

Developing AI-Generated Reading Materials from a Teacher Education Perspective: A Comparative Study of Two Japanese Universities

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Abstract

The rapid advancement of generative artificial intelligence (AI), particularly ChatGPT, is reshaping Computer-Assisted Language Learning (CALL) and language teacher education. This study investigates how pre-service English teachers perceive AI-generated reading materials and critically evaluate their pedagogical value within Japanese teacher education. Grounded in the Technological Pedagogical Content Knowledge (TPACK) framework and sociocultural perspectives, the study compares participants from two Japanese universities. Ninety-seven pre-service English teachers (University A, $n = 53$; University B, $n = 44$) used ChatGPT 5.0 to create reading passages for secondary school learners. Participants then revised the materials and reflected on their pedagogical appropriateness. Data were collected through a 20-item Likert-scale questionnaire and analyzed descriptively. The findings indicate that participants viewed generative AI as an effective tool for adjusting linguistic difficulty, generating multiple text versions, and supporting lesson preparation. At the same time, they demonstrated increased awareness of ethical issues, including cultural appropriateness, inclusivity, and overreliance on AI. Institutional differences also influenced participants' confidence and readiness to integrate AI into teaching. The study suggests that AI-supported materials development can foster reflective teacher agency and AI literacy in CALL-oriented teacher education.

Key words: Generative AI, CALL, teacher education, AI-generated materials

1. Introduction

The emergence of generative artificial intelligence (AI), particularly large language models (LLMs) such as ChatGPT, has transformed educational practices worldwide. Within the field of CALL, AI-powered applications are increasingly being employed to support language learning, lesson planning, assessment, and materials development. Unlike earlier CALL technologies, generative AI enables teachers to create authentic language materials rapidly while adapting content to learners' proficiency levels and instructional objectives.

Recent studies have suggested that generative AI has considerable potential for improving the efficiency of language teaching and promoting individualized learning experiences (OECD, 2021). Nevertheless, AI-generated content is not always pedagogically appropriate. Language may contain cultural bias, factual inaccuracies, unnatural discourse patterns, or linguistic expressions that exceed learners' proficiency levels. Consequently, teachers need to develop professional competence to evaluate, modify, and pedagogically justify AI-generated materials rather than simply accepting AI outputs.

This issue is particularly important in teacher education. Future English teachers are expected not only to become competent users of educational technology but also to develop critical AI literacy and professional judgment. The integration of AI into teacher education therefore represents more than technological training; it involves fostering reflective practitioners capable of making principled instructional decisions. From this perspective, generative AI should be viewed as a pedagogical partner that supports teacher agency rather than replacing teachers' expertise.

Previous studies have investigated the application of AI in higher education and language learning (Zawacki-Richter et al., 2019; Godwin-Jones, 2019). However, relatively little empirical research has examined how pre-service English teachers perceive the process of creating teaching materials with generative AI, particularly within different institutional contexts. Furthermore, few studies have compared AI-related self-efficacy and pedagogical beliefs across universities implementing similar instructional tasks.

To address this gap, the present study investigates how pre-service English teachers at two Japanese universities used ChatGPT to develop English reading materials for

secondary school learners. Drawing upon the Technological Pedagogical Content Knowledge (TPACK) framework (Kessler, 2006) together with sociocultural perspectives on learner autonomy and digital mediation (Reinders & White, 2016), this study examines participants' perceptions of AI-supported materials development, ethical awareness, pedagogical effectiveness, and AI-related self-efficacy.

The following research questions guided this study:

- (1) How do pre-service English teachers perceive the usefulness of generative AI for developing English reading materials?
- (2) What aspects of AI-supported materials development are regarded as pedagogically beneficial?
- (3) How does institutional context influence AI-related self-efficacy and ethical awareness?
- (4) What implications do these findings have for teacher education and CALL pedagogy?

