

## AI INTEGRATION IN EFL TEACHER EDUCATION: PERCEPTIONS AND PROFESSIONAL DEVELOPMENT NEEDS

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### Abstract

The integration of Artificial Intelligence (AI) into English as a Foreign Language (EFL) teaching presents both opportunities and challenges for teacher education. While AI's role in enhancing language learning is increasingly recognized, limited research has explored how EFL teacher educators perceive and navigate AI integration. Addressing this gap, the present study investigates Indonesian EFL teacher educators' perceptions of AI integration, focusing on the challenges they face, the competencies they require, and their professional development needs. Employing an interpretivist qualitative approach, the study analyzed data from semi-structured interviews with eight teacher educators at a private university in West Java. Thematic analysis, conducted both manually and with ChatGPT assistance, revealed key challenges including overreliance on AI, issues of academic integrity, and inadequate institutional support. Educators emphasized the need for AI literacy, pedagogical adaptability, and ethical awareness. They also identified the importance of structured, ongoing AI-focused professional development supported by institutional collaboration. Findings underscore the urgent need for responsive policies, ethical guidelines, and capacity-building efforts to support responsible AI adoption in teacher education. These insights contribute to the growing discourse on AI integration and inform the design of context-sensitive professional development programs in EFL contexts.

**Keywords:** *Artificial Intelligence (AI), EFL, English Teacher, Language Teaching*

### Introduction

This study explores teacher educators' challenges, competencies, and professional development needs in an Indonesian EFL teacher education program amid the rapid development of Artificial Intelligence (AI) in education. In Indonesia,

where college-based teacher education is the primary pathway to teaching, teacher educators play indispensable roles in preparing a high-quality teaching workforce (Adnan et al., 2024). Beyond teaching, they mentor, develop curricula, supervise practicums, and evaluate preservice teachers' learning (Lunenburg et al., 2014). These multifaceted roles position them to reshape future educational systems through their influence on preservice teachers' worldviews, pedagogical practices, and technological integration.

Given these influential roles, scholars must understand how AI advancements intersect with the responsibilities of teacher educators. The advancement of AI in language education requires its integration into teacher education programs, with teacher educators crucial to embedding these innovations. While research has examined AI's impact on language competencies and teachers' perceptions (Bin-Hady et al., 2024; Chiu, 2023; Jeon, 2024; Moorhouse & Kohnke, 2024; Wood & Moss, 2024; Zhang et al., 2023; Zou et al., 2024), studies on teacher educators' experiences remain limited (Celik et al., 2022; Celik, 2023; Sperling et al., 2024a). Given their influence on teacher education pedagogy (Lunenburg, et al., 2014), understanding how teacher educators can effectively prepare future teachers for AI integration is essential.

Artificial intelligence (AI) has transformed language education through interactive, adaptive, and personalized instruction. Conversational agents and chatbots facilitate real-time practice, feedback, and modeling of linguistic input, fostering learner autonomy and reducing anxiety (Huang et al., 2024; Wu & Li, 2024). Intelligent Tutoring Systems (ITS) diagnose learner needs, personalize instruction, and provide targeted feedback (Wu & Li, 2024), while AI-powered mobile applications adapt content to proficiency levels, promoting motivation and enhancing vocabulary and reading comprehension (Chavez & Palaoag, 2024). Recent developments in generative AI (GenAI) tools, such as ChatGPT, Grammarly, and Quillbot, support writing through grammar and coherence feedback, content organization, and iterative revision (Kohnke et al., 2023; Zheng, 2024). Automated Essay Scoring (AES) systems encourage self-regulated learning (Ho, 2024), and speech recognition tools like

Speaking AI, Bard, and Masterly AI integrate content generation, assessment, and personalized learning (Kohnke et al., 2023). Despite these affordances, ethical issues, data privacy risks, and overreliance concerns require that AI complement rather than replace human interaction (Kohnke et al., 2025).

