

The Effect of ChatGPT as an AI-Assisted Reading Tool on the Critical Reading Skills of English Education Students at FBMB, UNDIKMA

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Abstract

This study investigates the effect of ChatGPT, an AI-assisted reading tool, on the critical reading skills of English Education students at the Universitas Pendidikan Mandalika (UNDIKMA). The research was motivated by the need to enhance students' critical literacy, which remains a persistent challenge in English as a Foreign Language (EFL) context. Employing a quasi-experimental design, the study involved two groups of third-semester students enrolled in a Critical Reading course: an experimental group that used ChatGPT to support reading activities, and a control group that received traditional instruction without AI assistance. Over a six-week intervention, the experimental group interacted with ChatGPT to clarify vocabulary, summarize texts, analyze arguments, and generate comprehension questions, while the control group followed conventional reading procedures. Data were collected through pretests, posttests, questionnaires, and interviews. Quantitative analysis using paired-sample and independent-sample t-tests revealed that the experimental group achieved a significantly higher mean gain ($M = 18.06, p < .001$) compared to the control group ($M = 8.20, p < .001$), with a large effect size (Cohen's $d = 1.37$). Qualitative findings indicated that students perceived ChatGPT as engaging, helpful for understanding complex texts, and effective in developing critical awareness. However, some expressed concerns about potential overreliance on AI-generated responses. The study concludes that ChatGPT can serve as an effective pedagogical tool to enhance EFL students' critical reading skills when integrated thoughtfully and ethically. It recommends that educators provide structured guidance in using AI tools to foster analytical thinking, autonomy, and responsible digital literacy in higher education reading courses.

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1. INTRODUCTION

In recent years, the rapid advancement of technology has transformed almost every aspect of education, including how students read, analyze, and engage with academic texts. In higher education, especially in English as a Foreign Language (EFL) context, reading is not merely about decoding words or understanding literal meaning; it requires the ability to evaluate, interpret, and critically respond to the ideas presented by authors. Critical reading, therefore, plays a crucial role in developing students' analytical and reflective thinking skills, enabling them to question information, assess credibility, and connect textual ideas with broader academic and social issues (Grabe & Stoller, 2011; Wallace, 2003). As future English teachers, students in English Education programs are expected to

master this skill, both for their academic success and for their professional competence in teaching critical literacy.

Despite its importance, critical reading remains one of the most challenging skills for EFL learners to master. Many students in English Education programs, including those at Universitas Pendidikan Mandalika (UNDIKMA), tend to approach reading as a process of understanding surface-level information rather than engaging in deeper analysis and evaluation. They often rely on translation, keyword guessing, or memorization to comprehend texts, which limits their ability to infer meaning, identify bias, or assess argument quality. As a result, their reading performance may appear satisfactory in terms of comprehension accuracy, yet their critical engagement with texts remains underdeveloped. This problem is common in EFL contexts where students have limited exposure to authentic reading materials and critical discussion tasks that promote higher-order thinking.

Several factors contribute to the underdevelopment of students' critical reading skills. Pedagogically, reading instruction in many EFL classrooms still emphasizes comprehension questions that test recall rather than analysis, evaluation, or synthesis. Instructors may focus on vocabulary and grammar explanations rather than encouraging students to question the author's purpose or examine evidence critically. Furthermore, students' affective factors, such as low motivation, reading anxiety, or lack of confidence in using English also hinder their ability to engage deeply with texts. The absence of immediate feedback or support during independent reading makes it difficult for them to clarify confusion or validate their interpretations, leading to passive reading habits. These issues highlight the need for innovative instructional strategies that can provide personalized assistance and foster active engagement during the reading process. With the rise of Artificial Intelligence (AI), particularly language-based applications such as ChatGPT, new possibilities have emerged for supporting students in developing their reading comprehension and critical thinking skills. ChatGPT, powered by OpenAI's large language model, is capable of interacting with learners in natural language, generating summaries, clarifying difficult concepts, paraphrasing sentences, and producing higher-order questions related to the text (Lo, 2024; Rejeb et al., 2024). When used as an AI-assisted reading tool, ChatGPT can serve as a digital reading partner that provides instant scaffolding and encourages students to analyze texts more deeply. By engaging students in interactive questioning and reflection, ChatGPT has the potential to transform the passive reading process into an active dialogue, allowing learners to explore multiple perspectives and construct more critical interpretations of texts.

