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Chat GPT Integration in English Learning: Effects on Pre-Service Primary Teachers' Language Skills at Universitas Pasifik Morotai

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Abstract

English proficiency is an essential competency that university students, especially prospective teachers in the Primary School Teacher Education Program (PGSD), must possess. However, many students in underdeveloped, frontier, and outermost regions (3T), such as Universitas Pasifik Morotai, still face difficulties in mastering grammar, vocabulary, and speaking fluency. Along with technological advancements, ChatGPT, as an AI product, offers an interactive and flexible learning solution.

This study aims to examine the effect of using ChatGPT on the English proficiency of PGSD students. The research employed a quantitative approach with a quasi-experimental design. The sample consisted of 30 fourth-semester PGSD students divided into two groups: an experimental group using ChatGPT and a control group receiving conventional learning.

Data were collected through pre-test and post-test and analysed using an independent samples t-test. The results showed a significant difference between the two groups. The experimental group obtained an average post-test score of 46.67, higher than the control group at 40.27. The t-test result showed a t-value of 3.51 and a p-value of 0.00155 ($p < 0.05$), indicating that the use of ChatGPT significantly improves students' English proficiency. The conclusion is that ChatGPT is effective as a learning tool for English in higher education, especially in remote areas. The findings imply the need for integrating AI technology into language learning curricula and promoting self-directed learning

Keywords: ChatGPT; English proficiency; AI-based learning; PGSD students; quasi-experimental

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Introduction

English proficiency has become one of the essential competencies required for university students in the twenty-first century, particularly for pre-service teachers who are expected to facilitate global communication and access international educational resources. In the context of teacher education, English language competence is not only necessary for academic purposes but also for professional development and future teaching practices. However, students in underdeveloped, frontier, and outermost (3T) regions of Indonesia often face significant challenges in learning English due to limited educational resources, lack of exposure to English-speaking environments, and restricted access to innovative learning technologies.

Recent advancements in artificial intelligence (AI) have transformed educational practices, including language learning. One of the most widely discussed AI tools is ChatGPT, developed by OpenAI, which enables users to engage in interactive conversations, receive grammar feedback, improve writing quality, and practice speaking skills. Previous studies have demonstrated that ChatGPT can improve students' engagement, writing quality, vocabulary mastery, and speaking fluency in English as a Foreign Language (EFL) context (Hongxia & Razali, 2025; Karataş et al., 2024). Furthermore, Sayed et al. (2024) reported that ChatGPT contributed positively to students' speaking performance, autonomy, and psychological well-being during oral language practice.

Despite the growing number of studies on AI-assisted language learning, most previous research has focused on students in urban universities or technologically advanced educational settings. Experimental studies investigating the effectiveness of ChatGPT in geographically marginalised and educationally underdeveloped regions remain limited. In particular, there is still a lack of empirical evidence regarding how AI-based learning tools support English learning among pre-service primary school teachers in Indonesian 3T areas such as Pulau Morotai. Moreover, several studies have also raised concerns regarding excessive dependency on AI technology, including reduced cognitive engagement and lower retention in writing activities (Kosmyna et al., 2025). These contrasting findings indicate the need for further investigation into the actual pedagogical impact of ChatGPT in specific educational contexts.

To address this research gap, the present study investigates the effect of ChatGPT integration on the English language skills of pre-service primary school teachers at Universitas Pasifik Morotai. Using a quasi-experimental design, this study compares students who learned English with the assistance of ChatGPT and those who experienced conventional learning methods. The study specifically seeks to answer the following research question: "Does the use of ChatGPT significantly affect the English proficiency of PGSD students at Universitas Pasifik Morotai?"

This study contributes theoretically to the growing literature on AI-assisted language learning in higher education, particularly within underrepresented 3T

contexts. Practically, the findings are expected to provide recommendations for lecturers and educational institutions regarding the integration of AI technologies into English language instruction to promote interactive, autonomous, and technology-enhanced learning practices.