In teacher education, AI enhances instructional methodologies, professional development, and personalized learning (Moorhouse & Kohnke, 2024). Tools such as chatbots, automated writing programs, and essay scoring systems assist in lesson planning, assessment, and workload reduction (Sperling et al., 2024). ITS, analytics, and adaptive systems provide data-driven insights into learner progress (Meylani, 2024; Guan et al., 2025; Bauer et al., 2025) and enable real-time feedback through simulations. AI also advances AI literacy, fosters self-paced professional development, and promotes reflective practice (Lee et al., 2024; Sperling et al., 2024; Meylani, 2024). Taken together, these innovations position AI as a catalyst for more adaptive, efficient, and innovative teaching, while underscoring the need for responsible, pedagogically grounded integration.

This study analyzes teacher educators' roles by drawing on the Teacher Educator Technological Competencies (TETC) framework (Foulger et al., 2017), recently adapted to include AI technologies (Trust et al., 2024). The TETC offers guidance for preparing educators to integrate technology effectively, a need amplified as AI reshapes curriculum, pedagogy, and assessment in language teacher education (Moorhouse & Kohnke, 2024; Mishra et al., 2023). Its 12 interrelated competencies (Table 1) collectively support the responsible and effective use of AI in teacher education.

Table 1. Adapted Teacher Educator Technology Competencies (TETCs) by Trust et al., (2024).

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TETC 1: Teacher educators will design instruction that utilizes and encourages teachers to critically evaluate content-specific AI technologies to enhance teaching and learning.

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TETC 2: Teacher educators will incorporate pedagogical approaches that prepare teacher candidates to effectively use, and critically interrogate AI technology.

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TETC 3: Teacher educators will support the development of the knowledge, skills, and attitudes of teacher candidates as related to teaching with AI technology in their content area.

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TETC 4: Teacher educators will use and critically investigate the use of online AI-based tools to enhance teaching and learning.

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TETC 5: Teacher educators will use and critically investigate the use of AI technology to differentiate instruction to meet diverse learning needs.

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TETC 6: Teacher educators will critically investigate the use of AI technology tools for assessment, paying close attention to the biases built into these tools that can negatively impact learning and academic success.

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TETC 7: Teacher educators will critically investigate how AI technologies might influence teaching online and/or in blended/hybrid learning environments.

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TETC 8: Teacher educators will use AI technology to connect globally with a variety of regions and cultures.

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TETC 9: Teacher educators will address the legal, ethical, and socially responsible use of AI technology in education.

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TETC 10: Teacher educators will engage in ongoing professional development and networking activities to improve the critical integration of AI technology in teaching.

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TETC 11: Teacher educators will engage in leadership and advocacy for or against using AI technology based on their own critical analysis and research on AI in education.

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TETC 12: Teacher educators will apply basic troubleshooting skills to resolve AI technology issues.

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These competencies highlight the technical and ethical capacities essential for AI integration in teacher education. Effective use of AI requires not only technical proficiency and critical AI literacy—such as evaluating AI-generated content, designing prompts, and embedding AI tools pedagogically (Moorhouse & Kohnke, 2024; Sperling et al., 2024)—but also an understanding of ethical issues, including bias, misinformation, surveillance risks, and data privacy (Sperling et al., 2024; Meylani, 2024). Scholars stress the importance of modelling ethical and critical AI use in language teacher education (Moorhouse & Kohnke, 2024) and call for ongoing

professional development to equip educators with the skills needed to guide pre-service teachers in AI-enhanced classrooms (Moorhouse & Kohnke, 2024).

This study contributes to this understanding by exploring how teacher educators perceive, use, and experience the integration of AI tools into teacher education, aiming to address knowledge gaps related to their challenges, competencies, and learning needs. More specifically, it focuses on addressing the following three main questions: (1) What challenges do teacher educators face when integrating AI into teacher education? (2) What competencies do teacher educators need to successfully lead the integration of AI technologies in teacher education? and (3) What professional development opportunities do teacher educators require to be better equipped for integrating AI in EFL teacher education? The findings will contribute to the scholarly discourse on teacher educators' competencies and learning needs for AI integration while informing professional development initiatives for effective AI implementation in EFL teacher education.