Several recent studies have investigated the role of ChatGPT and similar AI tools in language education, reporting mixed but insightful findings. Some researchers found that using AI tools improved students' comprehension, writing quality, and motivation, as the technology provided immediate feedback and made learning more engaging (Kukulska-Hulme, 2023; Wang, 2025). Others, however, warned that students might become overly dependent on AI-generated content, leading to superficial learning and reduced cognitive effort (Daweli, 2024; El Hassan & Alsalwah, 2025). Most of these studies were conducted in general EFL or writing contexts, while very few have focused specifically on *critical reading* skills. Moreover, limited research has explored how ChatGPT affects EFL learners in Indonesian higher education, particularly in the local context of UNDIKMA, where students' digital literacy and learning environments differ from those in Western settings. This research gap provides a compelling rationale for investigating ChatGPT's influence on students' critical reading development in this specific educational context.

To address the persistent challenges in fostering critical reading among EFL learners, this study proposes the integration of ChatGPT as a pedagogical tool to support students'

analytical engagement with texts. The use of ChatGPT is expected to provide real-time assistance, enhance students' understanding of argument structures, and stimulate critical questioning during reading activities. By comparing the performance of students who use ChatGPT with those who do not, the study aims to determine whether AI-assisted reading can significantly improve critical reading skills. In addition, students' perceptions will be explored to understand how they view the role of AI in their reading process—whether as a helpful companion, a motivational aid, or a potential source of overreliance. Through this dual focus on outcomes and perceptions, the research will offer both quantitative and qualitative insights into the pedagogical implications of AI integration in EFL reading instruction.

In conclusion, while ChatGPT presents promising opportunities for language learning, its actual impact on students' critical reading skills remains underexplored, particularly in Indonesian higher education settings. As the English Education Program at UNDIKMA seeks to prepare reflective and critical future teachers, understanding how AI tools influence their reading behavior and thinking patterns is of great significance. This research, therefore, aims to empirically investigate the effect of ChatGPT as an AI-assisted reading tool on the critical reading skills of English Education students at UNDIKMA. The findings are expected to contribute to the growing body of knowledge on AI in education, provide evidence-based recommendations for EFL pedagogy, and support the development of innovative, technology-enhanced learning practices that cultivate independent and critical thinkers in the digital age.

2. MRESEARCH METHOD

This study employed a quasi-experimental design using a *pretest–posttest control group* format. The design was chosen because it allows the researcher to examine the causal relationship between the use of ChatGPT as an AI-assisted reading tool (independent variable) and the development of students' critical reading skills (dependent variable). Two groups of students were involved: an experimental group that received reading instruction integrated with ChatGPT and a control group that received traditional reading instruction without AI assistance. Both groups were given a pretest to measure their initial critical reading ability and a posttest to evaluate improvement after the treatment.

The study was conducted at the English Education Study Program, Faculty of Culture, Management, and Business (FBMB), Universitas Pendidikan Mandalika (UNDIKMA) during the odd semester of the 2025/2026 academic year. The participants consisted of third-semester students enrolled in the *Critical Reading* course. The researcher used purposive sampling to select two intact classes that shared similar proficiency levels and course syllabi. The total number of participants was approximately 60 students, divided equally between the experimental and control groups (30 each). All participants had completed basic and intermediate reading courses, making them suitable for the focus on *critical reading skills*.

The treatment was conducted over a period of six weeks during regular *Critical Reading* sessions. The experimental group received instruction supported by ChatGPT as an AI-assisted reading tool. During each session, students interacted with ChatGPT to clarify difficult vocabulary, request summaries, generate comprehension questions, and discuss the author's arguments. The lecturer guided students to use ChatGPT critically by emphasizing verification, comparison, and reflection rather than passive acceptance of AI-generated responses. In contrast, the control group studied the same reading topics and materials but followed traditional instructional methods through class discussions, teacher explanations, and independent reading activities without the use of AI. At the end of the treatment, both

groups completed a posttest using parallel test items to measure any changes in their critical reading performance.

