

Exploring Artificial Intelligence Tools Used by Pre-Service Teachers in Designing TEFL Methodology Lessons

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Abstrak

Perkembangan pesat kecerdasan buatan (AI) telah mengubah praktik pendidikan, khususnya dalam pendidikan guru bahasa Inggris. Studi ini mengeksplorasi bagaimana calon guru menggunakan alat AI untuk merancang komponen pembelajaran pada mata kuliah Metodologi TEFL. Desain deskriptif kualitatif digunakan yang melibatkan 17 calon guru di Universitas Muhammadiyah Pringsewu, Lampung. Data dikumpulkan melalui wawancara semi-terstruktur, analisis dokumen, dan observasi kelas. Temuan menunjukkan bahwa peserta sering menggunakan ChatGPT, Gemini, Canva AI, Grammarly, QuillBot, dan Microsoft Copilot untuk mendukung perencanaan pelajaran, pengembangan materi, desain asesmen, pembuatan media, serta peningkatan bahasa. Peserta menganggap AI bermanfaat untuk meningkatkan kreativitas, efisiensi, dan kompetensi teknologi dalam perencanaan pembelajaran. Meskipun demikian, beberapa tantangan diidentifikasi, termasuk ketergantungan berlebihan pada AI, kekhawatiran tentang keakuratan konten, risiko plagiarisme, serta masalah etika. Studi ini menyoroti pentingnya mengintegrasikan literasi AI dan pedagogi digital kritis ke dalam program pendidikan guru TEFL untuk mempromosikan penggunaan teknologi AI yang bertanggung jawab, efektif, dan berlandaskan pedagogi yang baik.

Kata kunci: Artificial intelligence, generative AI, pre-service teachers, TEFL methodology, instructional design

Abstract

The rapid development of Artificial Intelligence (AI) has transformed educational practices, particularly in English language teacher education. This study explores how pre-service teachers use AI tools to design instructional components in a TEFL Methodology course. A qualitative descriptive design was employed involving 17 pre-service teachers at Universitas Muhammadiyah Pringsewu, Lampung. Data were collected through semi-structured interviews, document analysis, and classroom observations. The findings indicate that participants frequently used ChatGPT, Gemini, Canva AI, Grammarly, QuillBot, and Microsoft Copilot to support lesson planning, material development, assessment design, media creation, and language improvement. Participants perceived AI as beneficial for enhancing creativity, efficiency, and technological competence in instructional planning. Nevertheless, several challenges were identified, including overreliance on AI, concerns about content accuracy, plagiarism risks, and ethical issues. The study highlights the importance of integrating AI literacy and critical digital pedagogy into TEFL teacher education programs to promote responsible, effective, and pedagogically sound use of AI technologies.

Keywords: Artificial intelligence, generative AI, pre-service teachers, TEFL methodology, instructional design

1. INTRODUCTION

Artificial Intelligence (AI) has rapidly transformed educational practices across various disciplines, including language education and teacher preparation programs. The emergence of generative AI technologies such as OpenAI ChatGPT, Google Gemini, Microsoft Copilot, and other AI-powered platforms has significantly changed how educational content is created, organized, and delivered. In contemporary educational contexts, AI tools are

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increasingly used to support lesson planning, instructional material development, assessment construction, language correction, and multimedia content generation (Puspani et al., 2026; Setiawan & Wibowo, 2025). These technologies have become particularly relevant in higher education because they provide rapid access to information, facilitate content personalization, and support digital learning environments. Furthermore, recent studies indicate that generative AI can enhance student engagement, creativity, critical thinking, and autonomous learning, particularly in language education and teacher training contexts (Abduh et al., 2025; Rohadi & Utami, 2025).