Research Methods

1. **Research types**
   This study employed a quantitative approach using a quasi-experimental research design (Pipia & Gurgenishvili, 2025). This design was selected as it enables the examination of the effects of the intervention—namely, the use of ChatGPT—on students' English language proficiency, despite the researcher's limited control over random assignment of participants.
2. **Research Data Sources**
   The research was conducted in the Primary School Teacher Education Program (PGSD) at Universitas Pasifik Morotai during the fourth semester of the 2024/2025 academic year. A total of two groups participated in the study: an experimental group (n = 15), which utilised ChatGPT as a learning tool, and a control group (n = 15), which engaged in conventional instruction without the use of AI-based technology.
3. **Research Population and Sample**
   The sample was selected using purposive sampling, with consideration given to students' active participation in English courses and their access to digital devices required to use ChatGPT. The research instrument consisted of an English proficiency test covering grammar, vocabulary, speaking fluency, and organisation of ideas. The instrument was developed based on the PGSD curriculum and validated through content analysis. Reliability testing using Cronbach's Alpha yielded a coefficient of $\alpha = 0.786$, indicating a satisfactory level of internal consistency.
4. **Data Collection Techniques**
   Data collection was carried out in three stages: pre-test, a four-week treatment/intervention period, and post-test. The pre-test was administered to assess the baseline proficiency of both groups. During the intervention phase, the experimental group engaged in learning activities supported by ChatGPT, including simulated conversations, grammar exercises, writing correction, and comprehension tasks. In contrast, the control group received traditional instruction through lectures and written exercises. Following the intervention, a post-test was administered to all participants to measure changes in English proficiency.
5. **Data Analysis Techniques**
   Data analysis was conducted using an independent samples t-test to compare post-test scores between the experimental and control groups. The analysis was performed using the latest version of IBM SPSS Statistics. The level of significance was set at $\alpha = 0.05$; thus, a p-value of less than 0.05 was considered indicative of a statistically significant difference.

The theoretical and practical justification for this research design is supported by prior studies, such as that of Carrera Nuñez et al. (2025), which examined the use of ChatGPT Voice in higher education contexts. Their findings indicated significant improvements in grammar and fluency ($p < 0.001$, $r = 0.84–0.90$), as well as a reduction in language anxiety through non-judgmental speaking practice (Carrera Nuñez et al.,

2025). These results further reinforce the appropriateness of employing an experimental design with pre- and post-test measurements.

Results and Discussion

Result

This study aims to determine the influence of the use of ChatGPT on the English language skills of PGSD students of the University of Pacific Morotai. The data obtained is analysed based on the validity, reliability, and descriptive statistics presented in the following table.

Table 1. Validity of the Instrument Test

Variabel	Averange
The Effect of Chat GPT	12
Students' Ability in Learning English	12
Total	**24**

Table 1 shows that the instrument used has gone through a validity test with a total of 24 indicators, 12 indicators each for independent and dependent variables. All items are declared valid based on correlation values that have met the eligibility standards.

Table 2. Reliability Test

Cronbach's Alpha	N of Items
0.786	24

Table 2 shows that the instrument has a reliability value of 0.786. Based on the reliability criteria, this number is in the "high" category, which means that it can be trusted to be used in variable measurements.

Table 3. Descriptive Statistic od Students' Result

	N	Mean
The Effect Total	30	40.27
Students' Ability Total	30	46.67
Valid N (listwise)	30	

Table 3 shows that there is a difference in the average score between the total effect of the treatment (40.27) and the total ability of the students (46.67). These results show a tendency to increase the score after the treatment is given.

To determine the significance of the difference in English learning outcomes between the experimental group (which uses Chat GPT) and the control group (which uses conventional methods), a statistical analysis was carried out using an independent *samples t-test*. The test results showed that the average English proficiency score in the experimental group was 46.67, while the control group was 40.27, with the number of subjects in each group being 15 students.

