grammar checkers, translation systems, and intelligent feedback engines. Moreover, they should identify the ethical implications, algorithmic biases, and the evolving roles of teachers in AI enhanced classrooms (Divekar et al., 2021).

In the field of EFL instruction, although teachers need to understand basic concepts of AI technologies such as automated speech and text recognition, grammar checking, translation machines, and so on, studies by Zawacki-Richter et al. (2019) and Chiu and Chai (2020) indicate a noticeable gap between the availability of AI technologies and teachers' readiness to use them effectively. They argued that most research has focused on the technical development of AI systems, with limited attention paid to teachers' competencies in EFL settings.

Other studies revealed that teachers often face multiple barriers to integration, including external challenges like a lack of infrastructure, training, and institutional support, as well as internal barriers such as fear of losing pedagogical roles, limited digital literacy, and resistance to change (Tsai and Chai, 2012; Pokrivcakova, 2019). Furthermore, adapting AI tools diverse learner needs requires a sophisticated understanding of both learner preferences and the functions of AI systems, indicating a need for specific skills that many teachers should have to fully be skillful and effective.

Thus, to enhance the design of AI-assisted instructional frameworks and approaches, there should be more efforts that are devoted to understanding teachers' training needs. Jiang (2022) recommends that more research is required to unravel AI pedagogical potential to address multifaceted EFL teaching development and unfold new ethical implications and risks dwelling in AI inherently. Xu (2020) recommends that promoting AI instructional competencies is significant for teachers, particularly those who have the required knowledge about using AI integrated with instructional strategies. In this integration, AI is able to provide support to teachers and promote their educational role, which in turn greatly improves the efficiency of management and the level of decision-making (Ng et al., 2022).

Markauskaite et al. (2022) and Ng et al. (2023) suggest that teachers should learn how to use appropriate AI-driven technologies such as adaptive learning systems and intelligent agents to facilitate their daily teaching management and practices to collaborate with different parties, enhance personalized learning to understand students' learning progress and needs, and conduct various tasks such as offering automatic feedback, self-diagnosing, and promoting online collaboration among learners. In addition, teachers

need to update their pedagogical and content knowledge on AI and learn how to develop suitable pedagogies, digital resources, learning materials and assessments to empower learners (Vazhayil et al., 2019).

Consequently, in response to these challenges, this research seeks to explore EFL teachers' competencies in using AI for language learning and teaching. Thus, it tries to identify the gaps in teachers' ability to integrate AI in their EFL instruction, and understand how EFL teachers engage with AI tools. As the previous research reveal that many pedagogical competencies were underdeveloped and need more training focus, the present research seeks not only to examine which AI tools teachers use, but also to explore how they align these tools with pedagogy and curriculum goals.

The research tries to achieve the following aims:

1. Exploring EFL teachers' technical understanding of AI concepts and ethics in education
2. Investigating how EFL teachers use AI to support instructional design and teaching strategies
3. Identifying teachers' ability to align AI tools with curriculum goals and pedagogical principles of EFL content.

The present research followed the descriptive approach and delimited to explore the AI instructional competencies of (15) EFL teachers from Salah Eldin university who teach EFL to the 1<sup>st</sup>-year students at the faculties of Engineering, Science, Economy, and Management in Iraq.

## II. REVIEW OF LITERATURE

### A. AI

AI has emerged as one of the most transformative technologies of the modern era, fundamentally reshaping how individuals interact with machines and solve complex problems. The foundation of AI was laid by Alan Turing, in 1950, a pioneering scientist who is often regarded as the "ancestor" of AI. Turing suggested that machines could indeed possess abilities traditionally associated with human intelligence, such as decision-making and problem-solving (Arslan, 2020). Following Turing's groundbreaking contributions, AI continued to evolve rapidly, driving the field beyond merely creating intelligent systems to developing technologies capable of human-like thinking and problem-solving (Joshi, 2021).

AI is a computer system that includes human-like processes like learning, adapting, synthesizing, self-correcting, and using data for complex processing tasks. From a broader view, AI is considered as a science, Stone et al. (2022) says that "artificial intelligence is a science and a set of computational technologies that are inspired by the ways people use their nervous systems and bodies to sense, learn, reason, and take action, but typically operate quite differently from human. Fahimirad and Kotamjani (2018) defined AI as a software that makes predictions, finds trends, and applies certain patterns that have recently been discovered to situations not covered by its primary architecture. From another view, Baker and Smith (2019) define it as

“computers which perform cognitive tasks, usually associated with human minds, particularly learning and problem-solving.” Thus, AI is considered as a specific set of skills of computers. In the field of education, AI is defined as a means to improve education in an individualized, flexible, inclusive and interesting way by processing real-time data.