Moreover, this current study was conducted in an EFL teacher education program at a private university in northern coastal West Java, Indonesia, with approximately 200 students and 25 faculty members (teacher educators). The institution represents a typical context in Indonesia, where many private colleges face infrastructural and professional development limitations despite national policies encouraging digital transformation. In the Indonesian educational landscape, AI integration is further shaped by uneven internet connectivity across regions, varying digital literacy levels among educators, limited institutional budgets for technological investment, and a strong emphasis on high-stakes assessments that can constrain pedagogical innovation. These factors create a unique set of challenges in translating global AI trends into locally relevant practices in Indonesia, requiring educators to adapt tools and approaches within cultural, infrastructural, and policy constraints.

While global research on AI integration in education is growing, much of it focuses on student outcomes or in-service teachers, with little attention given to the experiences and perceptions of teacher educators in under-resourced environments. This study addresses that gap by investigating how teacher educators in a developing

country context engage with AI in their professional roles. By highlighting their challenges, competencies, and perceived professional development needs, this research contributes critical insights to the emerging field of AI-integrated teacher education. What distinguishes this study from previous work is its emphasis on teacher educators as both agents and subjects of change, using AI not only as a teaching tool but also as a means for reflection and pedagogical transformation within an emerging economy.

## **Method**

This study adopted an interpretivist approach, employing a qualitative case study design to explore in depth the challenges, competencies, and professional development needs perceived by teacher educators (Cohen et al., 2018; Creswell, 2014; Yin, 2018). This design enabled an in-depth examination of AI integration within a bounded context, an EFL teacher education program, capturing the complexity of participants' perceptions and experiences (Denzin & Lincoln, 2018; Yin, 2018). It also provided the flexibility to investigate this emerging topic while prioritizing participants' perspectives, attending to context-specific factors rather than seeking broad generalizations, and emphasizing meaning and interpretation (Cohen et al., 2018). Through this approach, this study aimed to generate rich, contextually grounded insights to inform future research, policy, and professional development related to AI integration in teacher education.

### **1. Participants**

Participant recruitment began with sharing the research outline via the faculty WhatsApp group, followed by individual outreach to those using AI in their teaching. Eight of the ten AI-implementing faculty members agreed to participate (six females, two males), with teaching experience ranging from 10 to 30 years. Two held associate professor positions, while six were assistant professors. Table 2 presents their demographic information. The researcher initially distributed invitation to participate and consent form outlining the detailed on the study through the lecturer's WhatsApp group. This study specifically targeted the lecturers who have experiences in integrating AI in their practices. Out of 28 lecturers, eight agreed to participants. This

way, this study used convenience sampling strategy. The eight lecturer who agreed to participate have been using AI in their practices ranging from one to three years.

Table 2. The participants

<b>Pseudonym</b>	<b>M/ F</b>	<b>Teaching experience</b>	<b>Academics ranks</b>
Michael	M	10 years	Associate Professor
Andy	M	25 years	Assistant Professor
Lesly	F	20 years	Associate Professor
Martha	F	10 years	Assistant Professor
Narnia	F	30 years	Assistant Professor
Fatimah	F	10 years	Assistant Professor
Saiah	F	15 years	Assistant Professor
Mulia	F	15 years	Assistant Professor

## 2. Data Collection and analysis

Data were collected through 45- to 60-minute individual interviews. The interviews were audio-recorded. All the interviews process began with a discussion about the study and ask the participants to restating their consent to participate. (Appendix 1 provide the interview protocol). Interviews were chosen to capture teacher educators' perspectives on AI integration and their meaning-making processes (Brinkmann, 2013). A semi-structured protocol with open-ended questions explored their experiences with AI, perceived benefits, and challenges, required competencies, and professional development needs for effective AI integration in language teacher education.