The data collection process consisted of several stages. First, a pretest was administered to both groups to assess their baseline critical reading ability. Second, the treatment phase was implemented, in which the experimental group used ChatGPT while the control group relied on conventional methods. Third, a posttest was given to both groups after six weeks to measure progress. Finally, after the posttest, the researcher distributed questionnaires and conducted short interviews with selected participants from the experimental group to explore their perceptions of ChatGPT in supporting their reading process. All procedures were carried out within the same semester to maintain internal consistency and minimize external influences on students' development.

The collected data were analyzed using both quantitative and qualitative approaches. Quantitative data from the pretest and posttest were analyzed using *paired-sample t-tests* to determine improvement within each group and *independent-sample t-tests* to compare differences between the two groups. When statistical assumptions were not met, non-parametric tests such as the Wilcoxon or Mann-Whitney U test were employed. The level of significance was set at $p < 0.05$. Meanwhile, qualitative data obtained from questionnaires and interviews were analyzed thematically to identify recurring patterns in students' perceptions, including perceived usefulness, engagement, motivation, and challenges. These qualitative findings were used to triangulate the quantitative results and to provide a deeper understanding of how ChatGPT influenced students' critical reading processes.

Throughout the research, ethical principles were carefully observed to protect participants' rights and ensure data integrity. All participants were informed of the study's objectives and procedures and provided their voluntary consent to take part. They were assured that their participation would not affect their course grades and that all information collected would remain confidential and be used solely for academic research purposes. During the use of ChatGPT, students were reminded to follow the university's digital ethics policy, which included avoiding plagiarism and using AI-generated content responsibly as a learning aid rather than as a substitute for their own academic work.

This study followed standard research ethics to ensure participants' rights and data integrity. All participants were informed about the purpose of the study and voluntarily agreed to participate. They were assured that their academic grades would not be affected by their participation and that all data would remain confidential and used only for research purposes. During the use of ChatGPT, students were instructed to follow institutional digital ethics guidelines avoiding plagiarism and ensuring that AI-generated texts were used solely for learning support, not for producing graded assignments.

This research method was designed to rigorously test the effect of ChatGPT on the development of EFL students' critical reading skills while maintaining pedagogical relevance and ethical soundness. Through a combination of experimental and perceptual data, the study aims to determine whether AI-assisted reading can effectively enhance students' analytical engagement with texts and provide new directions for integrating artificial intelligence into higher education reading instruction.

3. RESULT AND DISCUSSION

This study aimed to examine the effect of ChatGPT as an AI-assisted reading tool on the critical reading skills of English Education students at UNDIKMA. Quantitative data were obtained from pretest and posttest scores of both the experimental and control groups, while qualitative data were collected from students' perception questionnaires and interviews. The results are presented in two main parts: (1) the statistical analysis of

students' critical reading performance and (2) qualitative insights into students' experiences using ChatGPT during the learning process.

1. Quantitative Findings

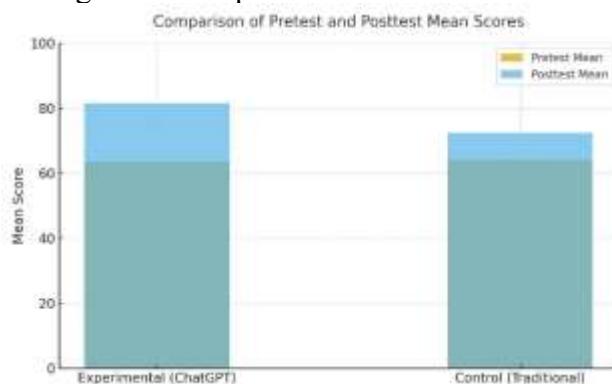
a. Descriptive Statistics

Table 1 presents the descriptive statistics of students' pretest and posttest scores in both groups.

	N	Pretest	Posttest	Mean	SD
		Mean	Mean	Gain	(Posttest)
Experimental (ChatGPT)	30	63.47	81.53	18.06	6.42
Control (Traditional)	30	64.10	72.30	8.20	7.05

As shown in Table 1, both groups improved from pretest to posttest; however, the experimental group showed a much higher mean gain (18.06) compared to the control group (8.20). This indicates that the integration of ChatGPT had a notable positive impact on students' critical reading performance.