The integration of Artificial Intelligence (AI) into English language education has attracted growing scholarly attention in recent years. In the field of Teaching English as a Foreign Language (TEFL), AI technologies are considered capable of fostering pedagogical innovation and improving instructional efficiency. Recent studies have shown that generative AI can assist language teachers in designing learning activities, generating teaching ideas, and adapting instructional materials to students' needs (Apoko, 2025; Moon et al., 2025). Furthermore, pre-service teachers perceive AI tools as valuable resources for reducing cognitive workload during lesson preparation, enhancing creativity, and supporting more flexible instructional design processes (Castillo-cuesta et al., 2025). These findings indicate that AI technologies are increasingly functioning as influential pedagogical support systems in language teacher education, particularly in preparing future English teachers for digitally mediated classrooms.

The increasing use of Artificial Intelligence (AI) in teacher education is closely related to the growing demand for digital competence among future educators. Pre-service teachers are expected not only to master pedagogical theories and language-teaching methodologies but also to demonstrate technological literacy and the ability to integrate digital tools effectively into instructional practice. In the context of TEFL Methodology courses, students are generally required to design lesson plans, prepare instructional materials, develop classroom activities, and construct assessment instruments aligned with curriculum objectives and learners' needs. However, many pre-service teachers continue to encounter difficulties in organizing instructional components, selecting appropriate teaching strategies, and designing engaging learning experiences due to limited teaching experience and insufficient technological competence (Alif et al., 2025; Ayuningtryas & Emaliana, 2025). Recent studies also emphasize that integrating digital literacy and AI-supported pedagogy into teacher education programs is essential to prepare future educators for technology-enhanced learning environments (Febriyanti et al., 2026).

The emergence of Artificial Intelligence (AI) technologies potentially addresses these challenges by functioning as instructional assistants that support brainstorming, material organization, and content development. Recent studies revealed that pre-service teachers frequently use generative AI tools to generate lesson ideas, improve writing quality, and develop collaborative learning activities more effectively (Nikmah et al., 2025; Torres-diaz et al., 2025). AI tools also help students produce instructional materials more efficiently by simplifying time-consuming tasks such as editing texts, generating contextual examples, and designing visual learning media. Furthermore, the integration of AI in teacher education has been shown to contribute positively to the development of Technological Pedagogical Content Knowledge (TPACK), particularly in supporting future teachers' ability to integrate technology into pedagogical practices and instructional decision-making processes (Saputra et al., 2025; Suna et al., 2025). These findings suggest that AI technologies can play a

strategic role in enhancing both pedagogical competence and digital readiness among pre-service English teachers.

Despite these potential benefits, the integration of Artificial Intelligence (AI) into educational settings remains controversial. Several scholars have highlighted concerns regarding the ethical and pedagogical implications of AI-assisted learning. One major concern is the overreliance on AI-generated outputs, which may reduce students' critical thinking, creativity, and reflective pedagogical decision-making abilities (Muhammad & Hasan, 2026; Zhai et al., 2024). Researchers have also identified issues related to plagiarism, authorship ambiguity, academic integrity, and the reliability of AI-generated information in educational contexts (Torres-diaz et al., 2025). Since generative AI systems occasionally produce inaccurate, biased, or contextually inappropriate information, users must critically evaluate and verify AI-generated outputs before integrating them into instructional and academic practices. Furthermore, scholars emphasize the importance of developing ethical AI literacy among pre-service teachers to ensure responsible and pedagogically sound use of AI technologies in language education (Meneses III, 2026).

In teacher education, these concerns become increasingly significant because pre-service teachers will shape students' learning experiences in future classrooms. Without adequate AI literacy, future teachers may rely excessively on AI-generated instructional materials, failing to critically examine their pedagogical appropriateness, language accuracy, or contextual relevance. Recent studies define AI literacy as the ability to understand, critically evaluate, ethically use, and pedagogically integrate AI technologies into educational settings (Febriyanti et al., 2026; Rohadi & Utami, 2025). Therefore, teacher education institutions need to ensure that pre-service teachers possess not only technical competence in operating AI tools but also critical awareness regarding ethical, responsible, and reflective AI integration in educational practices. Moreover, scholars emphasize that AI literacy should include competencies related to data awareness, academic integrity, bias recognition, and responsible instructional decision-making to prepare future educators for technology-enhanced teaching environments (Mirelle-Carmen et al., 2025).