### *B. The Importance of Using AI in EFL Teaching*

The embedment of AI applications and systems into education has transformed various aspects of teaching and learning, offering innovative solutions that can significantly enhance EFL instruction. AI technologies provide unique opportunities for language practice and progress. The growing body of research highlights how AI can significantly improve teaching practices, student engagement, and language skills.

Several studies have demonstrated the usefulness of AI chatbots in developing speaking skills and oral communication. It has been shown that providing EFL students with AI-driven chatbots can improve their spoken communication, read comprehension, and writing in an argumentative style (Wang and Petrina, 2013). The use of AI chatbots in the classroom has been shown to increase students' levels of interest, as well as their motivation and self-esteem (Kim et al., 2019). In the same view, it is revealed that students' interaction with these generative tools improves their capacity to comprehend oral English language (Lan et al., 2018).

From another perspective, AI applications enable learners to access unlimited multimedia resources, study materials easily, and choose their own learning style (Mijwil et al., 2022). In addition, “these tools can improve speaking skills through speech recognition software that provides feedback on pronunciation and oral fluency” (El Shazly, 2021). In relation to the writing domain, Mohamed and Siddiqui (2021) demonstrate that these systems offer grammar correction, accuracy support, and tools of language style refinement, promoting various writing skills.

From another perspective, AI tools facilitate collaborative learning by enabling meaningful communication and group work (Massoudi et al., 2025). These tools can support the formation of appropriate learning groups, monitor interactions, and provide guidance at critical moments (Luckin et al., 2016). In addition, these tools provide immediate and individualized feedback, helping students improve their performance through consistent practice and self-revision (Gao, 2021).

Moreover, AI-translation applications encourage EFL learners to modify their translations through different suggestions of translated texts to enhance their lexical and grammatical knowledge (Lee and Lee, 2024). Research in this vein suggests that when these applications used appropriately, they can be effective aids for language development and practice (Garcia and Pena, 2011).

### *C. AI Pedagogical Competencies*

The integration of AI into teaching requires specific competencies that span technological, pedagogical, and

content knowledge (Massoudi and Zaidan, 2025). These competencies enable teachers to effectively use AI tools to enhance educational practices, making them better equipped to design AI-based instructional strategies that improve learning outcomes.

Edwards et al. (2018) stated that teachers need to be trained on selecting and designing AI based instruction, monitoring students' progress, and providing emotional and cognitive support using AI-based systems. According to Hazaymeh et al. (2024), EFL teachers need to use AI applications in ways that are aligned with instructional goals and support student learning. Training teachers in AI competencies allows them to develop the necessary skills to use AI technologies effectively, while also considering how these tools can be integrated into their pedagogical practices to support student learning and engagement (Vinothkumar and Saratha, 2024).

Kim et al. (2019) conducted an analysis of AI curricula and identified key competencies required for effectively designing learning tasks and AI instruction. These include a solid understanding of AI principles, computer science foundations such as programming and algorithms, and proficient use of ICT tools alongside educational systems. For the teacher-focused competencies in the field of using AI in teaching and learning, previous studies concentrated on identifying AI knowledge, utilizing AI technology, and integrating it into teaching practice. Jiang et al. (2021) indicate that teachers should have enough knowledge about the functions and ethics of AI, and how to utilize these tools for achieving curriculum objectives. Teachers can perform skillfully tasks such as data analytics, correcting, and scoring using AI-based tools (Olari and Romeike, 2021). Teachers should have the ability to select suitable AI tools, plan machine-oriented instructions and create adaptive learning environments that address individual student needs based on AI personalized abilities (Edwards et al., 2018).

Pedagogical competencies of teachers should involve monitoring students' progress and providing appropriate cognitive and emotional support using AI-based systems. Olari and Romeike (2021) examined current teacher education frameworks concerning AI and data literacy, proposing a comprehensive model encompassing eight core competencies: (1) Acquiring pertinent data for AI tool application; (2) Executing effective data cleansing and mitigating bias; (3) Translating AI and data management concepts into practical learning tasks; (4) Enhancing datasets using AI techniques; (5) Generating data visualizations through AI algorithms; (6) Extracting insights from data using AI analyses; (7) Interpreting outcomes, recognizing potential errors, and subjecting them to critical scrutiny; and (8) Applying AI-based strategies to optimize data storage, deletion, and dissemination.