2. Literature Review

2.1 Generative AI in CALL

Since the public release of ChatGPT in late 2022, generative AI has rapidly transformed educational practices worldwide. Unlike earlier AI-powered CALL applications, large language models can generate coherent texts, adapt linguistic complexity, and provide immediate pedagogical support. Consequently, language teachers are increasingly utilizing AI not only as a tutoring system but also as a collaborative tool for lesson planning and materials development.

2.2 Teacher Education and AI Literacy

AI literacy extends beyond the technical ability to operate AI systems. It involves understanding the strengths and limitations of AI-generated content, recognizing ethical concerns, evaluating reliability, and making informed pedagogical decisions (Ng et al., 2021). Within teacher education, AI literacy has become essential professional competency.

2.3 TPACK Framework

The Technological Pedagogical Content Knowledge (TPACK) framework, proposed by Mishra and Koehler (2006), provides an important theoretical foundation for understanding how teachers integrate technology into teaching and learning. Building on Shulman's (1986) concept of Pedagogical Content Knowledge (PCK), TPACK emphasizes that effective technology integration requires the interaction of technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK).

Rather than viewing technology as an independent skill, the framework highlights teachers' ability to make informed pedagogical decisions by integrating these three domains of knowledge.

Within language teacher education, TPACK has been widely adopted as a framework for preparing future teachers to use digital technologies effectively (Koehler et al., 2013). As generative AI becomes increasingly available in educational settings, technological knowledge alone is no longer sufficient. Teachers must critically evaluate AI-generated content, adapt it to learners' proficiency levels, and ensure that it aligns with instructional objectives and curriculum requirements. These processes require the integration of technological competence with pedagogical reasoning and subject-matter knowledge.

In the present study, TPACK provides a useful lens for examining how pre-service English teachers engaged with ChatGPT during the development of reading materials. Rather than simply generating texts, participants evaluated, revised, and justified AI-generated materials according to pedagogical principles. This process illustrates how AI-assisted materials development can promote the integration of technology, pedagogy, and content knowledge while fostering reflective decision-making in teacher education.

2.4 Sociocultural Theory and Teacher Agency

From a sociocultural perspective (Vygotsky, 1978), AI can be understood as a mediational tool that supports cognitive activity and learning through interaction among teachers, learners, and technology. In teacher education, such mediation can support the development of pedagogical knowledge and professional practice. Teacher agency remains central, as teachers make intentional, context-sensitive decisions about how technologies are selected and used (Priestley et al., 2015). In language education, digital technologies can enhance such agency when teachers critically select and adapt technological resources to meet pedagogical goals and learners' needs (Reinders & White, 2016). In the context of generative AI, this requires teachers to evaluate and modify AI-generated content rather than simply accept its output. Thus, AI may support rather than replace teachers' professional agency.

3. Method

3.1 Participants

The participants in this study were 97 pre-service English teachers enrolled in teacher education programs at two Japanese universities: University A ($n = 53$) and University B ($n = 44$). All participants were undergraduate students preparing to obtain English teaching licenses for secondary education. Although they had previously completed

coursework in English language education, their prior experience with generative artificial intelligence (AI) varied considerably. Some students occasionally used ChatGPT or similar AI tools for language learning or writing support, whereas others had little or no experience with AI-assisted educational applications.

The study was conducted during methodology courses focusing on English language teaching and materials development. Participation in the instructional activity formed part of the regular coursework. However, participation in the questionnaire survey was voluntary, and all responses were collected anonymously. Prior to data collection, participants were informed of the purpose of the study, the confidentiality of their responses, and their right to withdraw at any stage without academic disadvantage. Ethical considerations were addressed in accordance with institutional research guidelines.

Participation in the study was voluntary, and informed consent was obtained from all participants prior to data collection. Participants were informed of the purpose of the study and assured that their responses and submitted materials would remain confidential and be used solely for research purposes.

