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AI-assisted Reading Instruction and EFL Students' Reading Comprehension: A Quasi-Experimental Study

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ABSTRACT

As one of the fundamental English skills, reading comprehension often challenging for EFL learners, partly due to ineffective teaching methods. While previous studies have explored the use of ChatGPT in language learning, this study integrates ChatGPT within reciprocal teaching instruction specifically for analytical exposition texts in Indonesian secondary education. This study employed a quasi-experimental design with pre-test and post-test, involving 37 eleventh-grade students divided into experimental and control groups. The experimental group received instruction integrating ChatGPT as an Al-assisted learning tool, while the control group follows conventional methods. Data are collected through reading comprehension tests focusing on analytical exposition texts, and were analyzed using independent sample t-tests, along with effect size calculations. The results indicate a significant improvement in the experimental group post-test scores (mean= 78.11) compared to the control group (mean=67.56). One-way ANCOVA revealed a statistically significant effect of $F(1,34)= 8.398$, $p= 0.007$, partial $\eta^2 = 0.198$, indicating a large practical effect with Cohen's $d= 0.85$. The reading comprehension indicators, such as identifying relevant information and main ideas, show the greatest improvement among all indicators. In conclusion, AI-assisted learning can be considered an innovative and effective approach to EFL reading instruction, as it enhances students' reading comprehension particularly in identifying relevant information.

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1. Introduction

Reading comprehension is a critical skill for English as a Foreign Language (EFL) students, enabling them to interpret written texts, acquire knowledge, and achieve academic success. It involves constructing meaning by integrating textual information with prior knowledge through complex cognitive processes (Grabe & Stoller, 2019; Klingner, et al., 2007). In EFL contexts, particularly in Aceh Province, Indonesia, students face significant challenges in reading comprehension, including limited vocabulary, unfamiliar text structures, and inadequate strategies (Safura & Helmanda, 2020).

Despite various pedagogical approaches, reading difficulties persist. Thus, in order to solve the challenges educators are exploring innovative ways and methods to improve students' reading comprehension skills, one of the ways is by the utilization of technology, including using Artificial Intelligence (AI) (Alexandrowicz, 2024; (Nugrahawati, 2024). AI tools, like ChatGPT, offer personalized support, immediate feedback, and interactive learning, aligning with Computer-Assisted Language Learning (CALL) principles (Beatty, 2013).

Previous studies demonstrate AI's efficacy in improving reading comprehension by reducing task difficulty and boosting engagement (Behforouz & Al Ghaithi, 2024; Chea & Xiao, 2024).

Although AI has been increasingly applied in language learning, current studies still show notable limitations, first, most AI-assisted studies in language learning are focus on writing, vocabulary, and grammar skills, while research on reading comprehension remains relatively limited. Second, few studies have investigated the integration of ChatGPT with established pedagogical strategies, such as reciprocal teaching. And the third, Lack of empirical studies examining the use of AI-assisted instruction on analytical exposition texts in the Indonesian senior high school context. Therefore, this study aims to address these gaps by examining the effectiveness of AI-assisted learning instruction using ChatGPT integrated with reciprocal teaching strategy in enhancing EFL students' reading comprehension of analytical exposition texts.

This study contributes to the existing literature in three significant ways. First, it integrates ChatGPT with the reciprocal teaching strategy, offering a structured and pedagogically grounded approach rather than using AI as an independent tool. Second, it specifically focuses on analytical exposition texts, a genre that is central to the Indonesian senior high school curriculum but remains rarely investigated in AI-assisted reading research. Third, it provides empirical evidence from the Indonesian secondary education context, where studies on AI integration in English language teaching are still scarce.

Consequently, this study extends AI-assisted language learning research by providing one of the first empirical investigations integrating ChatGPT with reciprocal teaching for analytical exposition reading instruction in Indonesian secondary education. The purpose is to evaluate its impact of AI-assisted learning instruction (ChatGPT integrated with reciprocal teaching strategy) compared to a conventional method. The scope of the study focuses on eleventh-grade students. using ChatGPT integrated with reciprocal teaching strategy.

2. Research Question

This study addresses two primary research questions. First, does AI-assisted learning instruction using ChatGPT integrated with reciprocal teaching significantly improve EFL students' reading comprehension? Second, which specific reading comprehension indicators benefit the most from this AI-assisted approach?