Hsu, et al. (2023) mentions that teachers also should know how to use data generated by AI tools to inform instructional decisions and adapt their teaching methods accordingly. This may involve using AI insights to tailor content delivery, adjust pacing, or modify learning tasks to better meet the needs of students. Teachers also need to use AI to modify and present content based on the learners' progress. This may include

using adaptive learning platforms that adjust the content difficulty according to each student's needs (Sun et al., 2022). Ikedinachi et al. (2019) mention that AI applications that are integrated in education enable the teacher to perform his/her educational roles out of routine tasks and can concentrate on establishing links with students, getting to know them, and mastering skills that will accompany them on their journey towards their human development.

To sum up, there is a gap between the reality of EFL teachers' pedagogical competencies of using AI in teaching EFL and the required skills that teachers should have to effectively integrate AI applications into the instructional design, personalize learning tasks, and adapt of AI applications into the curriculum objectives and learners' needs. This gap is evident in competencies as the limited level of conceptual understanding of AI technologies, the insufficient training in AI-assisted pedagogies, and the lack of skills and efficiency in adapting AI to diverse classroom contexts. Bridging this gap requires focus and directed professional development, institutional support decisions, and continuous training to evolve AI tools to ensure that teachers are prepared to harness AI's full potential in EFL education.

### III. METHODOLOGY

#### A. Design

The present research followed the descriptive analytical method of research, through using an observation sheet as a main instrument of the research to investigate the university teachers' competencies of using AI applications in EFL instruction. The research group consisted of (15) teachers at Salah Eldin university who teach EFL for the 1<sup>st</sup> year at the faculties of Engineering, Science, Economy, and Management, those teachers actually used AI in their EFL instruction and has enough knowledge about using AI in EFL instruction. Their age ranged from 40 to 44 years old and they approximately had the same year of experience in teaching EFL.

#### B. Instrument

The researcher used an observation sheet to evaluate EFL teachers' competencies in integrating AI into English language instruction. Based on an extensive literature review of previous studies discussed the integration of AI in EFL

instruction, the researcher identified 20 sub-competencies. These competencies were categorized into three primary domains: (1) Technical understanding of AI applications relevant to education, (2) Using AI to support instructional design and teaching strategies, (3) Integrating AI knowledge with pedagogy and EFL content. Building on this framework, the researcher constructed an observation sheet containing 24 items. Each item was assessed on a three-point scale: (1) Indicates a poor availability, (2) Represents an adequate availability, and (3) Represents a high level of availability. The maximum score of the observation sheet was 72. The reliability of the instrument was confirmed through inter-rater reliability, whereby three equivalent raters assessed the teachers' performance.

#### C. Data Collection

Three copies of the observation sheet were distributed to three professors specialized at Teaching EFL to observe the EFL teachers who participated in the research. They record their evaluation in the form of numbers (Poor=1, Good=2, Excellent=3) in the front of each indicator of the observation sheet. The observation lasted for 5 weeks. Every teacher was observed for three sessions. Data was collected from the evaluators and decoded into percentages. The evaluation process for every teacher lasted for three sessions to make sure of the validity of the evaluation process.

### IV. RESULTS

#### A. Technical Understanding of AI Applications Relevant to Education

The evaluators' observations in the first main competency were analyzed and scored quantitatively. Means and percentages were calculated and interpreted.

The previous Table I shows the percentage of the availability of how well educators understand and apply AI applications within educational contexts. The analysis of the data reflected different levels of understanding, as the teachers showed deep knowledge about using AI tools, interpreting learning analytics and an awareness of how AI could support feedback and content delivery adaptively. On the other hand, they demonstrated low awareness of conceptual understanding and the ability to track and monitor the accuracy and stability of AI-generated outputs in EFL instruction, indicating the less opportunities to learn the

TABLE I  
RESULTS OF OBSERVING TEACHER'S TECHNICAL UNDERSTANDING OF AI APPLICATIONS RELEVANT TO EDUCATION

No.	Item	Percentage		
		Poor	Good	Great
1	Identifying the core concepts of AI such as machine learning and data-driven algorithms	71	19	10
2	Identifying AI tools like chatbots, CAT translation tools, and intelligent tutoring systems	12	82	8
3	Interpreting AI-generated data for classroom insights	8	89	3
4	Tracking the accuracy and stability of AI-generated outputs in EFL instruction	73	22	5
5	Recognizing how AI systems support feedback and adaptive content delivery	1	6	93
6	Setting up AI systems or platforms in an educational setting.	6.5	16.5	77

AI: Artificial intelligence, EFL: English as a Foreign Language

theoretical bases of the AI and its ethics in education, not just tool usage. This was clear through observations, as most teachers could not differentiate between rule-based systems and machine learning, indicating conceptual confusion and illiteracy of AI ethical dimensions. Other default appeared in their inability to deep analytics of learning. Most teachers could interpret student heat maps on Edmodo but struggled to draw inferences for instructional design.