3.2 Instructional Task

As part of the methodology course, participants completed an AI-assisted materials development task using ChatGPT5.0. The objective of the activity was not simply to generate English reading passages but to encourage future teachers to critically evaluate AI-generated materials from a pedagogical perspective.

Students were first introduced to the educational possibilities and limitations of generative AI in language teaching. The instructor demonstrated examples of effective prompts and discussed issues such as factual accuracy, linguistic appropriateness, cultural sensitivity, and ethical use of AI-generated content. Students were reminded that AI-generated texts should be regarded as drafts requiring professional evaluation rather than finished instructional materials.

Each participant selected a topic appropriate for junior or senior high school English classes. Examples included environmental issues, cultural diversity, international communication, Japanese traditions, healthy lifestyles, and sustainable development. Students then designed prompts for ChatGPT to generate reading passages consisting of approximately 90 to 120 words. The generated texts were expected to correspond to the linguistic level of the intended learners while maintaining meaningful and authentic content.

After generating the initial reading passage, participants critically reviewed the AI-produced text. They examined

vocabulary level, grammatical complexity, discourse coherence, cultural appropriateness, factual accuracy, and overall readability. When necessary, students modified vocabulary, simplified sentence structures, corrected inaccurate information, eliminated ambiguous expressions, and improved the overall organization of the text. They also considered whether the content reflected inclusive perspectives and avoided unintended cultural bias.

Following the revision process, participants prepared a brief pedagogical justification explaining why they accepted, modified, or rejected AI-generated expressions. This reflective component encouraged students to articulate their instructional decisions and to recognize that effective materials development depends on professional judgment rather than automated text generation. Through this sequence of generating, evaluating, revising, and reflecting, the activity aimed to foster critical AI literacy and teacher agency within the context of English language teaching.

3.3 Research Instrument

Following completion of the instructional task, participants completed a questionnaire designed to investigate their perceptions of AI-assisted materials development. The questionnaire consisted of twenty items measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The questionnaire was developed to examine four major dimensions of participants' perceptions: (1) perceived pedagogical effectiveness of generative AI, (2) AI-related self-efficacy in materials development, (3) ethical awareness regarding AI-generated educational content, and (4) willingness to integrate AI into future teaching practice. Items concerning pedagogical effectiveness explored participants' views on the usefulness of AI for adjusting linguistic difficulty, generating instructional ideas, improving efficiency, and supporting differentiated instruction. Ethical awareness focused on the importance of verifying factual accuracy, evaluating cultural appropriateness, and recognizing the limitations of AI-generated content. The questionnaire also included statements regarding participants' confidence in modifying AI-generated materials and their intentions to use generative AI in their future classrooms.

3.4 Data Analysis

The quantitative data obtained from the questionnaire was analyzed using descriptive statistical procedures. Mean scores and standard deviations were calculated for each questionnaire item to identify overall trends in participants' perceptions of AI-assisted English education. Descriptive comparisons were also made between the two participating universities to examine differences in participants'

perceptions, confidence in using AI, and awareness of potential risks and ethical issues.

In addition to the questionnaire data, qualitative data were collected from the instructional task in which participants used ChatGPT to develop English reading materials. The AI-assisted materials produced by the participants, together with their revisions and pedagogical explanations, were examined qualitatively. Attention was given to how participants evaluated and modified AI-generated content, including vocabulary, grammatical complexity, factual accuracy, cultural appropriateness, and suitability for the intended learners. The analysis also considered the ways in which participants demonstrated pedagogical judgment when accepting, revising, or rejecting AI-generated content.

The qualitative analysis was conducted thematically by identifying recurring patterns in participants' use of and responses to AI-generated materials. These qualitative findings were considered alongside the questionnaire results to provide a more comprehensive understanding of participants' perceptions and experiences. By combining quantitative questionnaire data with qualitative evidence from the AI-assisted materials development task, the study sought to examine not only what participants thought about generative AI but also how they engaged with it as a pedagogical tool.