3. Literature Review

Reading comprehension is one of the most essential receptive skills in language learning, serving as the primary means of accessing and interpreting written information. According to Grabe and Stoller (2019), reading comprehension involves a complex cognitive process of receiving, interpreting, and constructing meaning from written texts by integrating new information with prior knowledge. Gilakjani and Sabouri (2016) emphasize that comprehension goes beyond decoding words, requiring active engagement with the text through skills such as inference-making, summarization, vocabulary knowledge, and identifying the author's purpose and tone. In EFL contexts, where exposure to authentic English texts is limited, learners often face challenges including low vocabulary, motivation issues, and insufficient prior knowledge (Nanda & Azmy, 2020; Tortola, 2024; Maarof & Yunus, 2016) Developing reading comprehension requires not only linguistic competence but also strategic processing, metacognitive awareness, and opportunities for meaningful interaction with texts.

Viani et. al (2025) suggest that the development of effective reading skills is further supported when the learner proficient in literal, inferential, and critical reading comprehension.

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1. **Literal Comprehension**
   Literal comprehension focuses on the author's actual message. The reader must grasp the ideas and information that are clearly presented in the text. The reader should be able to locate information, use context clues to derive meaning, follow specific instructions, understand sequences, and recognize explicitly stated relationships and organizational structures.
2. **Inferential Comprehension**
   Inferential comprehension involves understanding the underlying meaning of the author's words. The reader needs to read between the lines and draw conclusions about information that is not explicitly stated. This includes making inferences related to the main idea, supporting details, sequences, and cause-and-effect relationships.
3. **Critical Comprehension**
   Critical comprehension focuses on the reader's ability to critically assess and analyze the content of a text based on the information. Readers must be able to concluding and make judgements about the accuracy, relevance and value of the ideas presented by the author. This includes evaluating critically the strengths and weaknesses of arguments, assessing the credibility of information, analyzing the structure of the text, identifying the author's biases or perspectives, and comparing the information in the text with personal knowledge or experience.

2.1 Computer Assisted Language Learning (CALL)

Digital technology has transformed language education by making learning more interactive, personalized, and accessible. Computer-Assisted Language Learning (CALL) has played a foundational role in this transformation. Beatty (2013) notes that CALL facilitates interactive practice and immediate feedback, which enhances learner engagement and motivation. In EFL contexts, CALL has been shown to reduce cognitive load by providing scaffolding and minimizing extraneous demands, allowing learners to focus on deeper comprehension (Sweller, 1988).

The rapid advancement of Artificial Intelligence (AI) has further evolved CALL into what is now known as AI-supported CALL or AI-enhanced CALL. This integration marks a significant development in language learning technology.

2.1.1 *AI-supported CALL*

The integration of AI has further advanced CALL into what is often termed AI-supported CALL or AI-enhanced CALL. AI technologies enable adaptive learning experiences that adjust difficulty levels, provide immediate and personalized feedback, and support learners according to their proficiency and learning styles (Hwang et al., 2020). AI-supported CALL reduces cognitive load by offering scaffolding, automating repetitive tasks, and allowing teachers to focus on higher-order pedagogical activities (Sweller, 1988). In EFL contexts, such systems have shown potential in improving learner engagement, motivation, and language outcomes through real-time interaction and data-driven insights.

2.1.2 *Generative AI in Language Learning*

While CALL provides the technological foundation for language learning, the emergence of Generative AI has transformed it into a more adaptive, interactive, and personalized learning environment. Generative AI (GenAI), particularly large language models such as ChatGPT, represents a paradigm shift because these tools do not merely analyze or adapt to learner input, but can also create original content, including personalized

texts, dialogue simulations, explanations, questions, and feedback (Moorhouse & Wong, 2025; Lee et al., 2026).

Recent systematic reviews highlight that GenAI tools can function as conversational partners, writing assistants, and personalized tutors, significantly enhancing skills in reading, writing, speaking, and vocabulary acquisition (Lee et al., 2026; Mizumoto & Eguchi, 2023). Nevertheless, challenges such as over-reliance, accuracy of generated content, academic integrity, and the need for proper pedagogical integration remain critical concerns (Kohnke et al., 2023).