Although numerous studies have examined the integration of Artificial Intelligence (AI) in higher education, research specifically focusing on the use of AI tools in TEFL instructional design remains limited, particularly in Indonesian teacher education contexts. Most existing studies primarily investigate students' perceptions or attitudes toward AI technologies rather than examining how AI tools are practically utilized during lesson planning, material development, and assessment design activities in TEFL Methodology courses (Gamlem et al., 2026; Sumarsih et al., 2026). Furthermore, only a limited number of studies have explored the specific types of AI tools utilized by pre-service English teachers and the pedagogical purposes underlying their use in instructional design practices. This gap indicates the need for more context-specific empirical investigations addressing how AI technologies support pedagogical decision-making, instructional creativity, and technology integration among future EFL educators in Indonesian higher education settings (Hamid et al., 2025).

Therefore, further investigation is needed to examine how pre-service English teachers use AI technologies to design instructional activities in TEFL Methodology courses. Such an investigation is expected to reveal the ways AI tools support lesson planning, instructional material development, classroom activity design, and assessment construction. It may also provide a deeper understanding of the pedagogical considerations, ethical awareness, and

technological competencies demonstrated by pre-service teachers during AI-assisted instructional design processes.

Moreover, exploring students' experiences with AI integration can help teacher education institutions evaluate the extent to which current curricula prepare future educators for technology-enhanced teaching environments. The findings may contribute to the development of more adaptive teacher education programs that integrate AI literacy, digital pedagogy, and critical technological awareness into English language teacher preparation. In the Indonesian context, where the integration of AI in teacher education is still developing, empirical evidence regarding AI-assisted instructional practices remains essential for informing policy development, curriculum innovation, and pedagogical strategies in higher education (Hafizon, 2025; Kohnke et al., 2025).

Accordingly, this study aims to investigate the use of Artificial Intelligence tools by pre-service English teachers in TEFL Methodology courses, particularly focusing on the types of AI tools utilized, the pedagogical purposes underlying their use, and students' perceptions regarding the benefits and challenges of AI-assisted instructional design. By addressing these issues, the study seeks to contribute to the growing discourse on AI integration in English language teacher education and to provide practical implications for developing responsible, critical, and pedagogically appropriate AI use in TEFL contexts.

Therefore, this study aims to explore the AI tools used by pre-service teachers in designing instructional components within a TEFL Methodology course at Universitas Muhammadiyah Pringsewu, Lampung. Specifically, the study investigates the types of AI platforms students use, the ways AI tools support lesson design, material development, and evaluation design, and the perceived benefits and challenges of AI-assisted instructional planning.

This study involved 17 pre-service teachers enrolled in the TEFL Methodology course. The participants were assigned to develop lesson designs, instructional materials, and evaluation instruments for English language teaching. During these instructional design activities, students independently utilized various AI tools to support content generation, language editing, media creation, and assessment preparation. Data were collected through semi-structured interviews, classroom observations, and document analysis to provide comprehensive insights into participants' experiences and practices related to AI integration.

The findings of this study are expected to contribute, both theoretically and practically, to the field of English language teacher education. Theoretically, this study enriches the growing body of literature concerning AI integration in TEFL pedagogy and teacher preparation programs. In practice, the study may offer recommendations to teacher educators on integrating AI literacy, ethical awareness, and critical digital pedagogy into TEFL Methodology courses. Understanding how pre-service teachers use AI tools can help institutions design curricula that better prepare future English teachers to integrate technology responsibly and effectively into language-learning environments.

Based on the background discussed above, this study addresses the following research questions:

1. What AI tools are used by pre-service teachers in designing TEFL Methodology lessons?
2. How do pre-service teachers utilize AI tools in lesson design, material design, and evaluation design?