In addition, most teachers demonstrated a familiarity with specific AI tools such as (ChatGPT, Google Translate, Duolingo), this is due to the direct and continuous use of these applications in language classrooms, reflecting functional awareness. Almost all teachers were aware of the benefits of AI automation in education. This was clear when instructors used Moodle or Edmodo, they could clearly explain how AI automates quiz scoring and feedback personalization.

### *B. Teachers' use of AI to Support Instructional Design and Teaching Strategies*

The evaluators' observations in the second main competency were analyzed and scored quantitatively. Means and percentages were calculated and interpreted.

The Table II shows the percentage of the teachers' ability to use AI to support instructional design and teaching strategies, instructional planning, teaching, differentiation, and learner engagement. It was observed that teachers were proficient in using AI for personalized learning, feedback, and self-directed study, but they struggle with how to adapt AI to various proficiency levels, promote collaborative AI-based

tasks and group work activities, and fully integrate AI into communicative language tasks. Strong support was evident for learner autonomy using tools like Duolingo, Quizlet, or YouGlish, as many students reported using AI to practice listening outside class, based on teacher recommendations. In addition, most teachers demonstrated low awareness of the strategies of tailoring AI integration for varied proficiency level.

Most teachers were able to design tasks using AI (e.g., grammar correction with Grammarly, speaking tasks with AI), although they were faced by challenges of effective integration. This was evident when teachers created writing prompts using ChatGPT which were rarely aligned with cognitive or linguistic objectives. Furthermore, many teachers showed high performance in managing differentiated AI-enhanced activities (e.g. using adaptive tools like LingQ or Elsa Speak). This was evident when teachers let students using adaptive AI reading applications that meet every student's language level. On the other hand, although students used generative applications for simulated dialogues, but their teachers sometimes stuck to scripted tasks. Thus, AI conversation partners used as supplementary tools, not core dialogue practice.

Moreover, it was observed that most teachers used real-time applications (e.g., auto-marking quizzes, speech fluency scoring), but more focus should be put on using deeper analysis and personalized adaptation, as teachers rarely used AI in providing immediate MCQ scores for formative feedback loops.

TABLE II  
PERCENTAGE OF TEACHERS' USE OF AI TO SUPPORT INSTRUCTIONAL DESIGN AND TEACHING STRATEGIES

No.	Item	Percentage		
		Poor	Good	Great
1	Creating EFL tasks that leverage AI features in the learning process	21%	78	-
2	Managing classrooms where AI tools provide personalized instruction or practice	13	13	74
3	Using AI-generated analytics and intervening to track student progress when needed.	9	22	69
4	Implementing AI tools for real-time student feedback and assessment	9	83	8
5	Integrating AI in communicative language teaching activities	22	76	2
6	Using AI-powered platforms in self-learning activities	16	13	76
7	Adapting AI use to support learners of different proficiency levels	82.7	11.8	5.5
8	Fostering AI tools-based group activities.	73	11	21

AI: Artificial intelligence, EFL: English as a Foreign Language

TABLE III  
PERCENTAGE AND FREQUENCIES OF TEACHERS' ALIGNMENT OF AI TOOLS WITH CURRICULUM GOALS AND PEDAGOGICAL PRINCIPLES OF EFL CONTENT

No.	Item	Percentage		
		Poor	Good	Great
1	Integrating AI into lesson planning and content creation	12	15	73
2	Using AI tools that enhance vocabulary learning in authentic context	14	15	71
3	Using AI tools that enhance grammar learning and practice	22	8	70
4	Using AI tools that enhance skill development in alignment with curriculum goals	18	81	1
6	Creating tests that leverage AI for grammar correction, fluency analysis, or pronunciation feedback.	21	67	12
7	Using AI for speech recognition or image-to-text in language learning	15	78	7
8	Using AI for translation development	10	12	78
9	Incorporating AI tool functions into content delivery to support language acquisition	71	15	14
10	Using AI to provide personalized content that matches each learner's pace, style, and level. Each learner's pace, style, and level.	70	22	8

AI: Artificial intelligence, EFL: English as a Foreign Language

Teachers' alignment of AI tools with curriculum goals and pedagogical principles of EFL content.

The evaluators' observations in the third main competency were analyzed and scored quantitatively. Means and percentages were calculated and interpreted.