2.2 ChatGPT in Reading Instruction

Building upon the capabilities of Generative AI, ChatGPT has emerged as one of the most prominent tools in AI-assisted language learning, particularly in reading instruction. As a generative AI tool, ChatGPT can simulate human-like intelligence to support various educational tasks, including generating content, providing real-time feedback, and personalizing learning experiences (Russell & Norvig, 2021; Gajjar, 2023). In reading instruction, ChatGPT serves as an interactive assistant that clarifies meanings, generates questions, summarizes texts, and offers explanations (Ray, 2023).

By providing real-time scaffolding, ChatGPT aligns with Vygotsky's Zone of Proximal Development, acting as a 'More Knowledgeable Other' (Vygotsky, 1978). Studies have shown that ChatGPT can enhance reading comprehension through practice passages, vocabulary support, and adaptive feedback (Lin et al., 2025). While it increases student motivation and reduces anxiety, issues of over-reliance and ethical use require careful consideration (Al-tkhayneh et al., 2023).

2.3 Conceptual Framework

The concept of Vygotsky's Zone of Proximal Development (ZPD) positions AI as an intelligent More Knowledgeable Other (MKO) that delivers adaptive, real-time scaffolding, such as clarifying vocabulary, generating questions, and supporting summarization which help learners bridge the gap between independent and assisted performance (Vygotsky, 1978). Sweller's Cognitive Load Theory or CLT (1988) complements this by illustrating how AI reduces extraneous cognitive load from complex or unfamiliar text elements (e.g., vocabulary and structure), thereby freeing working memory capacity for germane load devoted to schema construction, inference-making, and deeper meaning integration. Thus, AI scaffolding optimizes cognitive efficiency and extends learners' potential within a guided, interactive reading process tailored to EFL challenges with reading comprehension.

2.3.1 *Zone of Proximal Development (ZPD)*

The role of AI in education aligns with the concept of the Zone of Proximal Development (ZPD) by Vygotsky (1978) that emphasizes the importance of scaffolding in guided learning. ChatGPT as a generative AI Chatbot functioning as an intelligent tutor or More Knowledgeable Other (MKO) that can adaptively respond to students' needs by analyzing their reading inputs, providing clarifications, and generating personalized exercises that resemble the scaffolding role of a human instructor. This adaptive support helps students gradually progress toward a better reading comprehension skill.

2.3.2 *Cognitive Load Theory (CLT)*

Cognitive load theory by Sweller (1988) explains how human working memory when processing new information. It emphasizes that human working memory has limited capacity for processing information. Excessive cognitive demands can hinder learning, whereas well-structured digital interventions can minimize extraneous cognitive load and

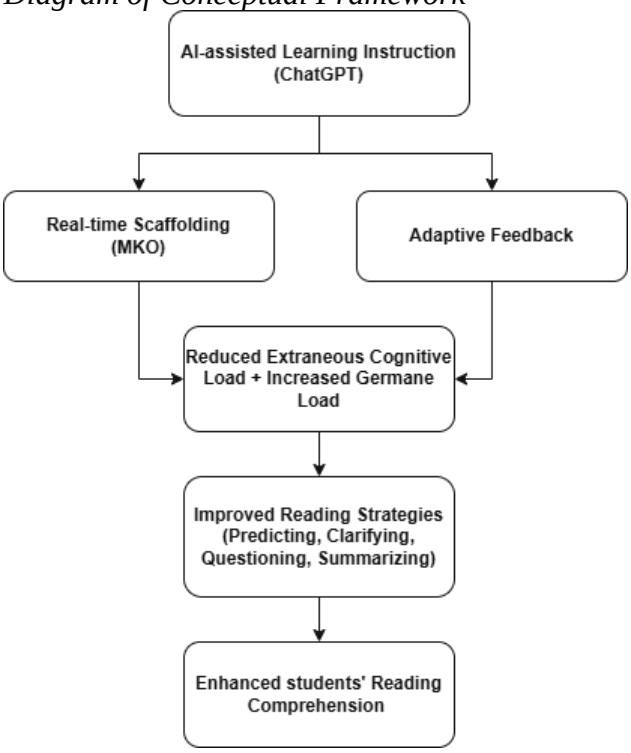
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promote deeper understanding. Cognitive load divided into three types, the first is intrinsic load, which is the inevitable cognitive load of the complexity of the material itself. The second is extraneous load that is cognitive load caused by poor learning instructional design, this type of cognitive load should be minimize. The third is germane load, which is beneficial cognitive load that dedicated to schema formation and deep learning, and this type of cognitive load is should be maximized.