This study conducted inductive data analysis using Clark and Braun's (2021) thematic analysis, integrating AI tools to enhance the process. To maintain manageability, analysis occurred concurrently with data collection, allowing immediate engagement in familiarization with the data. Interviews were transcribed, translated

into English, reviewed, and annotated for initial impressions. The first three authors manually analyzed the data, while the other two employed ChatGPT, following Zhang, Wu, et al.'s (2023) guidelines for AI-assisted qualitative analysis, emphasizing high-quality prompts (see Appendix 2 for details). The researchers then compared and contrasted manual and ChatGPT-assisted analyses, fostering close collaboration to verify interpretations, clarify discrepancies, and refine understanding (Creswell, 2013). This process ensured a rigorous examination of teacher educators' challenges, competencies, and professional development needs in AI integration.

### **3. Ethics and Trustworthiness**

In this study, the researchers assumed dual roles as researchers and colleagues of the participants. From the outset, this study was mindful of Creswell's (2013) warning regarding power dynamics and potential risks when conducting research within our own institution. Given our shared background knowledge of the study context and familiarity with the participants, the researchers recognized that their prior experiences, biases, and assumptions could influence the research process (Creswell, 2013). Furthermore, Consideration was given to how the researchers' dual roles might influence data authenticity (Maxwell, 2013).

This study addressed these concerns by ensuring voluntary participation through thorough discussions before recruitment. The researchers designed an interview protocol that fostered open dialogue, clarified the study's purpose, and allowed participants to ask questions before recording (see Appendix 1). To enhance data credibility, this study conducted two rounds of member checking (Maxwell, 2013), with participants verifying transcript accuracy and later confirming the researchers' interpretations. Ongoing discussions throughout data analysis further refined interpretations and maintained reflexivity. These measures upheld the study's ethical integrity, credibility, and trustworthiness, ensuring the findings accurately reflect participants' perspectives while minimizing researcher bias.

### **Results**

This study's analysis shows that while teacher educators integrate AI into their practices and recognize its impact, they are concerned about its challenges. Viewing

themselves as instructors and role models, they emphasize the need for competency development in effective and ethical AI use.

### **1. Challenges in AI integration**

Three most salient themes were identified from the interview datasets regarding to challenges in integrating AI into teacher education perceived by the teacher educators: (1) over-reliance on AI, which may diminish critical thinking and creativity; (2) difficulties in assessing AI-generated work while ensuring academic integrity; and (3) limited institutional support and varying levels of AI literacy among educators.

The first challenge identified by the teacher educators is the concern about *over-reliance on AI and its impact on critical thinking and creativity*. The teacher educators have a key concern over the excessive use of AI may weaken students' critical thinking and creativity. *Fatimah* highlighted this, stating, "*Many students use AI, and the concern is that it may reduce their critical thinking and creativity since AI is a machine—it provides whatever we ask for*". *Mulia* echoed this worry, adding, "*my biggest concern is that students may rely too much on AI without critically evaluating the content*." Similarly, *Fatimah* warned that AI's immediate and authoritative responses might erode students' ability to think independently. This concern extends to the teacher educators as well. *Lesly* cautioned against AI dependency, stating:

"If it's overly relied upon, it can be dangerous. For instance, it might lead to plagiarism or the absence of critical thinking. We could become overly dependent on AI for everything. My main concern is that we might lose our creativity."

These concerns highlight the need to balance AI's benefits with strategies that promote independent thinking and creativity in both students and educators.

The teacher educators also acknowledged collectively that they faced the challenge in *assessing AI-generated works and ensuring academic integrity*. *Lesly* noted, "*one of the biggest challenges is related to writing. For example, plagiarism becomes an issue because students often struggle to write in their own words*." *Fatimah* shared a similar concern: "*AI can generate complete academic papers, and I*

*worry that students might submit AI-generated work without truly understanding it."* Martha emphasized the difficulty of distinguishing between original and AI-generated content, stating, "The most difficult part is avoiding or finding originality... I'm having difficulty distinguishing whether this is genuinely human work or robot generated."

