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PRE-SERVICES ENGLISH TEACHERS' READINESS FOR AI-INTEGRATED LANGUAGE TEACHING IN THE INDONESIAN CONTEXT

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ABSTRACT

The rapid growth of artificial intelligence (AI) in education is a factor introducing significant changes in teaching English as a foreign language (EFL). Many AI-based applications, including chatbots, automated feedback systems, and adaptive platforms, offer the possibility to develop more interactive and personalized learning. Nonetheless, the implementation of AI will be successful if teachers are willing to learn, adapt, and implement it well. The study sought to see the extent to which teachers in Indonesia who teach English are prepared to adopt AI technology in learning activities. The areas studied were teachers' awareness, perceived benefits, difficulties, and flexibility towards AI. The results of this study to provide an initial picture of teachers' willingness to be exposed to digital transformation and can serve as a basis for developing more relevant training and education policies.

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INTRODUCTION

Artificial intelligence (AI) has experienced rapid development and has become one of the most influential technologies in the world of education. Globally, AI has been used to create more adaptive learning that tailors material and approaches to the unique needs of each student, enhances the learning experience through interactive simulations, and supports teachers with administrative automation and educational data analysis (Hartono, 2024). Internationally, the implementation of AI in education has been proven to improve access and quality of learning. Global platforms like Coursera, for instance, use AI algorithms to evaluate user data and suggest courses based on needs; this has helped to increase course completion rates by 20% (Sugandini et al., 2022, in Fauziddin et al., 2025). Meanwhile, European programs like AI for Schools highlight the significance of incorporating AI into school curricula to support 21st-century skills, while developed nations like China and Japan have invested substantial resources to create AI-based education systems that can reach remote areas (Nevezhin, 2021, in Fauziddin et al., 2025). As a result, AI is strategically advancing the shift in global education toward a system that is more competitive, inclusive, and adaptable.

Across Indonesia, both at the policy and classroom levels, AI in education is gaining attention. The Ministry of Communication and Informatics (KOMINFO) is working on

national-level regulations focusing on issues of innovation, data privacy, and environmental sustainability (KOMINFO, 2024). Other local application platforms utilizing AI for personalised learning, such as Ruangguru and Zenius, can also provide a motivation increase (Lase et al., 2024). The use of AI in the Indonesian educational context gains several benefits, for instance, adaptive learning, adjustable learning materials, as well as personalization learning; however, it also addresses various problems such as digital devices, infrastructure for implementation, and ethical issues (Ulimaz et al., 2024). Additionally, teachers have begun to experiment with AI-based tools, including automated writing evaluation, chatbots, and intelligent tutoring systems, to teach English; however, the risks of dependence and depersonalization still exist (Novawan et al., 2020). At the level of classroom practices, applications such as ChatGPT, Duolingo, Grammarly, and QuillBot offer unique contributions to language learning, for example ChatGPT is a tool that supports learners in understanding complex material and increases motivation (Tatipang et al., 2025) and Grammarly and QuillBoot are applications that support English learners to improve academic writing through enhancing grammar, coherence, and style (Zulaeha et al., 2025). Furthermore, automated feedback systems have been demonstrated to be effective for revision and to promote learner autonomy, but will always require some degree of teaching mediation for accuracy and relevance (Harwani et al., 2024). These changes exemplify opportunities to harness the transformative potential of AI and suggest the prospect of more flexible, efficient, and student-centered language education in Indonesia. A related consideration is the technology concept and challenge of digital literacy. Prior research has indicated that certain student populations presently are not ready for AI-based technology, and more specifically re quire structured training and targeted interventions (Tatipang et al., 2025).

Previous studies have investigated pre-service teachers' readiness, perceptions, and competencies in integrating Artificial Intelligence (AI) into teaching and learning across different educational contexts. Qualitative research involving prospective teachers in Hong Kong revealed that although participants perceived AI as a valuable tool for supporting instruction, their readiness to implement it effectively was still developing and required changes in pedagogical roles, strengthened AI competencies, and ethical awareness (Guan et al., 2024). Other research conducted with teacher education students in Finland emphasized the importance of hands-on experience with Generative AI and machine learning (ML), showing that theoretical understanding alone was insufficient for practical classroom application, while direct engagement with AI tools significantly enhanced critical thinking skills, technical knowledge, and AI-in-practice competencies (Laru et al., 2025). In the Indonesian context, studies involving prospective teachers have shown that most students hold moderate to high positive attitudes toward AI; however, these positive perceptions do not automatically translate into readiness to apply AI in teaching and learning due to limited training and practical experience (Meivawati et al., 2025). Despite the growing body of international research, studies examining prospective teachers' readiness to integrate AI within ethical boundaries and policy frameworks in Indonesia, particularly among prospective English teachers, remain limited, indicating a clear research gap that this study seeks to address.