AI-assisted tool can help to reduce extraneous load, when students struggle with complex or challenging words, phrase, or sentence, AI can help to provide instant feedback or clarification. Thus, it is can significantly reduce the unnecessary cognitive load and students can reallocate their limited working memory for germane load. It allows the student to focus more on higher-level metacognitive strategy, such as critically questioning the text material or accurately summarizing key concept of the text and leading to better comprehending reading text.

The diagram of conceptual framework can be seen as figure 1:

Figure 1
Diagram of Conceptual Framework



3. Research Method

This study used a quasi-experimental method with pre-test-post-test design with control and experimental group to evaluate the effectiveness of AI-assisted instruction in enhancing students' reading comprehension skill. The population comprises eleventh-grade students at SMA N 1 Langsa, samples include 19 experimental and 18 control group students selected via purposive sampling based on the researcher's criteria. Data collection involved pre-tests to measure students' proficiency before given any treatment, treatments (AI-integrated reciprocal teaching for experimental group, and a conventional teaching method for control group), and post-tests to measure students' improvement after the intervention.

Data analysis of SPSS Statistic 27 employed One-way Analysis of Covariance (ANCOVA) to examine the effectiveness of AI-assisted learning instruction on students'

reading comprehension scores while controlling for the influence of pre-test scores as a covariate, and Cohen's d to measure the effect size (Cohen, 1988).

3.1 Research Design

This research used quantitative method with quasi-experimental design. Quasi experimental chosen because this study aimed to compare the achievement between two different groups that receive the treatment of using AI-assisted learning instruction and the other group that do not. Additionally, this study used pretest-posttest non-equivalent control group design where participants are placed into experimental and control groups based on existing conditions, rather than through random selection. Therefore, it is not possible to completely avoid differences in characteristics between groups that may affect the research results (Creswell, 2014)

3.2 Participants

The participants were 37 eleventh-grade EFL students in SMA Negri 1 Langsa that divided into control and experimental group control group students selected by purposive sampling based on the researcher's criteria: 1) eleventh-grade students, 2) having demonstrated difficulties in reading analytical exposition texts based on previous English achievement, and 3) willingness to participate in the study.

3.3 Research Instruments

A reading comprehension test consisting of 25 multiple-choice questions was used for both pre-test and post-test. The questions covered the five indicators of reading comprehension across literal, inferential and critical reading comprehension level, including identifying main idea; understanding vocabulary/word meaning; finding relevant information from the text; analyzing process of text; and conclusion.

3.3.1 *Instrument Validation and Reliability*

The test was validated by an expert in English education from Universitas Samudra Langsa. The expert evaluated the instrument in terms of content relevance, construct alignment with the curriculum, linguistic clarity, difficulty level, and suitability for eleventh-grade students in Indonesian education context. Necessary revisions were made based on the expert's feedback.

To ensure reliability, the internal consistency of the test was measured using Cronbach's Alpha. The pre-test and post-test of reading comprehension tests demonstrated satisfactory internal consistency with Cronbach's $\alpha = 0.80$. This value indicates that the instrument is reliable for measuring students' reading comprehension.

Table 1

Output of Reliability test

Reliability Statistics	
Cronbach's Alpha	N of Items
.803	25

3.4 Research Procedure

This study was conducted over a five-weeks period, in the first week, pre-test was administered before treatment to measure students' baseline ability of their reading comprehension, furthermore, in the next there weeks the treatment was given for control group and experimental group used reciprocal teaching strategy on several different analytical exposition texts.

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The reciprocal teaching strategy consists of four main activities: predicting, clarifying, questioning, and summarizing. The detailed treatment for the experimental group is presented in the following table:

Table 2
Treatment Phase

Session	Reciprocal Teaching Phase	Activity	AI (ChatGPT) Assistance
1	Predicting	Students predict the content of the analytical exposition text based on title, subtitles, and pictures.	Generates guiding prediction questions and possible content outlines based on the text title and topic.
2	Clarifying	Students identify and discuss difficult words, phrases, or sentences in the text.	provides instant definitions, synonyms, examples in context, and simplified explanations of complex sentences.
3	Questioning	Students generate comprehension questions based on the text (literal, inferential, and critical).	Helps to provide model answer of the questions generated by students for discussion.
4	Summarizing	Students summarize the main ideas and important details of the text in their own words.	Gives feedback on student summaries, suggests improvements, checks coherence, and helps refine the summary.