Rather than focusing solely on statistical significance, the analysis emphasized practical educational implications of the findings. Attention was given to identifying areas in which participants demonstrated strong confidence in AI-supported materials development as well as areas requiring further teacher education. Differences between institutions were interpreted in relation to instructional context, previous technological experience, and opportunities for reflective engagement with AI-supported teaching practices.

By combining classroom-based instructional activities with quantitative survey data, the present study sought to provide empirical evidence regarding the role of generative AI in pre-service English teacher education. The methodological design also aimed to illustrate how structured engagement with AI can promote reflective decision-making, pedagogical reasoning, and responsible integration of emerging technologies within CALL-oriented teacher education.

4. Results

This section presents the findings from both the quantitative and qualitative data collected in the study. First, the quantitative results from the questionnaire are presented to examine participants' overall perceptions of AI use in English education and differences between the two participating universities. The questionnaire findings

are followed by qualitative evidence from the AI-assisted materials development task. In this task, participants used ChatGPT to create English reading materials and subsequently evaluated, revised, and explained their instructional decisions. The qualitative findings therefore illustrate how participants engaged with generative AI as a pedagogical tool and provide additional insight into the perceptions identified through the questionnaire data.

This summer, I worked at a small bakery near my house. It was my first part-time job, so I was nervous at first. I worked three days a week, from 9 a.m. to 1 p.m. The staff were kind and taught me many things. I learned how to clean the shop and arrange bread on the shelves. Sometimes I helped make bread, too. The best part of the job was giving bread to the customers with a smile. When they said, "Thank you," I felt really happy. I want to work there again next summer.

Question 1:

How many days a week did the writer work at the bakery?

Answer: Three days a week.

Question 2:

What was the best part of the writer's job?

Answer: Giving bread to the customers with a smile.

Resource : (This English sentences were made for Junior school learners with the help of AI (Chat GPT) .)

No .	Questionnaire Item	University A (<i>n</i> =53) <i>M</i> (<i>SD</i>)	University B (<i>n</i> =44) <i>M</i> (<i>SD</i>)
1	Previous experience using AI for university learning	4.47 (0.88)	4.15 (1.46)
2	AI-assisted English learning is effective	4.37(0.80)	3.88 (1.29)
3	AI can support English teachers	4.48 (0.78)	4.07 (1.26)
4	Willingness to incorporate AI into future English classes	4.26 (1.02)	3.76 (1.34)
5	Willingness to use AI for future lesson preparation	4.34 (0.98)	4.00 (1.23)

6	AI can make classes more engaging	4.27 (0.93)	3.75 (1.10)
7	AI skills are necessary for English teachers	4.34 (0.85)	4.32 (1.05)
8	Concern that AI may make learners passive	4.14 (1.03)	3.17 (1.36)
9	Concern about inaccurate information generated by AI	4.40 (0.80)	4.00 (1.34)
10	Concern that AI may reduce the importance of teachers	3.66 (1.31)	2.77 (1.49)
11	Concern about ethical risks of AI use	3.83 (1.07)	3.95 (1.25)
12	AI is useful for lesson preparation	4.40 (0.74)	4.34 (1.10)
13	AI can respond to individual learners' needs	4.00 (1.13)	3.95 (1.24)
14	AI can support learners' English proficiency development	4.21 (0.95)	4.00 (1.20)
15	AI can reduce teachers' lesson preparation time	4.48 (0.75)	4.30 (0.95)
16	Confidence in developing effective AI-use skills	4.25 (0.94)	3.98 (1.00)
17	Confidence in adapting to AI-integrated classes	3.72 (1.01)	3.27 (1.15)
18	AI can improve one's English and teaching skills	3.94 (0.95)	3.86 (1.05)

19	Teacher education programs should provide AI-related training	4.10 (0.85)	4.14 (1.17)
20	AI has potential for the future of English education	4.42 (0.80)	4.36 (1.18)

Table 1: Descriptive statistics of participants' perceptions of AI use

Note. Responses were measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). For items with multiple selections recorded in a single response, those responses were excluded from the calculation of the mean and standard deviation. Therefore, the valid n varied slightly across items.