The implementation of AI in the education ecosystem must be strategically designed to enable teachers to adopt it through contextualization and normalization of responsible practices. Research shows that teacher readiness to integrate technology is highly dependent on the constructs of technical competency, ability, confidence, and understanding (Alshammari, 2023).

This is crucial to addressing public concerns about over-reliance on AI. Therefore, this study aims to fill the literature gap regarding the use of AI to support English language teaching strategies.

To achieve this goal, this study explores how prospective English language teachers perceive their readiness and how the interaction of skills, attitudes, knowledge, and ethical factors shapes this readiness. Specifically, this study measures the extent to which AI is integrated into English Language Teaching (ELT) and how background experience influences students' views. The results of this study are expected to contribute theoretically to the teacher education literature and provide practical recommendations for institutions and policymakers in preparing future educators in the AI era.

How do pre-service English teachers perceive their readiness for AI-integrated language teaching; how do skill, attitude, knowledge, and AI ethical factors interact in shaping their readiness. Two interrelated research questions can be outlined here based on these questions. The first being to what extent pre-service English teachers show readiness to incorporate AI technologies into ELT. The second is concerned with their knowledge, skills, and attitudes towards AI, including how pre-service teachers might enact their views through their own backgrounds and experience. Overall, this inquiry helps contribute academic knowledge to the developing literature surrounding the integration of AI technologies in education, and teacher education contexts, along with more practical implications and recommendations for educators, teacher training institutions, and policy-makers who are preparing future teachers to teach with AI. Taken together, the current research contributes to a framing for a forthcoming discussion of the research methods, findings, and implications.

LITERATURE REVIEW

Pre-service teaching readiness is examined by the factors of knowledge and competencies. The current study utilizes the theoretical framework Technological Pedagogical Content Knowledge (TPACK) as a lens to find the appropriate theme based on how pre-service teachers believe as they are perceived (Koehler et.al, 2014). The theory explains what teachers need to know to use technology in an effective way in their teaching. It views teacher knowledge as a blend of content, teaching methods, and technology rather than treating them separately. As technology, especially artificial intelligence, continues to develop quickly, TPACK remains important by highlighting technology as the most rapidly changing part of teaching. TPACK is used in this study because it potentially discusses the data that appears in the theme of pre-service teachers' readiness to integrate AI-based technology professionally in practical use Schmidt, et.al (2013). The concept of TPACK used in this study relies on the specificity of the four terms, such as technological skills, pedagogical skill, self-confidence, and ethical awareness (Guan et al., 2024). Precent study suggest that teacher competencies cover cognitive and motivational competence. In terms of cognitive area are pedagogical content knowledge (PCK), teachers; content knowledge (TCK), and general pedagogical knowledge (GPK). From those key types of knowledge, it shows positive attitude of teachers to disseminate AI in teaching and learning (Liu et al., 2022)(Bautista et al., 2024).

In examining pre-service teacher perception, the literature review of AI integration perception by (Guan et al., 2024) is used, where the acceptance of AI in education will demonstrate the teachers' readiness to embrace the technology without any, so that means the individual evaluation could affect their decision in the future. The positive perception will

emerge along with the repeated exposure ofto the technology application as reflected by the developing competencies for a long hours of practice. Rely on this theory, pre-service teacher behavioral, such as using AI for completing the task, experiences in learning AI-tools for teaching and learning practice could be influenced by their attitude oftowards AI acceptance. This research is differed from the previous study of Alnasib (2022), where variables (e.g. gender, experiences, and age) are occupied, in another way this research is taken places in English Educational college for differ level of AI training in pre-service teachers in an Islamic University.