In each session, students worked in small groups. The teacher acted as a facilitator, while ChatGPT served as a real-time scaffold and "More Knowledgeable Other" (MKO) to support students within their Zone of Proximal Development (ZPD). Students accessed ChatGPT through a shared account or individual devices under teacher supervision. Specific prompts were carefully designed by the researcher to align with each phase of reciprocal teaching.

The control group followed the same reciprocal teaching phases but relied only on teacher guidance and peer collaboration without AI support. In the last meeting a post-test administered after treatment for both groups to measure the progress using an equivalent test form.

3.5 Data Analysis

Data from the pre-test and post-test were analyzed using SPSS version 27. Given the pre-test post-test non-equivalent control group design, one-way Analysis of Covariance (ANCOVA) was employed as the primary statistical technique, with post-test scores as the dependent variable, group (experimental vs. control) as the fixed factor, and pre-test scores as the covariate. Prior to the main analysis, assumptions of ANCOVA were tested. Normality of residuals was checked using Shapiro-Wilk test and Q-Q plots, homogeneity of regression slopes was examined through the Group × Pretest interaction, and homogeneity of variances was tested using Levene's test. All assumptions were met ($p > 0.05$).

4. Findings and Discussion

4.1 Findings

4.1.1 *Descriptive Statistic*

The pre-test results showed that the experimental and control groups had comparable initial reading comprehension abilities. The result of descriptive statistic of the test can be seen as in table 1.

Table 3

Result of Students' Reading Comprehension

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-test Control Group	18	24	72	48,44	15,993
Pre-test Experimental Group	19	24	76	49,05	14,474
Post-test Control Group	18	40	92	67,56	14,317
Post-test Experimental Group	19	60	92	78,11	10,187

The result revealed that the difference between the two mean scores of pre-test was relatively small, which means that the students in both groups had comparable reading comprehension abilities at the beginning of the study. With the control group has 48.44 in average score and experimental group scoring 49.05 in average. The results of the post-test revealed that both groups experienced improvement in their reading comprehension scores. However, the experimental group demonstrated a greater improvement compared to the control group. The experimental group achieved a mean post-test score of 78.11, meanwhile the control group obtained a mean score of 67.56 that showed significant different average score in both groups.

4.1.2 *Result of ANCOVA*

One-way Analysis of Covariance (ANCOVA) employed to examine the effectiveness of AI-assisted learning instruction on students' reading comprehension scores while controlling for the influence of pre-test scores as a covariate. All ANCOVA assumptions were satisfied prior to the analysis. The results of the ANCOVA are presented in Table 4.2 below:

Table 4

Output of ANCOVA

Test of Between-Subjects Effects						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2413.772[a]	2	1206.886	10.343	.000	.378
Intercept	8685.144	1	8685.144	74.434	.000	.686
Pretest	1385.033	1	1385.033	11.870	.002	.259
Groups	979.920	1	979.920	8.398	.007	.198
Error	3967.201	34	116.682			
Total	203408.000	37				
Corrected Total	6380.973	36				

a. R Squared = ,378 (Adjusted R Squared = ,342)

The ANCOVA results revealed a statistically significant effect of the treatment on post-test reading comprehension scores after controlling for pre-test scores, $F(1, 34) = 8.398$, $p = 0.007$ (<0,05), partial $\eta^2 = 0.198$. The adjusted mean score for the experimental group was higher than that of the control group, indicating significant difference between the reading comprehension scores of students taught using AI-assisted learning instruction and those

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taught using a conventional instruction. thereby supporting the alternative hypothesis. Consequently, these findings demonstrate that the Implementation of AI-assisted learning instruction had a significant positive effect on students' reading comprehension ability confirming its effectiveness in enhancing reading comprehension.