The results of the t-test calculation showed a t-value of 3.51 with a significance value (p-value) of 0.00155. Because the p-value < 0.05, it can be concluded that there is a statistically significant difference between the two groups. Thus, the use of Chat GPT has been proven to have a significant positive influence on improving the English skills of PGSD students of Pasifik Morotai University.

Table 4. Independent Sample T-test

Class	N	Mean	Std. Deviation	t-count	p-value	Sig.
Experimental (Chat GPT)	15	46,67	5,00			
Control (Conventional)	15	40,27	5,00	3,51	0,00155	Significant ($p < 0,05$)

Diagram 1. The Comparison of Experimental and Control Classes

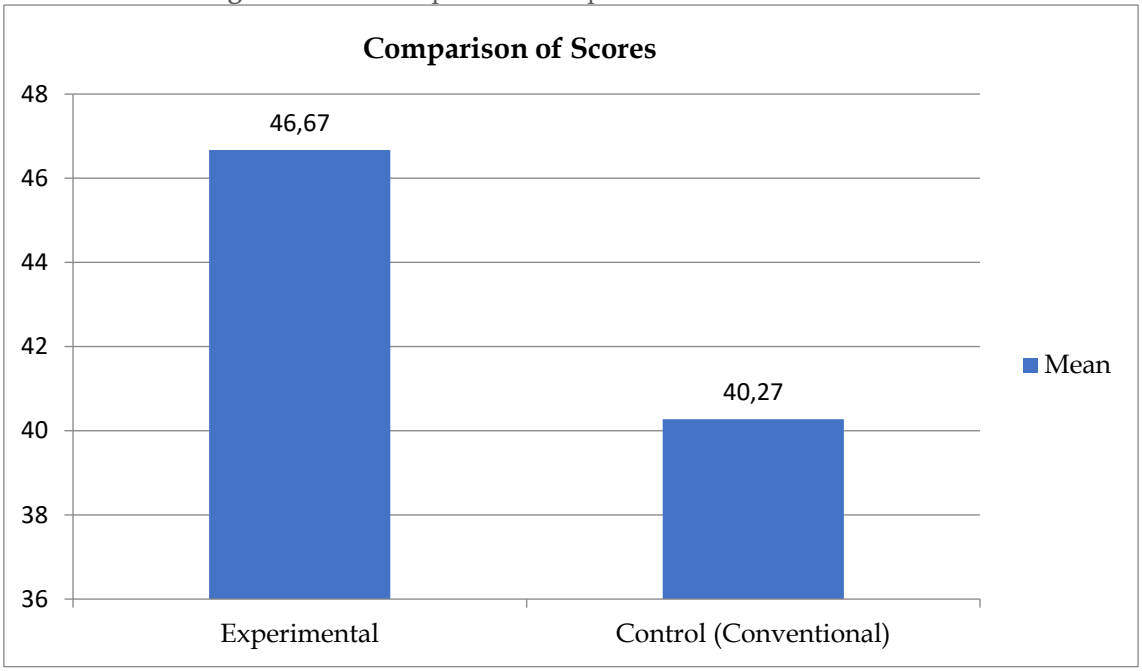

Diagram 1 presents a comparison of *post-test* scores between the experimental group using Chat GPT and the control group that followed conventional learning. It can be seen that the average score of the experimental group was higher than that of the control group. This indicates that Chat GPT-based learning interventions have a positive impact on improving students' English skills, especially in terms of grammar, speaking fluency, and idea organization. This difference reinforces the results of a descriptive analysis that shows that the average total score of students is higher after the use of Chat GPT, as shown in Table 3.

This visualization explicitly illustrates the success of the intervention carried out within 4 weeks, in which the students of the experimental group showed more significant progress in mastery of the material. Thus, this diagram supports the initial interpretation that Chat GPT acts as an effective and adaptive learning medium for prospective teacher students in the 3T region.