Recent research from various global contexts indicates that prospective educators generally have neutral to positive attitudes toward AI, but their practical preparedness remains inadequate, primarily due to a lack of literacy and formal training. In a comparative analysis, Lucas et al. (2025) found that prospective educators in Portugal and Spain showed neutral attitudes and inadequate preparedness for AI integration. Pokrivcakova (2023) conducted a KAP survey of prospective EFL teachers, showing that despite their positive attitudes, the majority lacked background knowledge of AI. Meanwhile, Guan et al., (2024) used semi-structured interviews in Hong Kong and concluded that prospective teachers viewed AI as an instrumental tool and faced identity confusion in their teaching roles. Bautista et al. (2024) used a quantitative approach (n=429) with prospective Filipino teachers and identified that TPACK was closely related to moral responsibility toward AI. In addition, Harakchiyska (2025) adopted the Theory of Planned Behavior and Technology Acceptance Model on prospective EFL teachers, Bulgaria, showing that AI knowledge and self-efficacy were the main predictors of adoption intention on the context, with Purnama et al. (2025) finding in A study in North Bali found that better institutional support and training made urban teachers better prepared.

Given the lack of focus on the Indonesian teacher candidate population and previous approaches that tend to focus on only one aspect of readiness such as ethical concerns (Savitri et al., 2025) or students' lack of digital literacy (Tatipang et al., 2025; Hidayat et al., 2022) this study aims to fill this gap. Focusing on Indonesian English teacher candidates, the study employed a multidimensional approach that measured their technological skills, pedagogical capabilities, self-confidence, and ethical dispositions. By linking the concepts of AI literacy, teacher identity, and digital competence, the study aimed to build a comprehensive theory of readiness. Practically, the findings serves as a repository of good practices that can be used by lecturers, teacher training institutions, and policymakers to design AI-responsive teacher education programs and empower Indonesian teacher candidates to effectively integrate AI-based pedagogies.

METHOD

This study uses a descriptive qualitative approach to explore the perspectives of pre-service English teachers regarding their readiness to integrate Artificial Intelligence (AI) into language teaching in Indonesia. Qualitative methods were chosen to provide an interpretive depth that offers in-depth insights into participants' perceptions, experiences, and behaviors towards AI integration readiness (Oranga & Matere, 2023).

This study used a purposive sampling technique to select participants who possessed the specific pedagogical insights necessary for a contextual evaluation of AI integration. The participants in this study consist of eight participants who were students in the fifth and seventh semesters who were aspiring English teachers participating in this study. They were selected for

their strategic TPACK competencies. As aspiring practitioners with strong pedagogical knowledge, Pedagogical Content Knowledge (PCK), they critically evaluate AI integration. Their involvement ensured the internal validity of the research by producing an in-depth analysis of the alignment of digital innovations with classroom learning strategies.

The researchers used two instruments, namely questionnaires and semi-structured interviews. The instrument was adapted from (Guan et al., (2024), adapting the questionnaire from two sections. Section 1 is Pre-service teachers' AI practices, and section 2 is Agency, creativity, emotional well-being, and ChatGPT experience. As a consolidation step, a piloting process was conducted with five participants to validate research instruments This process allows us to identify ambiguities, correct biased question structures, and ensure the language used is easily understood (Tate et al., 2023). Based on the feedback obtained during the piloting stage, minor revisions were made to improve the wording and structure of several items. The results of the piloting also indicated that the questionnaire demonstrated acceptable validity and reliability, allowing it to be considered appropriate for use in the main study.

The finalized questionnaire consisted of 12 semi-structured questions and served as baseline data for the study. Data were collected online over two weeks. An open-ended questionnaire was first distributed via Google Forms to eight participants. To confirm and deepen the findings, semi-structured interviews were subsequently conducted via Zoom. The interview guide addressed four dimensions of teacher readiness: technical, pedagogical, psychological, and ethical. Each interview lasted approximately 40–45 minutes and was conducted in Indonesian or English according to participants' preferences.

Data were analyzed using the Thematic Analysis (TA) method based on the Braun and Clarke (2006) framework to identify, analyze, organize, and report patterns or themes within a data set. The analysis of the questionnaire obtained through the open-ended questionnaire was analysed through independent coding to identify basic patterns and generate initial themes that represent respondents' general perceptions.