Figure 1. Comparison of Pretest and Posttest Mean Scores



The graph illustrates the comparison between pretest and posttest mean scores of the experimental and control groups. Both groups showed improvement after the treatment period; however, the experimental group using ChatGPT demonstrated a notably greater increase in critical reading performance, with the mean score rising from 63.47 to 81.53. In contrast, the control group that received traditional instruction improved modestly from 64.10 to 72.30. This visual difference indicates that the integration of ChatGPT as an AI-assisted reading tool had a substantial positive effect on students' critical reading development compared to conventional methods.

b. Paired-Sample t-Test Results

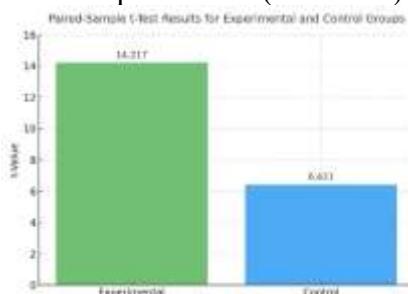
A paired-sample t-test was conducted to determine whether the improvement within each group was statistically significant.

Table 2. Results of Paired-Sample t-Test for Pretest and Posttest Scores in Experimental and Control Groups

Group	t (df=29)	Sig. (2-tailed)	Mean Difference
Experimental	14.217	.000	18.06
Control	6.421	.000	8.20

The results indicate that both groups experienced significant improvement ($p < .05$). However, the experimental group's t-value (14.217) was much higher than that of the control group (6.421), suggesting that the use of ChatGPT produced a stronger effect on students' critical reading gains.

Figure 2. Paired-Sample t-Test Results Showing the Improvement in Critical Reading Scores of Experimental (ChatGPT) and Control (Traditional) Groups.



The graphic illustrates the results of the paired-sample *t*-test conducted to determine the significance of improvement in critical reading scores within each group. The experimental group, which used ChatGPT as an AI-assisted reading tool, achieved a *t*-value of 14.217, while the control group, taught through traditional methods, recorded a *t*-value of 6.421. Both results were statistically significant at $p < .05$, indicating that both groups improved after instruction. However, the considerably higher *t*-value in the experimental group demonstrates a greater and more consistent improvement in students' critical reading performance when supported by ChatGPT compared to conventional teaching approaches.

c. Independent-Sample t-Test Results

An independent-sample *t*-test was performed to compare the posttest scores between the two groups.

Table 3. Independent-Sample t-Test Results Showing the Difference in Posttest Critical Reading Scores Between Experimental (ChatGPT) and Control (Traditional) Groups

Comparison	t (df=58)	Sig. (2-tailed)	Mean Difference	Cohen's d
Experimental vs. Control	5.402	.000	9.23	1.37

The analysis revealed a significant difference in posttest scores between the experimental and control groups ($t(58) = 5.402, p < .001$). The calculated effect size (Cohen's $d = 1.37$) indicates a large effect, meaning that the use of ChatGPT had a substantial impact on students' improvement in critical reading skills compared to traditional instruction.

The statistical results clearly show that integrating ChatGPT into reading instruction significantly enhanced students' ability to analyze arguments, identify assumptions, and evaluate textual evidence. The higher mean gain, larger *t*-value, and strong effect size collectively suggest that ChatGPT was an effective pedagogical tool for improving critical reading performance among English Education students at UNDIKMA.

2. Qualitative Findings

a. Students' Perception Questionnaire Results

The perception questionnaire consisted of 15 Likert-scale items covering three dimensions: *usefulness*, *engagement*, and *learning autonomy*. The mean scores for each dimension are summarized in Table 2.