This concern over academic integrity has not only highlighted the evolving nature of academic integrity in the AI era, but also underscored an area where teacher educators need professional development. While AI can support language learning, the teacher educators also raise critical questions about students' engagement with authentic expression and critical thinking. Therefore, they need support to develop their competencies in asserting ethical conducts and becoming role models for their student-teachers.

Lastly, our analysis has also found that the teacher educators faced the challenge in the form of *institutional and digital literacy barriers*. Lesly pointed out, "First, there must be adequate infrastructure, like reliable internet and Wi-Fi." Michael reinforced this concern: "One major issue is that students often cannot access the internet on campus." Without stable digital infrastructure, both educators and students struggle to integrate AI into teaching and learning effectively. Moreover, beyond infrastructure, limited AI literacy among educators further complicates AI adoption. Andy observed, "One challenge is that some lecturers lack AI knowledge. Students sometimes know more than their professors." Saiah echoed this, emphasizing, "There should also be an understanding by teacher educators of how AI is used in English language learning. However, I think many of us lack understanding on this matter."

There are hundreds of teacher education institutions (LPTK) in Indonesia, most of which are private universities with limited technological facilities. The university in this study, for instance, is a private institution with restricted internet access. Additionally, the teacher-centered learning culture poses a significant challenge to AI integration in teacher education. Many lecturers still view themselves as the primary source of knowledge and have limited awareness of AI advancements. Among the 25 lecturers at this university, only 10 have ever attempted to use AI in their teaching.

These concerns—ranging from inadequate infrastructure to limited AI literacy, highlight the need for policy and institutional support, not only in terms of technological infrastructure but also in fostering AI awareness and capacity building among teacher educators.

## 2. Competences in AI integration

As AI continues to reshape education, teacher educators face the challenge of preparing future teachers for an AI-enhanced learning environment. To meet this challenge, our analysis has found that the teacher educators emphasized the need for three key competencies: 1) technological proficiency, 2) pedagogical adaptability, and 3) ethical awareness.

The first and the foremost theme identified in the dataset is that the teacher educators agreed that they *need to improve their AI literacy and technological proficiency*. Teacher educators widely acknowledge that AI literacy and technological proficiency are essential for integrating AI into teacher education. Understanding how AI functions, its capabilities, and its applications in teaching is crucial for both educators and preservice teachers. *Lesly* emphasized, *"The first skill they need is to understand what AI is and what it encompasses—what facilities AI offers and what it can be used for."* Beyond comprehension, technological proficiency is necessary for effectively using AI tools in educational settings. *Fatimah* highlighted this, stating, *"Technological skills are essential because using AI requires technology proficiency."* Without these skills, educators may struggle to leverage AI's pedagogical benefits. As *Narnia* warned, *"Prospective teachers need to be technologically literate. If they're not, they will struggle to keep up with the rapid development of AI."*

Another competence that teacher educators need to integrate AI into their teacher education practices is *the ability to balance AI use with pedagogical integrity*. Beyond technical skills, teacher educators stress the importance of maintaining pedagogical integrity while integrating AI. While AI can enhance teaching, it should not replace fundamental pedagogical principles or human interaction. *Lesly* cautioned, *"The key is that not everything has to rely on AI, even though it's meant to assist in the learning process."* *Martha* added, *"If teaching is just defined as transferring*

*knowledge, then yes, it's already been taken over by ChatGPT or other AI.*" These concerns highlight the evolving role of teachers in an AI-driven world, where AI should support—not replace—educators. *Michael* reinforced this, stating, "AI is just a tool—nothing more than a hoe for a farmer or a vehicle for transportation." To ensure AI complements rather than undermines traditional pedagogy, educators must develop frameworks for its responsible integration.

Moreover, the teacher educators also acknowledged that they need the ability to *understand the ethical implications of AI in education*. The rapid adoption of AI raises concerns about bias, misinformation, and the potential devaluation of human cognition. *Saiah* cautioned, "We can't just accept it blindly." *Narnia* further emphasized that education extends beyond content delivery, stating, "Learning is not just about transferring knowledge—it's also about character education. That's something AI cannot provide." Educators must guide students in using AI responsibly while fostering critical thinking and ethical awareness. *Mulia* reinforced this by stating, "AI should be used as a tool, not as a replacement for thinking." These insights highlight the need for AI literacy to include an ethical dimension, ensuring responsible AI use that aligns with educational values.