For interview data obtained through semi-structured interviews were analyzed to elaborate, deepen, and confirm these initial findings to gain a more comprehensive understanding. The entire analysis process of both instruments focused on four dimensions of teacher readiness according to Guan et al.'s (2024) framework: technical skills, pedagogical skills, self-confidence, and ethical dispositions.

FINDING AND DISCUSSION

The findings showed that pre-service English teachers perceive their readiness for AI-integrated language teaching as moderate, indicating that they are ready to use AI tools. The participants demonstrate positive perceptions about AI integration as assistance tools in teaching and learning English language. In addition, the study highlights that pre-service teachers' readiness is shaped through their skills, attitude, knowledge, and AI ethical awareness factors. In this study, there are four categories of teachers' readiness in utilizing AI technology, namely technological skills, pedagogical skills, self-confidence, and ethical dispositions (Guan et al., 2024). This finding is supported by research adopting the TPACK framework, which demonstrates that pre-service teachers' readiness is influenced by technological knowledge (TK), technological pedagogical knowledge (TPK), technological content knowledge (TCK), and overall TPACK, along with ethical readiness in the use of AI-based tools (Bautista et al., 2024).

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Technological Readiness

According to the data, students possess basic to moder ate technological skill in utilizing AI for English language teaching. They understand AI tools as assistance to support learning activities such as grammar checking, materials development, idea generation, and language skill practice. It said that …

> *"AI is a technology that can help you learn English, for example, by checking grammar, giving example sentences, or helping with speaking practice"* (Questionnaire, N6).
>
> *"So, in my opinion, AI is like a new form of intelligence created by technology to help us or to assist us, perhaps as a tool or a new place of learning, because AI is instant"* (Interview N3)

In addition, participants reported familiarity the use of various AI tools for academic purposes. The most frequently mentioned applications included ChatGPT, Grammarly, QuillBot, Gemini, and Google Translate. These tools were primarily utilized to support brainstorming, material development, and writing improvement. It said that

> *"I often use ChatGPT, Grammarly, and Google Translate to help me brainstorm when I want to create material and check my writing"* (Questionnaire, N6).
>
> *"I use Gemini because I've upgraded this AI, so I prefer using Gemini. Besides that, I've also used Cloud AI, but Cloud AI also requires a premium account, and it has a lot of limitations. So, those are the three: Chat GPT, Gemini, and Cloud AI."* (Interview, N2)

Pedagogical readiness

Participants demonstrated a positive level of pedagogical readiness of AI integration and are able to use AI tools for specific English teaching goals. The findings showed that through various AI tools, pre-service English teachers can develop the teaching and learning of speaking, writing, grammar, and vocabulary. It mentioned that

> *"For listening, I use Lyricstraining. For writing, Grammarly or QuillBot can check grammar and suggest better words. For speaking, you can use Stimuler*

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or Elsa Speak, for grammar use Grammarly, and for vocabulary use Duolingo. (Questionnaire, N3).

"I use AI quite a lot in integrating my speaking and listening practice through Google AI or Gemini." (Interview, N1)

The interesting findings showed that by using AI, they can create lesson planning and learning activities easier. This indicates that pedagogical readiness among the participants was developing, as they demonstrated the ability to integrate instructional planning skills with technology-assisted tools while maintaining pedagogical coherence and instructional purpose. It said that

"AI can help teachers to accelerate how quickly teachers teach students." (Interview N5)

Self-confidence readiness

The findings indicated that students have, to some extent, good self-confidence but are still careful while using AI tools. They value efficiency for time and have the potential to increase creativity. It mentioned that

"AI can reduce the time I spend creating learning content. Whether it is analyzing student needs, setting objectives, or even creating the learning content itself." (Questionnaire, N4)

"It is practical and exciting. You have to be careful not to become lazy and stop thinking for yourself." (Interview, N6)

Furthermore, it also showed that participants showed the highest interest in AI tools as a means to offer better learning quality. Nevertheless, they remained critically aware of the potential negative consequences of using it. It said that

"All ethics must be upheld when using AI. This brings us back to the issue of individual copyright. AI may be able to help develop it, but we need to be aware of these ethics again." (Questionnaire, N5)