Dimension	Mean Score (out of 5)	Interpretation
Usefulness	4.52	Very High

Engagement	4.33	High
Learning Autonomy	4.20	High

Overall, students expressed positive attitudes toward using ChatGPT. They perceived it as a helpful tool for understanding complex texts (usefulness = 4.52), maintaining focus and curiosity during reading (engagement = 4.33), and encouraging independent learning (autonomy = 4.20).

b. Interview Findings

Interview data provided deeper insights into how students experienced ChatGPT during the learning process. Thematic analysis identified four major themes:

1. Enhanced Comprehension and Clarity; Students reported that ChatGPT helped them understand difficult vocabulary and concepts more quickly. One student stated, *"ChatGPT explains difficult parts in simple English, so I can follow the argument better."*
2. Active Critical Engagement; Many participants noted that ChatGPT's responses encouraged them to ask more critical questions about the author's intentions and evidence. For example, a student commented, *"When I asked ChatGPT about the author's bias, it made me think more deeply about the argument."*
3. Increased Motivation and Confidence; Students felt more confident participating in discussions after exploring ideas with ChatGPT. They viewed AI as a "non-judgmental assistant" that allowed them to learn without fear of making mistakes.
4. Concerns about Overreliance; A few students cautioned that using ChatGPT too frequently could make them depend on AI rather than developing their own reasoning. This concern highlights the importance of guided use and instructor supervision in AI-assisted learning.

c. Integrated Interpretation

The integration of quantitative and qualitative findings suggests that ChatGPT significantly improved students' critical reading skills and fostered more active, reflective engagement with texts. The statistical data demonstrated measurable gains in performance, while the qualitative responses revealed enhanced comprehension, motivation, and confidence. However, some students also recognized the need for critical awareness to avoid excessive dependence on AI-generated answers. Together, these findings indicate that ChatGPT, when used pedagogically and ethically, can serve as a powerful support tool in fostering higher-order thinking and critical literacy among EFL students.

The findings revealed that (1) ChatGPT significantly improved students' critical reading performance, (2) students perceived ChatGPT as a useful and engaging tool for reading support, and (3) appropriate instructional guidance is essential to ensure that AI tools promote independent, rather than dependent, learning behaviors. These results confirm that AI-assisted reading, particularly through ChatGPT, can be effectively integrated into EFL critical reading instruction to enhance comprehension, analysis, and learner autonomy.

Discussion

The findings of this study demonstrate that the integration of ChatGPT as an AI-assisted reading tool had a significant positive impact on the critical reading skills of English Education students at UNDIKMA. Quantitative analysis showed a substantial difference between the experimental and control groups, with the former exhibiting a higher mean gain and a large effect size (Cohen's $d = 1.37$). These results suggest that ChatGPT provided effective scaffolding during the reading process, enabling students to engage in more

analytical, reflective, and evaluative forms of reading. The outcomes support the hypothesis that technology-enhanced instruction can foster higher-order thinking skills when used strategically in EFL classrooms.

The improvement in the experimental group can be attributed to ChatGPT's ability to provide interactive and adaptive feedback during reading activities. By engaging with ChatGPT, students were able to clarify meanings, generate questions, and explore multiple interpretations of texts, which aligns with Vygotsky's (1978) theory of the Zone of Proximal Development (ZPD). The AI functioned as a form of scaffolding that guided students from basic comprehension to critical interpretation, offering personalized support that traditional classroom instruction could not always provide. This finding resonates with previous studies (Lo, 2024; Rejeb et al., 2024), which found that AI-based tools promote active engagement and foster deeper cognitive processing in reading comprehension tasks.

In contrast, students in the control group, who received traditional instruction, showed improvement but to a lesser degree. Their progress was likely limited by the conventional emphasis on vocabulary and factual comprehension rather than inferential and evaluative skills. This pattern reflects long-standing challenges in EFL reading pedagogy, where instruction often focuses on literal understanding rather than critical engagement (Wallace, 2003; Grabe & Stoller, 2011). The significantly greater gains in the experimental group thus provide empirical evidence that AI-assisted approaches can effectively bridge this pedagogical gap by encouraging students to engage more deeply with texts and reflect on meaning beyond surface comprehension.

The qualitative findings further illuminate the nature of these improvements. Students reported that ChatGPT made reading tasks more interactive, engaging, and comprehensible, allowing them to explore arguments and identify authorial bias with greater confidence. They also perceived ChatGPT as a "non-judgmental partner" that encouraged them to take intellectual risks and express their interpretations more freely. This aligns with studies by Kukulska-Hulme (2023) and Wang (2025), who noted that AI-based feedback enhances learners' confidence and motivation by providing immediate, supportive responses. Moreover, the increase in students' sense of autonomy, as reflected in the questionnaire results, indicates that AI integration can promote self-regulated learning, a key component of critical literacy.