### **3. Perceived professional development needs**

This study highlights three key professional development needs that teacher educators consider essential for integrating AI into teacher education: 1) structured and continuous AI training programs, 2) institutional support and collaboration, and 3) clear guidelines and best practices for AI integration. These needs reflect the challenges educators face in adopting AI and the steps required to enhance their AI-related competencies.

The first professional development that teacher educators need is *structured and continuous AI training programs*. A recurring theme among participants was the need for structured, continuous AI training rather than relying solely on self-learning. They emphasized the value of formal training through workshops, seminars, and peer learning sessions. *Lesly* expressed this need, stating, "I hope to get training on AI. While I could learn on my own, workshops or sharing sessions with peers who are

*already skilled in using AI would be really beneficial."* Similarly, *Saiah* stressed the necessity of a structured program: *"I would love to have a program... specifically designed to introduce AI to lecturers."* *Narnia* reinforced this view, advocating for expert-led workshops: *"Yes, I think workshops are necessary for me and other lecturers. We need guidance from experts who have used AI before."*

These responses highlight that professional development should extend beyond individual efforts. Educators recognize the importance of peer learning and expert-led training to ensure AI integration is pedagogically sound. Given AI's rapid advancements, ongoing professional development is crucial for keeping educators updated with the latest applications in language teaching.

The teacher educators also highlighted the need *of institutional support and collaboration among educators*. Participants emphasized the need for institutional support and collaborative professional development efforts. Institutional backing can facilitate structured training sessions and foster a community of practice where educators can share their experiences and challenges in AI integration. *Michael* highlighted the importance of collective engagement: *"The training should be provided by all communities... we are currently developing something called a community platform."* *Mulia* stressed the role of IT specialists, stating, *"Workshops led by IT specialists... we need IT experts to provide insights on AI usage in teacher education."* *Narnia* echoed this concern, asserting, *"We need guidance from experts who have used AI before, so we don't just randomly try different tools without knowing their effectiveness."*

These perspectives underscore the need for institutional commitment to fostering AI literacy among teacher educators. Universities and teacher education programs should take an active role in organizing AI training, promoting faculty collaboration, and embedding AI-related professional development into faculty training programs. Without adequate institutional support, individual AI adoption efforts may remain fragmented and ineffective.

Moreover, beyond technical training, participants stressed *the importance of clear guidelines and best practices for AI integration in language teaching and teacher*

*education. Martha pointed out the need for a careful examination of AI's role in education: "It's better to formulate or observe first what are the advantages and disadvantages of AI when integrated into classroom learning." Narnia noted that not all AI tools are suitable for language learning: "Not all AI tools can enhance English learning. We need to identify which ones work best." Andy emphasized the importance of reliability, stating that educators "should always supplement AI-generated insights with primary sources."*

These concerns highlight the need for guidance on selecting AI tools that align with language learning objectives and instructional strategies. Establishing best practices for AI integration can help educators make informed decisions about its use in classrooms. This could include frameworks for evaluating AI tools, ethical considerations, and strategies for balancing AI-generated content with human expertise and academic rigor.

## **Discussion**

The challenges identified in this study, which are overreliance on AI, evaluation difficulties, and institutional barriers, reflect and extend broader concerns in the literature on AI integration in teacher education. Overdependence on AI raises the risk of diminishing critical thinking and creativity, as students may passively accept AI-generated outputs rather than engage in deeper cognitive processes (Bae, Kim, & Park, 2024). This finding resonates with Moorhouse and Kohnke's (2024) warning that AI's definitive answers can foster surface-level engagement unless instructional strategies deliberately cultivate higher-order thinking. In the context of the TETC framework, this aligns with TETC 1, which underscores the need to design instruction that promotes critical evaluation of AI outputs.