"But still, if the teacher can't create a good classroom atmosphere, it will remain boring even if they use those tools." (Interview, N4)

Ethical readiness

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Ethical readiness as the main factor that influenced teachers' preparedness in using AI tools. Pre-service English teachers were very much concerned about plagiarism, academic integrity, data privacy, bias, misinformation, and over, reliance on AI. It mentioned that

> *"In my opinion, the ethical issues that need to be considered when using AI are plagiarism, data privacy, and unfairness. AI can tempt students to copy answers without understanding the material, and there is a risk of personal data being misused."* (Questionnaire, N3)
>
> *"For example, if there is a writing assignment, it can be directly copied and pasted using AI, so first of all, I am afraid that the plagiarism rate will be high, where students use AI and then directly copy and paste it, without composing it in their own words."* (Interview, N7)

Also, participants concurred that AI is not always correct or fair and thus human intellectual responsibility should not be given away to AI. They demanded for more institutional policies and guidance on the ethical use of AI. It said that

> *" AI is only a tool, so humans still need to check and re-evaluate the results so as not to be completely dependent on technology."* (Questionnaire, N3)
>
> *"I want an ethical guideline that upholds the importance of honesty and responsibility. So, as AI users, we must be honest in using AI. If, for example, we use a certain percentage, we should state that percentage, because that would be very helpful."* (Interview, N1)

Discussion

The findings showed that technically, the participants were not at the initial stage, but their readiness was still functional and systematic and did not yet refer to pedagogy because most of their knowledge was obtained from independent experience rather than through structured formal training from institutions. This finding is in line with Runge et al (2025), who stated that pre-service teachers generally have initial experience with the independent use of AI, but a systematic institutional training program does not yet support this initial knowledge. A similar condition was also found in Purnama (2025), which showed that the level of teacher readiness was in the moderate category because the use of AI was still limited to practical needs and had not yet reached the level of mature pedagogical practice. Thus, the functional readiness found in the participants in this study reflects the general pattern of teacher readiness that was also found in other research contexts.

This study reveals that people with minimal knowledge of Artificial Intelligence (AI) view AI primarily as a tool for learning or teaching, and that currently their focus on AI usage is primarily based on practical reasons, such as assisting with proofreading or finding ideas for oral presentations, which meets the needs of teachers but not students as part of the classroom learning process. Through the original researchers' observations and analysis of AI and its

various modes of operation, the understanding of the number and depth of ways to use AI for teaching, as well as the long-term impact of AI use in the classroom, is still minimal. Therefore, the lack of knowledge about AI capabilities has a direct impact on how teachers utilize AI in their classrooms. Zhang et al. (2023) confirm the belief that a limited understanding of AI reduces opportunities for educators to implement AI in educational settings. All of the interviewees generally use AI superficially and do not utilize it strategically and pedagogically. The findings of this study study are also supported by findings from Méndez-Alarcón, C. M., Adebola Lasekan, O., and Pachava, V. (2024), who found that the technical knowledge required for developing Artificial Intelligence systems is not sufficient to be able to effectively implement and utilize AI because of the gap created by the lack of pedagogical literacy to complement that technical knowledge. As such, the results from the interviews with participants in this study regarding the conceptual knowledge of AI may reflect similar limitations identified in previous research.

The universal positive attitude among study participants towards Artificial Intelligence (AI) in education is rooted in the belief that AI is a highly relevant and useful technology with transformative potential to improve the quality of the teaching and learning process, particularly in making learning more interesting, efficient, and in line with the characteristics of the digital generation. This view is not only supported by study findings that highlight increased student engagement and motivation when using AI, but is also highly consistent with global academic trends in which research on Artificial Intelligence in Education (AIEd) has increased significantly since 2012 and is now recognized as a strategic field of innovation. This rapid increase, as documented by Chen et al. (2020), reflects the growing confidence among academics in the potential of AI to facilitate more effective learning. Furthermore, the findings of this study are in line with the main focus of international AIEd publications, where dominant keywords such as engagement, motivation, learning analytics, and intelligent tutoring systems underline that the global focus of AIEd is on improving student learning experiences and outcomes, not merely on technological development, which directly validates the positive perceptions of the participants.