3. What benefits and challenges do pre-service teachers perceive regarding the use of AI in TEFL instructional design?

The study ultimately argues that while AI technologies offer significant opportunities to improve instructional design practices, their integration into teacher education must be accompanied by critical AI literacy, ethical awareness, and pedagogical guidance to ensure responsible and meaningful use in English language teaching contexts.

2. METHOD

This study employed a qualitative descriptive research design to explore the use of Artificial Intelligence (AI) tools by pre-service teachers in designing instructional components within a TEFL Methodology course. A qualitative approach was deemed appropriate because the study aimed to investigate participants' experiences, practices, perceptions, and challenges related to AI-assisted instructional design in authentic educational contexts. According to Braun and Clarke (2006), qualitative research allows researchers to examine social phenomena in depth and understand how participants interpret their experiences within specific contexts.

The study was conducted at Universitas Muhammadiyah Pringsewu, Lampung, during the 2025/2026 academic year. The participants consisted of 17 pre-service teachers enrolled in the TEFL Methodology course. The participants were selected using purposive sampling because they met specific criteria relevant to the study's objectives. The criteria included: (1) being actively enrolled in the TEFL Methodology course, (2) participating in instructional design projects, and (3) having experience using AI tools during lesson preparation and material development activities.

The participants were assigned several instructional design projects throughout the semester. These projects required students to design lesson plans, instructional materials, classroom activities, and evaluation instruments for English language teaching. The projects were developed individually and collaboratively as part of the course requirements. During the instructional design process, students independently selected and used various AI platforms, including ChatGPT, Gemini, Canva AI, Grammarly, QuillBot, and Microsoft Copilot, to support their instructional planning.

The study population included all students enrolled in the TEFL Methodology course within the English Education Study Program. However, the sample specifically focused on the 17 students who actively integrated AI tools into their instructional projects. The selection of participants was based on the assumption that these students had direct experience relevant to the research objectives and could provide rich insights into AI-assisted instructional design practices.

Data were collected using three primary techniques: semi-structured interviews, document analysis, and classroom observations. The use of multiple data collection methods aimed to enhance the credibility and trustworthiness of the findings through methodological triangulation.

Semi-structured interviews were conducted to explore participants' experiences, perceptions, and practices related to AI integration in instructional design. The interviews focused on

identifying the types of AI tools used, the purposes of AI utilization, perceived benefits, encountered challenges, ethical considerations, and students' reflections regarding AI-assisted instructional planning. The interviews were conducted individually and lasted approximately 20–30 minutes for each participant. All interviews were conducted in Indonesian to ensure participants could express their perspectives comfortably and accurately. The interview sessions were audio-recorded with participants' consent and later transcribed for analysis.

The interview protocol consisted of open-ended questions developed based on previous studies concerning AI integration in teacher education (Bae et al., 2024; Butler & Jiang, 2025). The interview questions were peer-reviewed by two lecturers in English education and educational technology to ensure content relevance and clarity.

In addition to interviews, document analysis was conducted to examine participants' instructional products. The analyzed documents included lesson plans, teaching materials, PowerPoint presentations, worksheets, assessment rubrics, and classroom activities developed during the TEFL Methodology course. The purpose of document analysis was to identify how AI tools contributed to instructional organization, language accuracy, visual presentation, activity design, and assessment preparation.

The researcher also conducted classroom observations during teaching simulations and project presentations. Observations were conducted to examine how participants implemented AI-assisted instructional materials in classroom practice. Observation focused on instructional delivery, material presentation, classroom interaction, and the integration of AI-generated teaching resources. Field notes were taken during each observation session to document significant instructional behaviors and classroom interactions.

The data collection process was conducted over one academic semester, approximately four months. During this period, participants completed multiple instructional design assignments and participated in teaching simulations as part of course activities. This prolonged engagement enabled the researcher to obtain comprehensive data regarding students' instructional design practices and AI utilization patterns.