4.1.3 *Effect Size*

The effect size, measured by Cohen's d = 0.85 (95% CI [0.17-1.52]) as can be seen in table 3, fell into the large effect category according to Cohen's guidelines (Cohen, 1988). Hedges' correction and Glass's delta also supported the robustness of this large effect. These results confirm that integrating ChatGPT with reciprocal teaching strategy produced both statistically significant and practically meaningful improvement in students' reading comprehension.

Table 5
Output of Effect Sizes

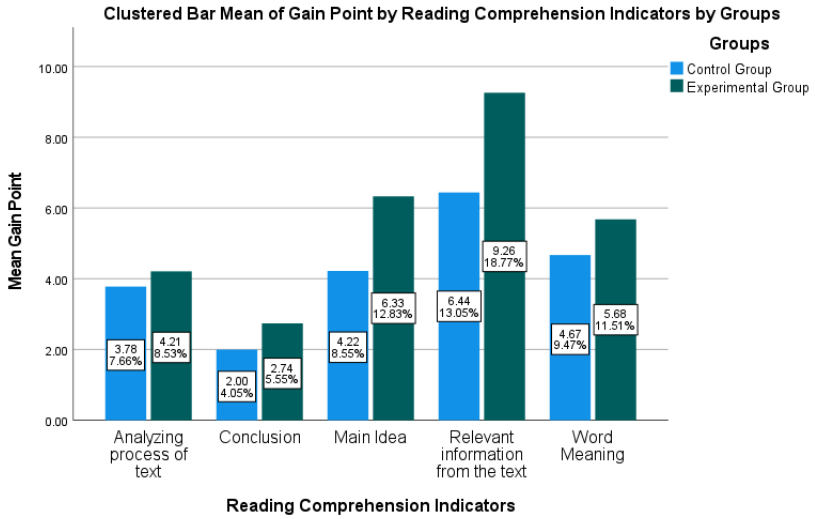
Independent Samples Effect Sizes					
				95% Confidence Interval	
		Standardizer[a]	Point Estimate	Lower	Upper
Posttest	Cohen's d	12.366	.853	.173	1.522
	Hedges' correction	12.639	.835	.169	1.489
	Glass's delta	14.317	.737	.038	1.417

*Cohen's d= 0.85 (large effect); 95% CI [0.17-1.52}

4.1.4 *Improvement based on Reading Comprehension Indicators*

To gain a deeper understanding of students' reading comprehension improvement, this study also explores how AI-assisted learning instruction supported specific reading comprehension skills by comparing the indicator improvement in both control and experimental group. The improvement was measured by comparing the gained points of each indicator from the pre-test and post-test results. The gain points difference indicates the extent to which the experimental group outperformed the control group in each reading comprehension indicator. The result of the improvement can be seen as follows:

Figure 2
Clustered Bar of the Improvement of Reading Comprehension Indicators



The result showed that of the reading comprehension indicators showed higher gained points in the experimental group compared to the control group. Among the five indicators, the largest gain points difference was found in relevant information from the text, with a difference of 2.82 points, this indicates that AI assistance is able to facilitate students in filtering important details from texts so that they have focus more on information that supports understanding.

The next indicator that experienced a significant increase was identifying the main idea, with a gain point difference of 2.11. Students became more skilled at finding the main idea from the content of the text, which had previously been one of their main difficulties. Moreover, word meaning also increased with a gain point different of 1.01, indicating that AI helped expand vocabulary mastery by providing definitions, synonyms, and examples of word usage instantly. Meanwhile, indicator conclusion has smaller gain point different in 0.74, and the last indicator, analyzing process of text, has gain point difference of 0.43, although the difference was relatively small, the result still indicates that AI-assisted instruction contributed positively to students' analytical reading skills.

4.2 Discussion

The findings of this study demonstrate that integrating ChatGPT with reciprocal teaching strategy significantly enhanced EFL students' reading comprehension skills compared to the conventional method. More importantly, the large effect size (Cohen's d = 0.85) indicates a substantial practical impact of the intervention.

The most notable improvement was observed in the indicator "finding relevant information". This can be explained through the mechanism of AI-supported scaffolding. ChatGPT provided immediate clarification, highlighted key details, and helped students filter important information from the text in real time. This process effectively reduced students' extraneous cognitive load (Sweller, 1988), allowing them to allocate more cognitive resources toward deeper meaning construction and inference-making. Similarly, the substantial gain in "identifying main idea" can be attributed to ChatGPT's ability to generate guiding questions and summarize key points, which aligns with Vygotsky's Zone of Proximal Development (1978), where the AI functioned as a More Knowledgeable Other (MKO).