Table 1 presents the descriptive statistics for the 20 questionnaire items concerning participants' perceptions of AI use in English education. The results indicate that participants at both universities generally held positive perceptions of the educational potential of AI. Mean scores were above 4.00 for most items at both institutions, suggesting a relatively high level of acceptance of AI-assisted teaching and learning.

At University A, particularly high mean scores were observed for the perceptions that AI can support English teachers ($M = 4.48$, $SD = 0.78$), reduce teachers' lesson preparation time ($M = 4.48$, $SD = 0.75$), and contribute to the future of English education ($M = 4.42$, $SD = 0.80$). Participants also reported positive attitudes toward using AI for lesson preparation ($M = 4.40$, $SD = 0.74$) and perceived AI-assisted English learning as effective ($M = 4.37$, $SD = 0.80$). These findings suggest that participants recognized the practical value of AI, particularly in supporting teachers and increasing the efficiency of instructional preparation.

A similar pattern was observed among participants at University B. The highest mean scores were found for the perceived future potential of AI in English education ($M = 4.36$, $SD = 1.18$), the usefulness of AI for lesson preparation ($M = 4.34$, $SD = 1.10$), and the potential of AI to reduce teachers' preparation time ($M = 4.30$, $SD = 0.95$). Participants also strongly agreed that AI skills are necessary for English teachers ($M = 4.32$, $SD = 1.05$) and that AI can support English teachers ($M = 4.07$, $SD = 1.26$).

At the same time, the results revealed that positive perceptions of AI coexisted with concerns about its limitations and potential risks. At University A, participants expressed relatively strong concerns about inaccurate information generated by AI ($M = 4.40$, $SD = 0.80$) and the possibility that AI could make learners passive ($M = 4.14$, $SD = 1.03$). At University B, concern about inaccurate information was also relatively high ($M = 4.00$, $SD = 1.34$), while concern about ethical risks, including privacy and copyright, reached $M = 3.95$ ($SD = 1.25$). These findings indicate that participants recognized the need for careful and responsible use of AI rather than unrestricted reliance on AI-generated content.

Some differences were observed between the two universities. For example, University A participants reported greater confidence in adapting to AI-integrated classes ($M = 3.72$, $SD = 1.01$) than University B participants ($M = 3.27$, $SD = 1.15$). Similarly, concern that AI might reduce the importance of teachers was higher at University A ($M = 3.66$, $SD = 1.31$) than at University B ($M = 2.77$, $SD = 1.49$). Nevertheless, both groups demonstrated generally positive attitudes toward AI while simultaneously recognizing the importance of human judgment, teacher expertise, and responsible AI use.

5. Discussion

The findings of this study provide valuable insights into the educational potential of generative artificial intelligence (AI) in pre-service English teacher education. Overall, participants at both universities demonstrated positive perceptions of AI-assisted materials development, particularly regarding its ability to enhance efficiency, adapt linguistic difficulty, and generate multiple versions of reading materials. At the same time, they expressed awareness of the need to critically evaluate AI-generated content for accuracy, appropriateness, and pedagogical suitability. These findings suggest that pre-service teachers do not simply accept AI-generated output uncritically but recognize the importance of exercising professional judgment when integrating AI into language teaching.

One important implication of this study is that generative AI should be viewed as a collaborative pedagogical partner rather than a replacement for teachers. While AI can rapidly generate reading passages, modify vocabulary, and suggest alternative expressions, it cannot independently determine whether the materials are appropriate for specific learners or instructional objectives. Participants frequently revised vocabulary, corrected factual inaccuracies, simplified grammatical structures, and adjusted cultural references before considering the materials suitable for classroom use. Such practices demonstrate that effective language teaching continues to rely on teachers' pedagogical expertise and contextual decision-making. In this sense, AI functions as a

mediational tool that supports, rather than replaces, human instructional judgment.