The collected data were analyzed using thematic analysis adapted from Braun and Clarke (2006). Thematic analysis was selected because it allows researchers to systematically identify, organize, and interpret patterns within qualitative data. The analysis involved several stages. First, the researcher familiarized herself with the data by repeatedly reading interview transcripts, observation notes, and instructional documents. Second, initial coding was conducted to identify significant statements regarding AI use, instructional design practices, benefits, and challenges. Third, similar codes were categorized into broader themes. Fourth, the themes were reviewed and refined to ensure consistency and relevance to the research questions. Finally, the themes were interpreted and presented descriptively in the findings section.

To ensure the validity and reliability of the findings, the study employed several strategies to enhance trustworthiness. First, methodological triangulation was conducted by comparing findings obtained from interviews, observations, and document analysis. Second, member checking was applied by asking participants to review interview summaries and confirm the accuracy of interpretations. Third, peer debriefing was conducted with colleagues in English education to discuss coding consistency and thematic interpretations. These procedures were intended to minimize researcher bias and enhance the study's credibility.

Several assumptions underpinned this research. First, it was assumed that participants provided honest and accurate responses during interviews and classroom observations. Second, the study assumed that the instructional documents analyzed genuinely reflected participants' instructional design processes and AI integration practices. Third, the study assumed that participants possessed the basic digital literacy skills necessary to use AI platforms during instructional design activities.

Although the study provides valuable insights into AI-assisted instructional design among pre-service teachers, several methodological limitations should be acknowledged. First, the study involved a relatively small number of participants from a single university, which may limit the generalizability of the findings to broader educational contexts. Second, the study focused specifically on TEFL Methodology courses; therefore, the findings may not fully represent AI integration practices in other disciplines or educational settings. Third, because the study employed a qualitative approach, the findings primarily emphasize participants' experiences and perceptions rather than quantitatively measuring the effectiveness of AI-assisted instructional design.

Despite these limitations, the methodology employed in this study provides an in-depth understanding of how pre-service teachers integrate AI technologies into lesson design, material development, and evaluation design activities within English language teacher education contexts.

3. RESULT AND DISCUSSION

The findings of this study revealed that all 17 pre-service teachers used Artificial Intelligence (AI) tools during the process of designing instructional components in the TEFL Methodology course. The participants utilized several AI platforms, including ChatGPT, Gemini, Canva AI, Grammarly, QuillBot, and Microsoft Copilot. Among these tools, ChatGPT emerged as the most frequently used platform because it helped students generate lesson plans, classroom activities, instructional objectives, and assessment tasks. Participants explained that ChatGPT helped them organize instructional ideas more efficiently and reduced the time required to prepare teaching materials. This finding indicates that AI technologies have become important instructional support tools for pre-service teachers in language teacher education contexts. The distribution of AI tools used by participants is presented in Table 1.

Table 1. AI Tools Used by Pre-service Teachers in TEFL Instructional Design

No	AI Tools	Main Functions	Number of Users
1	ChatGPT	Lesson planning, activity design, assessment generation	17
2	Canva AI	Presentation and media design	15
3	Grammarly	Grammar checking and editing	14
4	Gemini	Searching teaching ideas and references	12
5	QuillBot	Paraphrasing and rewriting texts	10
6	Microsoft	Organizing and summarizing materials	7

 Copilot

Table 1 shows that ChatGPT was used by all participants, indicating its dominant role in instructional planning activities. Canva AI and Grammarly were also frequently utilized because participants considered visual presentation and language accuracy important aspects of English instructional design. These findings suggest that pre-service teachers integrated AI technologies not only for content generation but also for media development and language improvement.