The previous Table III showed how EFL teachers were able to integrate AI tools meaningfully into EFL instruction, ensuring alignment with curriculum goals and pedagogical principles. Through observations, teachers demonstrated a strong ability to integrate AI in EFL instruction and development, as teachers effectively used suitable AI applications to generate and adapt content for EFL. It was observed that teachers used ChatGPT to generate role-plays, practice reading texts, and engage in discussion prompts suitable for learning EFL. Most teachers displayed a high performance in employing tools like LingQ or Rewordify to contextualize vocabulary within real-life texts. This was evident when learners used YouGlish and ChatGPT to explore word usage in authentic sentences and role play scenarios. With this high performance in speaking, reading, and vocabulary domains, a small number of the participants still misused AI grammar tools. Even though, applications like Grammarly and Write and Improve were used to diagnose and correct errors, followed by peer revision activities.

Furthermore, it was observed that EFL teachers aligned AI applications with general learning outcomes but they lacked the ability to integrate these applications in creative or critical skill integration. This was evident when AI was used for reading speed tracking or pronunciation drills, but it was rarely used for fostering critical reading or debate. In relation to assessment criteria, many teachers were observed to use AI for formative testing, but fewer design rich, diagnostic tasks using AI feedback loops. This was clear when many teachers used ChatGPT to generate grammar quizzes; some teachers used Speechling or Elsa for pronunciation scoring. In addition, innovative tools, as Google Lens, Whisper, or Microsoft Read Aloud, were used to enhance multimodal learning. Teachers used image-to-text tasks in which students were allowed to practice descriptive language, especially for beginners.

In the domain of developing translation, many teachers effectively used AI applications (DeepL or Google Translate) to teach translation strategies, where students translated texts and used AI to compare outputs with human translation to reflect on accuracy and equivalence consistency. Teachers often prepared content using AI but didn't allow students to interact with AI during the lesson. In contrary, few proportion of EFL teachers adjusted AI reading tasks to individual learners' levels, leading to disengagement or frustration.

Based on the previous observations, it was obvious that teachers showed high performance in using AI for content development and vocabulary/grammar learning, but face challenges in adaptive instruction, AI-driven delivery, and personalization. These gaps suggest the need for deeper pedagogical training on AI as an active instructional agent not just a static tool.

## V. DISCUSSION

The previous observations of the EFL teachers' AI instruction-based competencies, understanding of AI concepts and ethics, using AI in instructional design, and integrating AI in developing English language skills and EFL content, explored the teachers' current abilities in leveraging AI for English language teaching and the gaps that needs focused training and support.

Reviewing the previous observations, the EFL teachers in 1<sup>st</sup> year university stage, demonstrated a deep practice and use of AI applications, particularly in content development, lesson planning, test generation, lesson delivery, language skills development, vocabulary and grammar instruction, classroom automation and self-directed and personalized practice using adaptive platforms.

However, the observations also revealed weak performance and less ability in foundational AI knowledge, especially regarding core concepts such as machine learning, natural language processing, and algorithmic bias. AI is often used as a tool rather than an active part of instruction. Most EFL teachers struggled to adjust AI content to match learner proficiency, pace, or style. There was a narrow view of AI as a collaborative learning tool.

## VI. CONCLUSION

Based on observations of AI-related instructional competencies, it can be concluded that while there was a high familiarity with AI tools, there was a noticeable lack of conceptual literacy and critical engagement, particularly in complex domains such as ethics and reliability. AI was used effectively for individual tasks like grammar correction and content generation; however, its integration into collaborative and communicative learning environments was limited. Moreover, areas such as personalized learning and adaptive AI-driven delivery systems are undeveloped, thereby constraining the broader pedagogical potential of AI technologies. Finally, although practical applications are widely adopted, training efforts were inconsistent, with significant gaps in theoretical understanding and strategic implementation that should be addressed to achieve more coherent and impactful integration.

## VII. RECOMMENDATIONS

Based on the previous results and conclusions, it is recommended to professional development decision makers should design training modules that build teachers' knowledge and core concepts of AI theories and systems, bias, ethics, and data interpretation.

Incorporate micro learning sessions and simulations in the teachers' preparation practical trainings to enable them develop their skills of using AI applications effectively in teaching and learning processes.

Embed AI based activities in curriculum design and train teachers to encourage students' engagement through designing adaptive and personalized learning activities and

integrating AI into lesson stages (e.g., warm-up, practice, assessment).

Provide teachers with strategies and examples for using AI with learners at different proficiency levels (e.g., level-adjusted prompts, simplified outputs).

Use project-based learning tasks in teachers' development trainings that provide teachers with collaborative tasks to use AI tools (e.g., co-writing with ChatGPT, peer reviewing with AI support).

Train teachers on reflection activities in teacher development programs where they could evaluate AI effects, assess biases, and discuss ethical use.

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