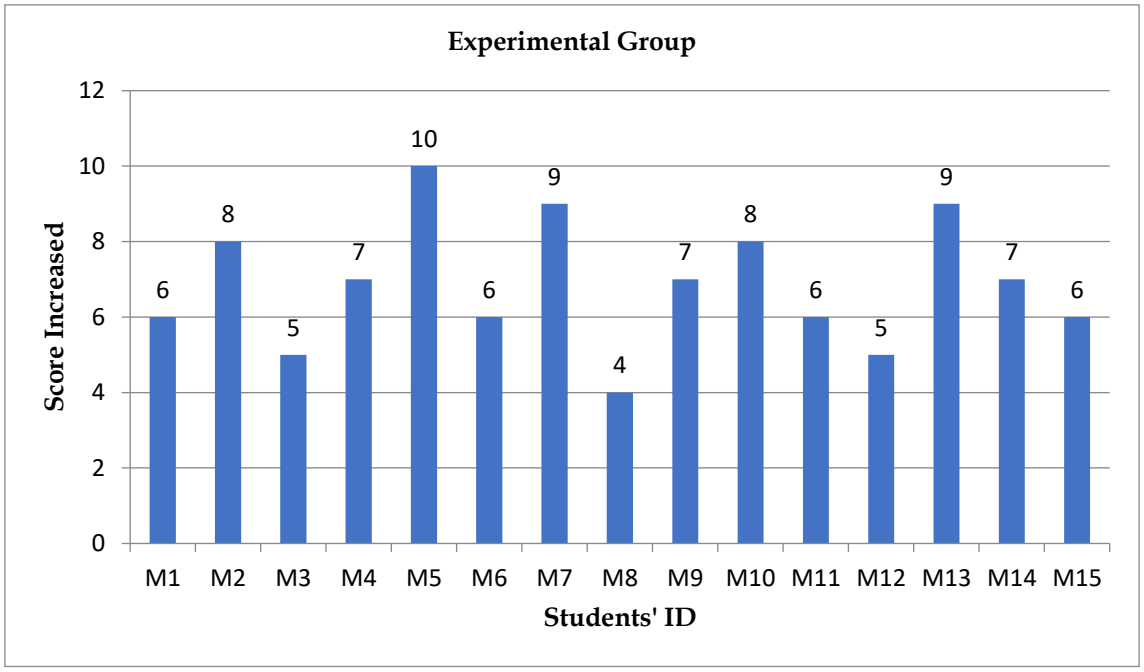

Diagram 2. Distribution of Student Score Improvement in Experimental Group

Diagram 2 illustrates the distribution of individual students in the experimental group based on the degree of improvement in their scores from pre-test to post-test. Most students experienced consistent and significant score improvements, with a range of scores showing moderate to great improvements. This indicates that the use of Chat GPT is not only effective in general but also has a fairly evenly distributed positive effect on almost all members of the experimental group.

This distribution provides a deeper picture of the equitable distribution of learning outcomes achieved, as well as the effectiveness of ChatGPT in reaching various types of students, including those with different initial levels of language proficiency. With a steady variation of improvement, it can be concluded that this technology has the potential to be implemented more widely in English language teaching in higher education.

Discussion

The results of the analysis showed that there was a significant difference in students' English proficiency scores after participating in learning with the help of ChatGPT. The increase in the average score in the experimental group indicates that the use of Chat GPT-based AI technology is able to make a positive contribution to the English learning process, especially in the aspects of grammar, speaking fluency, vocabulary, and the ability to compose ideas.

These findings are in line with the results of a study by Carrera Nuñez et al. (2025), which showed a significant improvement in the grammar and fluency aspects of students using *ChatGPT Voice*, as well as a reduction in language anxiety through a non-judgmental approach (Carrera Nuñez et al., 2025).