The extensive use of ChatGPT among participants demonstrates the growing role of generative AI in English language teaching preparation. Most participants reported using ChatGPT as a brainstorming partner when developing learning objectives, designing communicative classroom activities, and preparing discussion questions. In addition, participants frequently used the platform to generate examples of classroom tasks appropriate for English language learning. These findings support Butler and Jiang's (2025) study, which found that pre-service language teachers perceived ChatGPT as a useful pedagogical assistant that simplified lesson planning and instructional preparation. Similarly, Bae et al. (2024) reported that generative AI technologies supported instructional creativity and helped students reduce cognitive workload during teaching preparation activities.

In addition to ChatGPT, participants also used Canva AI to design visual learning materials and classroom presentations. Many students explained that Canva AI enabled them to create attractive instructional materials more easily, particularly presentation slides, infographics, and classroom worksheets. Participants believed that visually engaging materials could increase students' motivation and classroom interaction. In addition, Grammarly and QuillBot were commonly used to improve grammar accuracy, revise instructional texts, and paraphrase learning materials. These findings suggest that AI integration among pre-service teachers extends beyond lesson planning and includes language editing and multimedia development activities. According to Cong et al. (2026), AI-powered educational technologies support teachers in producing more interactive and visually appealing instructional materials in digital learning environments.

The findings further revealed that AI tools were integrated into three major instructional activities: lesson design, material development, and evaluation design. In lesson design activities, participants used AI tools to generate learning objectives, organize instructional sequences, and develop communicative classroom activities. Most participants stated that AI technologies helped them structure lesson plans more systematically and provided alternative ideas for classroom interaction. In material development activities, students utilized AI platforms to prepare reading passages, vocabulary exercises, dialogues, and presentation media suitable for English language teaching contexts. Meanwhile, in evaluation design activities, participants used AI tools to create quizzes, multiple-choice questions, rubrics, and formative assessments aligned with lesson objectives. The areas of AI utilization in instructional design are summarized in Table 2.

Table 2. Areas of AI Utilization in TEFL Instructional Design

No	Instructional Activities	Number of Participants
1	Lesson Design	17
2	Material Development	15
3	Evaluation Design	13

4	Media Design	15
5	Language Editing	14

Table 2 demonstrates that lesson design became the primary instructional activity supported by AI technologies. However, the findings also indicate that AI tools were extensively integrated into material development, media preparation, and language editing processes. This suggests that AI technologies functioned as instructional assistants throughout the teaching preparation process. The integration of AI tools into instructional activities is further illustrated in Figure 1.

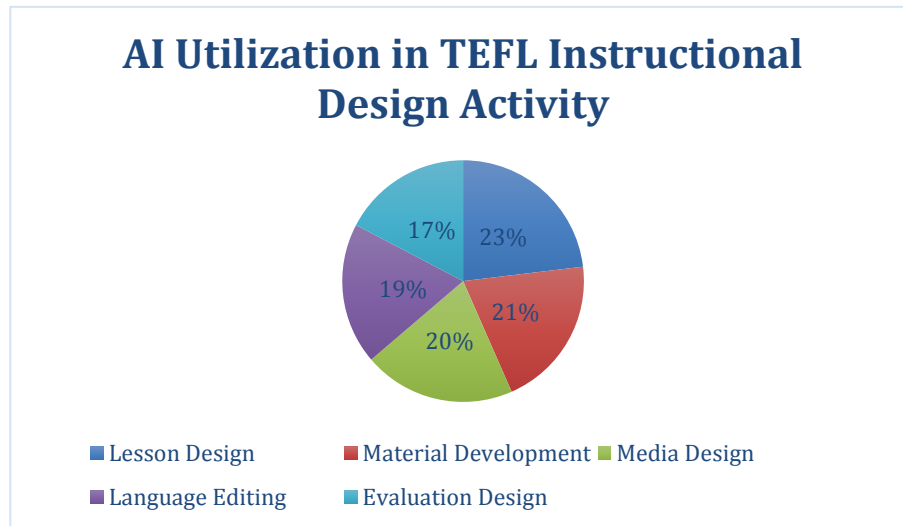


Figure 1. AI utilization in TEFL instructional design activities

Figure 1 shows that lesson design represented the highest area of AI utilization among participants. The figure also indicates that AI technologies played significant roles in material development and media preparation. These findings support the argument proposed by Mailizar et al. (2026), who emphasized that AI integration contributes positively to the development of pre-service teachers' Technological Pedagogical Content Knowledge (TPACK), particularly in instructional organization and pedagogical preparation.