These findings can be interpreted from the perspective of the Technological Pedagogical Content Knowledge (TPACK) framework (Kessler, 2006). TPACK emphasizes that effective technology integration requires teachers to combine technological knowledge with pedagogical and content knowledge. The present instructional activity required participants not only to operate ChatGPT but also to evaluate whether AI-generated texts matched learners' proficiency levels, curricular objectives, and educational contexts. This process encouraged participants to integrate technological competence with pedagogical reasoning, thereby extending their professional understanding beyond the simple use of digital tools. As generative AI becomes increasingly available in educational settings, teacher education programs should therefore provide opportunities for students to develop AI-related TPACK through authentic classroom tasks.

The findings also support sociocultural perspectives on technology-mediated learning. From a Vygotskian perspective, learning occurs through interaction with mediational tools and socially situated activities rather than through passive reception of information. In the present study, generative AI functioned as a cognitive tool that stimulated participants' reflection, evaluation, and revision of instructional materials. Rather than reducing the need for critical thinking, AI-generated drafts prompted participants to engage more actively in analyzing language, identifying potential problems, and making pedagogically informed revisions. This process illustrates how technology can mediate professional learning while preserving the central role of human agency.

Closely related to this interpretation is the concept of teacher agency. One concern frequently expressed in discussions of AI is that teachers may become overly dependent on automated technologies. However, the results of this study suggest a different perspective. Participants did not perceive AI as an authority that should determine instructional decisions. Instead, they viewed AI as a resource requiring careful human evaluation and adaptation. The requirement to explain the pedagogical rationale for their revisions encouraged participants to reflect on why particular linguistic choices were appropriate for secondary school learners. Such reflective practices are fundamental to the development of professional identity and teacher autonomy. Consequently, AI-assisted materials development may strengthen rather than weaken teacher agency when incorporated into carefully designed teacher education programs.

Another noteworthy finding concerns ethical awareness. Participants consistently recognized that AI-generated texts should not be accepted without verification. They expressed concerns regarding factual accuracy, cultural

appropriateness, inclusiveness, and the possibility of excessive reliance on AI-generated content. These findings align with recent discussions emphasizing that AI literacy includes not only technical competence but also ethical responsibility and critical evaluation. As generative AI becomes more prevalent in educational environments, future teachers must acquire the ability to recognize both the strengths and limitations of AI-generated materials. Teacher education should therefore incorporate explicit instruction on responsible AI use, including issues of bias, copyright, transparency, and academic integrity.

Although both universities demonstrated generally positive attitudes toward AI-supported materials development, some variation was observed in participants' confidence levels and perceptions of AI. These differences may reflect variations in institutional culture, prior technological experience, or opportunities to engage with educational technologies within teacher education curricula. While the present study did not investigate these factors in detail, the findings suggest that institutional context may influence how future teachers develop confidence in using AI effectively. Further comparative research involving additional universities and longitudinal data collection would contribute to a deeper understanding of these contextual influences.

Several limitations should also be acknowledged. First, the study relied primarily on self-reported questionnaire data collected immediately after the instructional activity. Although participants expressed positive perceptions, future research should examine how these perceptions influence actual classroom practice during teaching practicums or in-service teaching. Second, the participants were drawn from only two Japanese universities, which may limit the generalizability of the findings. Expanding the research to include diverse educational contexts and international comparisons would provide a broader understanding of AI integration in teacher education. Finally, as generative AI technologies continue to evolve rapidly, ongoing research will be necessary to examine how teachers' perceptions and competencies develop alongside technological advances.