These results are consistent with previous studies. Behforouz and Al Ghaithi (2024) reported that interactive AI chatbots significantly improved reading comprehension among university EFL students and give positive effects of ChatGPT on senior high school students' reading skills in Indonesia. However, while Chea and Xiao (2024) noted potential over-reliance on AI tools in higher education, the current study showed that when ChatGPT is systematically integrated with reciprocal teaching, it serves as a supportive scaffold rather than a replacement for active learning. This study extends previous research by demonstrating the effectiveness of such integration specifically for analytical exposition texts in the Indonesian senior high school context, an area that has received limited attention.

Addictionally, the findings of this study offer several important implications:

- **For teachers**
  ChatGPT can be used as a powerful scaffolding tool within established strategies such as reciprocal teaching, particularly to support students who struggle with identifying relevant information and main ideas. Teachers should be trained not only in using the technology but also in designing effective prompts and integrating AI meaningfully into classroom activities.
- **For curriculum design**
  The results suggest the need to incorporate AI-assisted reading modules, especially for genres required in the national curriculum such as analytical exposition texts.

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- **For AI integration policies**
  Educational institutions and ministries should develop clear guidelines for ethical and effective AI integration in language learning to maximize benefits while minimizing potential drawbacks such as over-reliance.

5. Conclusion

This study demonstrates that the integration of ChatGPT with reciprocal teaching strategy is effective in enhancing EFL students' reading comprehension of analytical exposition texts. The experimental group significantly outperformed the control group, with a large effect size, particularly in identifying relevant information and main ideas. The findings confirm that AI tools can serve as effective scaffolds that reduce cognitive load and support students within their Zone of Proximal Development. By providing real-time feedback and personalized assistance, ChatGPT strengthened the implementation of reciprocal teaching in the classroom.

However, this study held several limitations. First, the sample size was relatively small (N=37) and drawn from only one senior high school. Second, the intervention period was short (three weeks). These factors limit the generalizability of the findings.

Future studies should address these limitations by conducting longitudinal research to examine the long-term effects of AI-assisted instruction. Researchers are also encouraged to investigate the effectiveness of this approach across different text genres, various AI platforms (beyond ChatGPT), and at different educational levels (junior high school, university, or adult learners). Overall, this study provides empirical evidence supporting the integration of generative AI in EFL reading instruction and offers practical insights for teachers and curriculum developers in technology-enhanced language learning.

References

Alexandrowicz, V. (2024). Artificial Intelligence Integration in Teacher Education: Navigating Benefits, Challenges, and Transformative Pedagogy. *Journal of Education and Learning*, *13*, 346. https://doi.org/10.5539/jel.v13n6p346

Al-tkhayneh, K., Alghazo, E., & Tahat, D. (2023). The Advantages and Disadvantages of Using Artificial Intelligence in Education. *Journal of Educational and Social Research*, *13*, 105. https://doi.org/10.36941/jesr-2023-0094

Beatty, K. (2013). *Teaching & researching: Computer-assisted language learning* (2nd ed.). Routledge.

Behforouz, B., & Al Ghaithi, A. (2024). Investigating the Effect of an Interactive Educational Chatbot on Reading Comprehension Skills. *International Journal of Engineering Pedagogy*, *14*(4), 139–154. https://doi.org/10.3991/ijep.v14i4.48461

Chea, P., & Xiao, Y. (2024). Artificial Intelligence in Higher Education: The Power and Damage of AI-assisted Tools on Academic English Reading Skills. *Journal of General Education and Humanities*, *3*(3), 287–306. https://doi.org/10.58421/gehu.v3i3.242

Chen, L. L., Maarof, N., & Yunus, M. M. (2016). *Factors Affecting ESL Reading Compre hension of Malaysian Secondary School Pupils*. Education in the 21st Century: Res ponding to Current Issues, 542-547.

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). Routledge. https://doi.org/10.4324/9780203771587

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). Sage.