In addition to functional acceptance, a high level of ethical awareness among prospective teachers is a key finding related to the implementation of AI in education. This ethical awareness plays a crucial role; it serves as an internal control mechanism that ensures the use of AI remains aligned with and does not deviate from fundamental academic integrity and pedagogical goals. Participants demonstrated a mature understanding of the main ethical dangers inherent in AI technology, namely the threat of plagiarism, the risk of developing excessive dependence, and the potential for spreading inaccurate information. Explicitly, as future educators, they hold the belief that AI should not be used to copy answers, especially in the context of assessment and examinations. This strong commitment to academic honesty is significant and relevant given the growing global concern about maintaining the authenticity of assessments in the era of Generative AI. These findings are consistent with contemporary research, such as that conducted by Chen et al. (2024), which emphasises that maintaining the authenticity of assessments and preventing cheating practices are the biggest challenges in ethically integrating AI into learning environments.

Research participants consistently highlighted two important strategies in the responsible use of Artificial Intelligence (AI), namely re-verification and paraphrasing to avoid direct dependence, both of which reflect critical digital literacy and academic ethical awareness. The

re-verification strategy, checking facts, citations, and arguments generated by AI, is rooted in the understanding that AI is prone to bias and data inconsistencies, a view reinforced by literature emphasising the importance of ethics education and risk awareness (Akgun & Greenhouw, 2021). Meanwhile, paraphrasing practices demonstrate a conscious effort to balance technological efficiency with cognitive skill development and preserve personal authenticity, thereby preventing the risk of over-reliance on AI tools. Overall, these findings suggest that prospective teachers' readiness to integrate AI into their pedagogy is a multidimensional construct, consisting of a dynamic interaction between knowledge, skills, attitudes, and ethics, going beyond technical competence alone. This holistic readiness model effectively expands the TPACK (Technological Pedagogical Content Knowledge) framework by adding ethics as an important domain, a view that aligns with the findings (Sperling et al., 2024) that consider teacher AI literacy as a complex professional construct.

The emerging ethical readiness as the primary dimension is indicated as a new aspect. Several researchers (Ayanwale et al, 2024; Zulaeha et al, 2025) have validated that ethical topic area has a significant correlation with the development of emotional regulation skills and the learning of persuasion knowledge when using AI, therefore, the authors affirm that an individual's capacity to "see" ethical considerations is not a supplemental ability, but rather a competency that dictates how a person manages the affective and persuasive aspects of AI Technology. Based on the earlier research of Tatipang et al. (2025), it could be found that it is helpful for us to ask conceptual questions, such as: How does ethical awareness affect technology adoption decisions? Can ethics be employed as a protective barrier preventing the misuse of AI? Does an individual's level of ethical preparedness increase the likelihood of maintaining a more sustainable technology integration? Our findings indicate that the ethical domain significantly outweighs the technological domain as an indicator of potential long-term success; therefore, if ethical readiness is viewed as a reflection of personal moral values, we suggest that ethical preparedness is the first step in sustaining the successful integration of AI technology. The findings indicated that the ethical skills rise more frequently than the technical skills.

Nevertheless, generalizing these results is not suggested. The latest developments of ethical attitudes and awareness reflect the development of readiness, which can be considered a developing characteristic for all prospective teachers in developing countries that are building institutional AI literacy. According to Ayanwale et al. (2022), teacher readiness is affected mainly by a teacher's self-confidence and perceived relevance of their teaching practice, while the concept of "AI for social good" was not significantly predictive of teacher readiness. This confirms that the factors of teacher readiness for prospective teachers go beyond just personal factors. Teacher readiness is also impacted by structural dynamics, such as access, policies, and curricula, which support or restrict a teacher's competency. In addition to the above, as noted by Ning et al. (2024), using surveys to capture actual behaviour and perceptions has limitations, and thus encourages cross-regional research/multi-context studies in order to assess if the pattern of readiness-gaps is isolated to locality or becomes a global trend.

The implications of this study are significant in terms of understanding the preparation level of prospective teachers concerning AI integration into English language teaching. It has been shown that while technical skills are important, it is more important to be able to reflect on one's own development and to develop a sense of professional ethics, intent to use technology with integrity, and the ability to connect to the educational community's needs (Ayanwale et al.,

2024). The current study supports Ayanwale et al. (2024) in their claim that ethical competence is a vital component to the sustainable use of AI in the instructional process. Thus, the current research provides an extension of prior assessments of the preparation level of prospective teachers concerning AI by including moral dimensions as the first level of a new preparatory framework for effective integration.