However, the findings also highlight potential limitations and risks associated with AI-assisted learning. Some students expressed concerns about becoming overly dependent on ChatGPT, relying on its responses instead of developing their own reasoning. This caution echoes the arguments of Daweli (2024) and El Hassan & Alsalwah (2025), who warned that uncritical use of AI tools could lead to passive learning or reduced critical engagement. Therefore, while ChatGPT proved effective as a reading aid, it should be integrated with guided instruction that emphasizes evaluation, comparison, and verification to ensure that students maintain ownership of their learning process.

The results of this study have significant pedagogical implications for EFL instruction at UNDIKMA and similar institutions. First, lecturers can incorporate ChatGPT into reading courses as a complementary tool to stimulate discussion, provide individualized feedback, and enhance critical engagement. Second, teachers must explicitly train students to use AI responsibly—encouraging them to question, analyze, and verify AI-generated responses rather than accept them passively. Third, curriculum designers can consider integrating AI literacy components into reading syllabi to prepare students for the ethical and cognitive challenges of AI-assisted learning environments.

Finally, the findings contribute to the broader discourse on AI in language education, showing that when used thoughtfully, tools like ChatGPT can enrich the learning process rather than replace human instruction. The study confirms that the pedagogical value of AI

lies not in automation, but in augmenting human cognition, providing learners with opportunities for exploration, reflection, and dialogue that lead to genuine critical understanding. Future research could expand on this study by examining the long-term effects of AI-assisted reading, exploring other AI applications for writing or speaking, or investigating how teacher mediation influences the effectiveness of AI tools in different EFL contexts.

5. CONCLUSION

This study investigated the effect of ChatGPT as an AI-assisted reading tool on the critical reading skills of English Education students at UNDIKMA. The findings revealed a significant improvement in students' performance after being exposed to AI-assisted reading activities. The experimental group that used ChatGPT showed a much higher gain in posttest scores compared to the control group, supported by a large effect size. These results confirm that ChatGPT can effectively enhance students' ability to analyze, evaluate, and interpret texts critically when used as a pedagogical support tool in EFL reading instruction.

The significant difference between the experimental and control groups suggests that ChatGPT provided meaningful scaffolding that encouraged active interaction with texts. Through features such as vocabulary clarification, text summarization, and argument evaluation, ChatGPT created a dialogic reading environment where learners could explore multiple perspectives and develop critical awareness. This finding aligns with the principles of socio-constructivist learning, where interaction and feedback play a vital role in cognitive development. It also supports the growing body of literature asserting that AI tools, when integrated thoughtfully, can foster deeper cognitive engagement and learner autonomy.

However, the study also acknowledges that AI tools should be implemented carefully and ethically. While ChatGPT proved effective in promoting critical reading, uncritical or excessive reliance on AI could undermine students' independent thinking. Thus, the role of teachers remains essential — to guide students in verifying AI-generated information, to cultivate reflective judgment, and to encourage self-directed learning. AI should therefore be viewed not as a replacement for human instruction, but as a complementary tool that enhances the teaching and learning process.

From a pedagogical standpoint, the findings underscore the potential of AI integration in higher education, particularly in EFL contexts where critical literacy remains a challenge. Incorporating ChatGPT into reading instruction can make learning more interactive, personalized, and intellectually stimulating. For English Education programs like that of UNDIKMA, this approach can help prepare future teachers to be both critical readers and critical users of digital technology, aligning with 21st-century literacy demands.

In conclusion, ChatGPT offers valuable opportunities to transform the way EFL learners engage with texts. Its intelligent feedback, interactivity, and adaptive responses can foster critical reading competence when coupled with proper instructional guidance. Future research is encouraged to examine long-term effects, explore different AI platforms, and investigate how students' digital literacy and teacher mediation influence the success of AI-assisted learning. By continuing to explore the synergy between human teaching and artificial intelligence, educators can develop more effective, ethical, and empowering reading pedagogies for the digital age.

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