Gajjar, D. (2023). *Artificial intelligence: An explainer*. London. https://doi.org/10.58248/PB57

Grabe, W., & Stoller, F. L. (2019). Teaching and researching reading (3rd ed.). Routledge. https://doi.org/10.4324/9781315726274

Hwang, G.-J., Xie, H., Wah, B. W., & Gašević, D. (2020). Vision, challenges, roles and research issues of Artificial Intelligence in Education. *Computers and Education: Artificial Intelligence*, 1, 100001. https://doi.org/10.1016/j.caeai.2020.100001

Klingner, J. K., Vaughn, S., & Boardman, A. (2007). *Teaching Reading Comprehension to Students with Learning Difficulties* (Vol. 4). Guilford Publications. https://books.google.co.id/books?id=NfLfnEdzD60C

Kohnke, Lucas, Moorhouse, Benjamin Luke, & Zou, Di. (2023). ChatGPT for Language Teaching and Learning. *RELC Journal*, *54*(2), 537–550. https://doi.org/10.1177/00336882231162868

Lee, S., Choe, H., Zou, D., & Jeon, J. (2026). Generative AI (GenAI) in the language classroom: A systematic review. *Interactive Learning Environments*, *34*(1), 335–359. https://doi.org/10.1080/10494820.2025.2498537

Lin, H., Chen, Z., Wei, W., & Lu, H. (2025). GenAI Tools in Academic Reading: A Study on AI-Assisted Metacognitive Strategies and Emotional Reactions. In *Lecture Notes in Educational Technology*: *Vol. Part F312* (pp. 98–112). Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/978-981-96-4952-5_7

Mizumoto, A., & Eguchi, M. (2023). Exploring the potential of using an AI language model for automated essay scoring. *Research Methods in Applied Linguistics*, *2*(2), 100050. https://doi.org/10.1016/j.rmal.2023.100050

Moorhouse, B. L., & Wong, K. M. (2025). *Generative Artificial Intelligence and Language Teaching*. Cambridge University Press. https://doi.org/10.1017/9781009618823

Nanda, D., & Azmy, K. (2020). Poor Reading Comprehension Issue in EFL Classroom Among Indonesian Secondary School Students: Scrutinizing the causes, impacts and possible solutions. *Englisia: Journal of Language, Education, and Humanities*, *8*, 12. https://doi.org/10.22373/ej.v8i1.6771

Nugrahawati, A. W. (2024). Enhancing Reading Comprehension in Higher Education: Exploring the Role of Artificial Intelligence in Teaching Reading. *Conference of English Language Teaching*. https://doi.org/10.24090/celti.2024.1005

Pourhosein Gilakjani, A., & Sabouri, N. B. (2016). How Can Students Improve Their Reading Comprehension Skill? *Journal of Studies in Education*, *6*(2), 229. https://doi.org/10.5296/jse.v6i2.9201

Ray, P. P. (2023). ChatGPT: A comprehensive review on background, applications, key challenges, bias, ethics, limitations and future scope. *Internet of Things and Cyber-Physical Systems*, 3, 121–154. https://doi.org/10.1016/j.iotcps.2023.04.003

Russell, S., & Norvig, P. (2021). *Artificial Intelligence, Global Edition A Modern Approach*. Pearson Deutschland. https://elibrary.pearson.de/book/99.150005/9781292401171

Safura, S., & Helmanda, C. M. (2020). The Analysis of English Department Students' Difficulties in Mastering Reading Text at Muhammadiyah Aceh University. *International Journal for Educational and Vocational Studies*, *2*(4). https://doi.org/10.29103/ijevs.v2i4.2200

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, *12*(2), 257–285. https://doi.org/10.1016/0364-0213(88)90023-7

Tortola, R. (2024). Key Factors Influencing Poor Reading Comprehension: A Qualitative Exploratory Study. *International Studies*, *8*, 288–291.

Viani, A., & Roswati, R. (2025). An analysis of students' reading comprehension level at Nurul Falah Senior High School Pekanbaru. VISION, 21(1), Article 4237. https://doi.org/10.30829/vis.v21i1.4237

Journal of Language
Volume 8 Number 2 pp: 304-316
e-ISSN: 2685-8878 | p-ISSN: 2655-9080
DOI: https://doi.org/10.30743/jol.v8i2.13599

Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Cambridge, MA: Harvard University Press.