In addition, these findings are reinforced by research by Sayed et al. (2024), which revealed that college students who use ChatGPT in speaking exercises show significant improvements in fluency, grammar accuracy, and organization of ideas in the context of English oral tests (Sayed et al., 2024).

The consistency of results is also seen in the local context. Prasetya & Syarif (2023) show that the use of ChatGPT helps Indonesian students improve the accuracy of self-assessment and encourages independent learning, which is especially important for students in 3T areas, such as Morotai, who have limited conventional learning resources (Prasetya & Syarif, 2023).

From a theoretical perspective, these results support *the interaction hypothesis* and *willingness to communicate theory* (Koç & Savaş, 2024), which states that AI chatbots can meaningfully encourage language interaction and lower affective barriers in foreign language learning (Koç & Savaş, 2024).

This research makes a scientific contribution as one of the local experimental studies that tested the use of Chat GPT in the 3T region. These findings not only confirm the effectiveness of AI technology in improving English language skills, but also reinforce the importance of digital learning in remote areas with limited access to conventional learning. This opens up opportunities for further integration of AI-based learning technologies in the primary teacher education curriculum.

Furthermore, the success of Chat GPT-based learning in the context of PGSD students can be explained through the theory of cognitivism, which emphasizes the active role of individuals in building knowledge through interaction and feedback. Chat GPT functions as a responsive learning facilitator, allowing students to receive direct corrections and develop language skills independently, as emphasized by Vygotsky's constructivist theory regarding *the zone of proximal development* (ZPD) (Yu et al., 2013). In this context, Chat GPT can act as a digital "scaffolding" that supports students to move from the actual zone to the potential zone of language mastery (Vygotsky, 1995).

This research also makes an innovative contribution to the discourse of technology education in the 3T region. By showing that PGSD Morotai students are able to significantly improve their English skills through Chat GPT interventions, this study confirms that geographical and infrastructure limitations are not always the main obstacles in equitable education quality. These findings support the digital transformation policy of higher education and show the great potential of using AI in addressing the gap in access to learning.

An important implication of this study is the need to integrate AI technologies such as Chat GPT into the English education curriculum in the PGSD program. The personalized, flexible, and interactive learning experience that Chat GPT offers not only improves language skills, but also builds students' confidence and learning independence. Therefore, higher education institutions, particularly in the 3T region, need to consider the use of AI as part of technology-based learning quality improvement strategies.

Conclusion

Based on the results of this study, it can be concluded that the use of Chat GPT has a significant influence on improving the English skills of PGSD students of Pasifik Morotai University. This is evident from the difference in post-test scores between the experimental group and the control group, where the group using Chat GPT showed a significantly higher average score. With a *t-count* value of 3.51 and *a p-value* of 0.00155 ($p < 0.05$), it is evident that AI-based learning interventions have a real positive impact on mastering aspects of grammar, vocabulary, fluency in speaking, and the organization of students' ideas.

Theoretically, the results of this study reinforce the view of cognitivism and social constructivism, especially Vygotsky's theory of *zone of proximal development* (ZPD), that learning supported by interactive technologies such as Chat GPT can act as a digital scaffolding that helps students achieve a higher level of competence. Chat GPT also provides real-time, individualized, and non-judgmental feedback, which is very much in line with the principles of student-centered and interaction-based learning.

Practically, this research has important implications for the world of higher education, especially in 3T areas such as Pulau Morotai. Chat GPT can be a strategic alternative to improve the quality of English language learning, given the limited access to resources and a foreign-language environment. Lecturers and institutions can integrate AI technology in teaching and learning activities in a structured manner, while still providing assistance so that technology dependence or abuse does not occur.

For further research, it is recommended that a more in-depth exploration be carried out on the influence of Chat GPT on aspects of other language skills such as listening and reading comprehension. The research can also be expanded using a full experimental design with a larger sample and a longer duration of intervention. In addition, it would be very useful to analyse students' perceptions, motivations, and learning strategies in utilizing Chat GPT independently and collaboratively.

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