Despite these limitations, the present study demonstrates that structured engagement with generative AI can make a meaningful contribution to CALL-oriented teacher education. By encouraging future teachers to critically evaluate, adapt, and justify AI-generated instructional materials, teacher education programs can foster not only technological competence but also reflective practice, professional judgment, and ethical responsibility. Ultimately, the educational value of generative AI lies not in replacing teachers' expertise but in creating opportunities for teachers to deepen their pedagogical reasoning and exercise informed professional agency within increasingly technology-rich language learning environments.

6. Conclusion

The present study investigated how pre-service English teachers at two Japanese universities perceived the use of generative artificial intelligence (AI) for developing English reading materials within teacher education. By engaging participants in the process of generating, evaluating, revising, and justifying AI-generated texts, the study explored not only the practical usefulness of generative AI but also its influence on pedagogical reasoning, ethical awareness, and AI-related self-efficacy. The findings indicate that generative AI has considerable potential to support teacher education when it is integrated into carefully designed instructional activities that emphasize reflection and critical evaluation.

Participants generally viewed ChatGPT as an effective tool for creating reading materials, particularly in terms of improving lesson preparation, adjusting linguistic difficulty, and generating multiple versions of instructional texts. At the same time, they recognized that AI-generated materials require careful human evaluation to ensure linguistic accuracy, cultural appropriateness, inclusiveness, and alignment with educational objectives. Rather than accepting AI-generated content without question, participants demonstrated an awareness of the teacher's responsibility to adapt and refine AI-generated materials according to learners' needs and curriculum requirements. These findings reinforce the view that generative AI should be regarded as a tool that supports professional practice rather than one that replaces teachers' expertise.

From the perspective of teacher education, the study highlights the importance of developing AI literacy as a core professional competency. Future English teachers must be equipped not only with the technical skills required to operate AI systems but also with the ability to critically evaluate AI-generated content, recognize ethical issues, and make pedagogically sound decisions. Activities that require students to explain and justify their revisions encourage reflective thinking and strengthen professional judgment, both of which are essential characteristics of effective language teachers. Consequently, AI literacy should be incorporated into teacher education curricula as an integral component of digital pedagogy rather than as an optional technological skill.

The findings also contribute to the broader field of CALL. As generative AI become increasingly embedded in educational practice, CALL is evolving from technology-assisted language learning toward human-AI collaboration in which teachers, learners, and intelligent technologies interact dynamically. Within this changing landscape, the role of teachers becomes even more significant. Their expertise is needed to interpret AI-generated content, adapt it to specific learning contexts, and facilitate meaningful language learning experiences. The present study therefore supports a view of AI as a mediational tool that enhances

teacher agency through reflective interaction rather than diminishing the professional role of educators.

Despite these promising findings, several limitations should be acknowledged. The study was conducted with participants from only two Japanese universities, and the data were collected immediately following a single instructional activity. Future studies should include a wider range of educational institutions and examine whether positive perceptions of AI translate into effective classroom practices during teaching practicums or in-service teaching. Longitudinal research would also provide valuable insights into how AI literacy, pedagogical competence, and teacher agency develop over time as future teachers gain greater experience with generative AI technologies. In addition, qualitative methods such as interviews, reflective journals, or classroom observations could complement questionnaire data by providing a deeper understanding of teachers' decision-making processes and professional growth.

In conclusion, this study demonstrates that generative AI can make a meaningful contribution to teacher education when it is implemented through pedagogically grounded and reflective learning activities. Rather than viewing AI as a substitute for teachers, educators should recognize its potential as a collaborative partner that stimulates critical thinking, supports instructional creativity, and enhances professional development. As AI technologies continue to evolve, teacher education programs have an important responsibility to prepare future educators who can integrate these technologies ethically, critically, and effectively. By fostering AI literacy, reflective practice, and teacher agency, higher education institutions can help ensure that generative AI serves not only as a technological innovation but also as a catalyst for more thoughtful, inclusive, and learner-centered language education.

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