Another important finding of this study concerns the perceived benefits of AI-assisted instructional design. Most participants reported that AI tools increased efficiency in lesson preparation by simplifying time-consuming tasks, such as organizing materials, grammar checking, and generating activities. Participants also stated that AI technologies enhanced their creativity by providing diverse instructional ideas and alternative teaching strategies. Several students explained that they became more confident in preparing lesson plans because AI tools helped them generate examples and organize instructional content more clearly. The perceived benefits of AI integration are presented in Table 3.

Table 3. Perceived Benefits of AI Integration

No	Benefits	Number of Participants
1	Faster lesson preparation	17
2	Increased instructional creativity	15
3	Easier access to teaching resources	16

4	Improved grammar and language accuracy	14
5	Better visual presentation of materials	15
6	Increased confidence in teaching preparation	13

As shown in Table 3, efficiency became the primary reason participants used AI technologies. Most participants explained that AI reduced the time needed to organize lesson plans, prepare materials, and construct assessments. These findings are consistent with those of Gamlem et al. (2026), who found that generative AI technologies increased instructional productivity and reduced cognitive workload among pre-service teachers.

Furthermore, participants perceived AI tools as helpful resources for improving language quality. Grammarly and QuillBot were frequently used to revise grammar, improve vocabulary selection, and increase readability in instructional materials. Students explained that these tools helped them produce more professional and accurate English teaching materials. This finding aligns with Cong et al. (2026), who emphasized that AI-powered language tools can improve linguistic accuracy and enhance instructional clarity in educational contexts.

Despite the identified benefits, the study also revealed several challenges and concerns regarding AI integration in TEFL instructional design. One major concern involved the reliability and contextual appropriateness of AI-generated content. Some participants reported that AI-generated lesson plans occasionally contained irrelevant classroom activities or instructional suggestions that did not fully align with Indonesian educational contexts. As a result, participants emphasized the importance of reviewing and revising AI-generated outputs before classroom implementation. The major challenges experienced by participants are summarized in Table 4.

Table 4. Challenges of AI Integration in Instructional Design

No	Challenges	Number of Participants
1	Reliability of AI-generated information	14
2	Overdependence on AI tools	12
3	Plagiarism and originality concerns	11
4	Difficulty writing effective prompts	10
5	Lack of contextual appropriateness	13

Table 4 demonstrates that reliability and contextual appropriateness became the most significant concerns among participants. These findings indicate that although AI technologies provide instructional support, human pedagogical judgment remains essential in determining the appropriateness of instructional materials.

Another challenge identified in this study was overreliance on AI tools. Several participants expressed concern that excessive reliance on AI technologies might reduce creativity and critical thinking during lesson preparation. Some students admitted that they occasionally accepted AI-generated outputs without sufficient evaluation because the generated materials appeared complete and convincing. These findings support Kildé's (2024) argument that

overreliance on generative AI may weaken students' reflective thinking and independent decision-making in instruction.

Ethical concerns also emerged as an important issue in this study. Participants highlighted concerns regarding plagiarism, originality, and authorship when using AI-generated instructional materials. Some students questioned whether AI-generated lesson plans could still be considered their own work if substantial portions of the content were automatically produced by AI systems. Saud (2025), similarly emphasized that generative AI raises ethical challenges related to academic integrity, misinformation, and ambiguity around authorship in educational settings.