The issue of evaluating AI-generated content also emerged as a significant concern. As Moorhouse and Kohnke (2024) note, AI can produce full academic texts, complicating plagiarism detection and threatening academic integrity. This challenge suggests a need for alternative assessment strategies such as reflective writing, dialogic discussions, and task-based evaluations that better capture authentic understanding (Bae et al., 2024). Such approaches align with TETC 6, which calls for

rigorous, ethical AI assessment frameworks. Institutional constraints, particularly inadequate infrastructure and limited AI literacy, further restrict meaningful integration. These findings echo research showing that many teacher educators feel unprepared to adopt AI, leading to cautious or reluctant engagement (Moorhouse & Kohnke, 2024). In the Indonesian context, where disparities in technological access persist, such barriers are compounded by resource limitations in many private colleges. Addressing these gaps requires targeted professional development (TETC 10) and ethical training (TETC 9) to mitigate issues such as plagiarism, while also encouraging exploration of AI for differentiated and online learning (TETC 5 & 7).

Beyond the challenges, the teacher educators in this study articulated clear areas for competency development: AI literacy, digital literacy, ethical awareness, pedagogical adaptability, and curriculum design knowledge. Concerns about AI's potential to undermine independent thinking reinforce the need for robust AI literacy and ethical understanding (Bae et al., 2024; Meylani, 2024), consistent with TETC 9 on socially responsible AI practices. Limited infrastructure and knowledge gaps underscore the necessity of digital literacy training (Meylani, 2024), aligning with TETC 10's emphasis on continuous professional learning. The findings also highlight AI's transformative potential for personalization, assessment, and feedback when integrated responsibly. AI-enhanced curricula should embed opportunities for critical engagement and ethical reasoning (Moorhouse & Kohnke, 2024), as envisioned in TETC 1 and 2. Moreover, AI's capacity to shift educators' roles from knowledge transmitters to facilitators (Guan et al., 2024) underscores the importance of balancing technological affordances with the cultivation of independent thinking, in line with TETC 3 and 5.

Importantly, these findings carry implications for both policy and practice. The professional development needs identified here mirror calls in the literature for organized, sustained AI training in teacher education (Moorhouse & Kohnke, 2024; Sperling et al., 2024; Meylani, 2024). Such initiatives should be supported institutionally, integrating adaptive learning systems and teaching simulations (Guan et al., 2024; Bauer et al., 2025) in accordance with TETC 1 and 2. Transparent

guidelines for ethical AI use (Sperling et al., 2024; Moorhouse & Kohnke, 2024) should be institutionalized, and adaptive assessment tools should be employed to promote fairness and minimize bias (TETC 5 & 6). By situating these insights within both the TETC framework and the Indonesian context, this study underscores that effective AI integration in teacher education requires more than technical proficiency—it demands sustained professional learning, ethical vigilance, and context-sensitive strategies. Addressing these dimensions can enable teacher educators to harness AI's benefits while safeguarding the pedagogical and ethical integrity of their practice.

## **Conclusion**

This study highlights the complexities of integrating AI into EFL teacher education in Indonesia, where limited infrastructure and low AI literacy present significant barriers. While teacher educators have begun to adopt AI and recognize its pedagogical benefits, they remain concerned about potential overreliance, risks to creativity and critical thinking, and challenges to academic integrity. Across the findings, a shared priority emerged: the need to strengthen competencies in AI literacy, technological proficiency, pedagogical adaptability, and ethical practice. Addressing these priorities will require institutional commitment to clear ethical guidelines, sustained professional development, and supportive policies that enable teacher educators to integrate AI effectively and responsibly into their teaching.

This study's small sample size and narrow focus on an Indonesian EFL teacher education program limit its generalizability. With diverse EFL teacher colleges across Indonesia, a broader study is needed for a more comprehensive understanding of AI integration. Additionally, investigating AI-based, job-embedded professional development models, such as self-study, could reveal how teacher colleges support educators in AI integration. Longitudinal research may further explore AI professional development's impact on teaching practices and preservice teachers' AI literacy.

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