By providing structured institutional initiatives such as targeted workplace-based AI professional development (Ayanwale et al., 2022) and the development of an AI-enhanced adaptive TPACK framework (Ning et al., 2024), institutions can help prospective teachers develop a more robust Pedagogical Technological Readiness for effective integration of AI. Therefore, through their development as professional educators and the use of AI in the instructional process, prospective teachers will have a greater capability to apply their knowledge and skills effectively and ethically in developing their professional competence by attaining meaningful English language learning (ELL) outcomes through technology-enhanced pedagogy. Moreover, institutions of higher education need to design teacher preparation programmes that will accommodate the ongoing technological developments, support the moral and reflective capacity of all teachers and future educators, and produce teacher candidates who are capable and responsible users of AI technology. \

CONCLUSIONS

This research has indicated that pre-service English teachers have moderate preparedness for integrating Artificial Intelligence (AI) into their respective areas of instruction and have been assessed primarily in three functional areas or (dimensions); they are familiar with AI software, have used AI tools for practical applications, e.g., checking grammar, generating ideas, preparing materials, etc., and are ready to adapt AI tools to suit instructional needs. However, the extent to which these participants are prepared to use AI in a pedagogically driven manner has not been realized because they were not provided with appropriate institutional or professional development training, thus leading the participants to become knowledgeable and skilled primarily through their own experiences–rather than by virtue of structured professional training and development programs.

Participants generally have a basic conceptual understanding of AI; however, most participants' knowledge is limited to AI's primarily technical and corrective functions, with limited or no knowledge of AI's potential beyond the technical. This lack of conceptual literacy will ultimately hinder participants' ability to effectively use AI within their own classrooms and impede their ability to integrate AI into instruction. Prior studies involving AI have similarly pointed out that participants' lack of a strong conceptual understanding of how to integrate AI into instruction inhibits participants' success in effectively integrating AI into their pedagogy.

This study proves that pre-service teachers have a positive attitude toward utilizing Al in learning. Participants believe that Al has the potential to increase engagement and relevance in the learning process, as well as enthusiasm for using Al in the context of English language education. Qualitative data in the form of student perspectives is in line with the improvement in learning experiences.

The significance of ethical awareness is demonstrated through students' perceptions, where they have high concerns regarding issues of plagiarism and misinformation generated by Al, leading to awareness of the avoidance of non-critical reading techniques and the loss of

integrity in academic commitment. This ethical awareness is identified as the core of the measure of readiness in the sustainable use of Al technology.

This study explicitly concludes that AI readiness among prospective teachers is a multidimensional construct that integrates knowledge, skills, attitudes, and ethical considerations; with the ethical dimension standing out as a crucial element, this study underscores the urgency of expanding existing educational frameworks, such as TPACK, to explicitly include reflective and ethical aspects. Significant findings reveal a unique imbalance high AI ethical awareness inversely correlates with limited technical and institutional support, a pattern characteristic of developing countries. Therefore, to bridge this gap and ensure responsible and effective AI implementation in the future, targeted interventions through specific training, relevant policy development, and curriculum innovation are necessary.

This study reveals that prospective teachers show great potential for integrating AI into English language teaching, as evidenced by their highly positive attitudes and strong ethical awareness. This strong moral disposition provides a good foundation for the responsible adoption of technology. However, this research clearly highlights a critical unmet need, namely structured and adequate institutional support, including infrastructure, technical resources, and clear policies. The absence of this support significantly hinders prospective teachers' ability to translate their positive attitudes into effective classroom practices and prevents the refinement of their pedagogical and technical competencies in the correct and efficient use of AI. Therefore, clear strategic steps are needed to address this gap. Investments should be directed toward targeted professional training that focuses not only on tools, but also on the development of AI pedagogy. Through this combination of training and framework, prospective teachers' initial readiness will transform into a comprehensive, sustainable, and solid foundation of competence, ensuring that the future integration of AI in English language education is effective and ethically grounded.

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