Overall, this study's findings demonstrate that AI technologies offer significant opportunities to support instructional design practices among pre-service English teachers. AI tools helped participants improve efficiency, enhance creativity, and develop more organized instructional materials. However, the findings also indicate that AI integration should not replace pedagogical reasoning and critical instructional decision-making. Instead, AI should serve as a supportive tool that helps future teachers develop reflective, creative, and pedagogically appropriate instructional practices.

4. CONCLUSION

This study demonstrates that Artificial Intelligence (AI) technologies have become important instructional support tools for pre-service teachers in designing instructional components within the TEFL Methodology course. The findings revealed that pre-service teachers actively utilized various AI platforms, particularly ChatGPT, Canva AI, Grammarly, Gemini, and QuillBot, to support lesson planning, material development, media creation, language editing, and assessment design. AI technologies helped participants improve efficiency, enhance instructional creativity, organize lesson structures more systematically, and develop more engaging learning materials. These findings indicate that AI integration has significantly influenced the instructional design practices of future English teachers in higher education contexts. The findings are consistent with previous studies, indicating that generative AI supports instructional productivity and pedagogical innovation in teacher education (Bae et al., 2024; Gamlem et al., 2026).

The study also highlights that AI technologies function not merely as automated content generators but as pedagogical support systems that assist pre-service teachers throughout the instructional preparation process. Most participants used AI tools to brainstorm ideas, revise instructional materials, and adapt learning activities according to pedagogical objectives and classroom needs. This finding suggests that AI technologies can support the development of digital competence and Technological Pedagogical Content Knowledge (TPACK) among pre-service teachers when used critically and responsibly. Mailizar et al. (2026) Similarly, it was argued that AI integration enhances pre-service teachers' ability to integrate technological, pedagogical, and content knowledge in instructional planning. Furthermore, the findings strengthen previous research emphasizing the growing role of generative AI in English language teacher education and instructional innovation (Butler & Jiang, 2025; Cong et al., 2026).

However, the findings additionally reveal important pedagogical and ethical challenges associated with AI integration. Participants expressed concerns about the reliability of AI-generated information, overreliance on automated outputs, plagiarism, and the contextual appropriateness of AI-generated instructional materials. These findings demonstrate that

although AI technologies offer substantial instructional benefits, human pedagogical judgment and critical evaluation remain essential in determining the quality and relevance of instructional content. Kildé (2024), similarly emphasized that excessive reliance on generative AI may reduce critical thinking and reflective instructional decision-making among future teachers. In addition, Saud (2025) argued that AI integration in language education raises ethical concerns related to academic integrity, authorship ambiguity, and misinformation. Therefore, AI should not replace teachers' professional reasoning but rather function as a complementary instructional tool that supports reflective and creative teaching practices.

The study contributes to the growing discussion concerning AI integration in English language teacher education, particularly within Indonesian higher education contexts. The findings imply that teacher education institutions should integrate AI literacy, ethical awareness, and critical digital pedagogy into TEFL Methodology courses to prepare future teachers for responsible AI-assisted instructional practices. According to Bui et al. (2025), AI literacy involves not only technical competence but also the ability to critically evaluate and ethically utilize AI-generated information in educational settings. Consequently, pre-service teachers need guidance not only in operating AI technologies but also in critically evaluating AI-generated outputs, understanding ethical implications, and adapting technological resources to specific classroom contexts.

Although this study provides valuable insights into AI-assisted instructional design among pre-service English teachers, several limitations should be acknowledged. The study involved a relatively small number of participants from a single university and focused specifically on TEFL Methodology contexts. Future research is therefore recommended to involve larger participant groups, apply mixed-method research designs, and investigate the long-term impact of AI-assisted instructional design on teaching performance and student learning outcomes. Further studies may also explore the development of AI literacy frameworks and ethical guidelines for AI integration in English language education.

Overall, this study confirms that AI technologies have considerable potential to support instructional innovation in English teacher education. However, meaningful and responsible AI integration requires critical awareness, pedagogical reflection, and ethical consideration to ensure that future teachers remain active, reflective, and creative instructional designers in increasingly digital learning environments.

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