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The Relationship between ChatGPT reliance, critical use, and critical reading skills among Indonesian undergraduate students

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ABSTRACT

The increasingly frequent use of ChatGPT in higher education raises questions about its impact on how students critically read a range of academic texts. However, empirical evidence examining the relationship between the dependence and critical use of ChatGPT and college students' critical reading ability is limited. Three aspects were investigated in this study: students' dependence on ChatGPT, their critical use of ChatGPT, and how these relate to students' critical reading skills. This study aimed to examine university students, specifically 79 students at a public university in Indonesia. Students were given a critical reading test, which was in the form of an essay, and there was also a questionnaire to measure students' dependency and critical use of ChatGPT. The results were descriptive, showing that the students' level of ChatGPT dependency was moderate (mean = 3.10) and their level of critical use was quite good (mean = 3.87). For critical reading scores, results ranged from 31.25 to 92.19, with an average in the moderate category. The results of multiple linear regression show that neither critical use nor dependence on ChatGPT has a statistically significant relationship with students' critical reading skills ($\beta = 0.164$, $p = 0.151$; $\beta = -0.071$, $p = 0.530$). Overall, these results indicate that students' engagement with ChatGPT has not had a clear or significant effect on their critical reading performance. Further research is needed to confirm these findings. These findings indicate that reliance on AI and critical use of ChatGPT alone may not be sufficient to influence students' critical reading abilities, suggesting that other factors may also play a role. Therefore, future research should involve a more diverse population and develop more specific, contextually relevant instruments, particularly those linking ChatGPT use to critical reading skills, while also considering other mediating variables.

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INTRODUCTION

The digital era is changing the way students learn, with new technology-based devices supporting the learning and teaching process in various ways. AI-based tools have now become an integral part of everyday academic practice, from information retrieval to supporting academic writing (Bimpong et al., 2024; Patra et al., 2024) . The integration of AI technology, such as ChatGPT, has also brought about major changes in the way students learn languages (Idham et al., 2024), including the four language skills, especially reading and writing, which are fundamental skills in language (Binu, 2024; Burkhard, 2022; Çıldır, 2023; Kim, 2024).

AI's many benefits, however, also pose new challenges for improving undergraduate students' language proficiency. ChatGPT may offer insufficient or erroneous information, necessitating a critical analysis of the answers obtained (Çıldır, 2023). But, without critically examining the trusted sources, students frequently rely on ChatGPT to analyze texts, respond to academic inquiries, and even finish assignments (Bimpong et al., 2024; Patra et al., 2024; Pujiastuti et al., 2025). This may inadvertently result in a dependence on ChatGPT, namely, relying too much on it for all activities. This dependency can impair critical thinking abilities and arises when an individual depends excessively on the ChatGPT system, regardless of whether ChatGPT makes accurate or inaccurate predictions (Levy et al., 2021; Morrill & Noetel, 2023).

As explained by Adesokan et al. (2025) in their research, dependence on AI can weaken the ability to think reflectively and read critically, which are important components in the learning process in the academic world. Dependence on ChatGPT can also reduce the ability to make independent decisions, as students become overly reliant on AI recommendations without critical evaluation (Morrill & Noetel, 2023). As described in several studies, in academic reading, critical reading is a core skill that allows students to evaluate arguments, identify biases, and assess the credibility of sources (Koloiz & Yelovska, 2020; Manarin et al., 2015; McWhorter, 2014). Therefore, there is a growing need to encourage the critical use of AI. There is recent research highlighting critical AI literacy as a new competency that must be developed in the digital era (Veldhuis et al., 2025). AI literacy requires users not only to operate technological devices but also to understand the underlying reasoning processes, limitations, and biases (Binu, 2024; Walter, 2024). In this study, AI dependency refers to students' tendency to rely on ChatGPT to complete academic assignments without critical evaluation. Critical use of ChatGPT is understood as the ability of students to evaluate, question, and verify information generated by AI. Meanwhile, critical reading skills refer to students' ability to analyse arguments, assess the credibility of sources, and understand texts in depth.

Being able to think critically about AI is important and necessary because it is becoming a part of daily life and even the academic world. AI literacy aims for students to understand using AI itself, including questioning AI (Ng et al., 2021). For example, when students ask questions or make prompts and then AI answers, students need to question what AI answers, and must even be able to criticize the impact of AI, be it moral, cultural, social, and even political impacts (Long & Magerko, 2020). What is meant is that students are not passive but active, not just silent but with a critical voice in responding to the impacts arising from changes in life brought about by AI. What can be formulated from several articles is that critical literacy has many benefits, such as helping people understand issues such as algorithmic bias, privacy concerns, and possible injustices caused by AI systems, but also helping them act more consciously and ethically in an increasingly AI-driven world (Brundage et al., 2018 Ng et al., 2021; Veldhuis et al., 2025).

Empirical research examining the correlation between ChatGPT dependence, critical use of ChatGPT, and students' critical reading skills is limited. Previous studies, such as Shafiq et al. (2025) and Yim & Wegerif (2024), emphasize AI literacy in the context of technology or learning media, rather than academic reading skills. There are studies that relate language, but they focus more on the benefits of AI, especially ChatGPT, on language proficiency, and methods to improve language skills through AI (Anh & Nguyen, 2024; Binu, 2024; Çıldır, 2023; Kim, 2024; Kohnke et al., 2023). Without sufficient empirical evidence, the relationship between AI use and critical reading skills remains largely assumptive, limiting the development of theoretical understanding of reading literacy in AI-mediated learning contexts. This gap is why researchers examine how students' activities and attitudes towards AI, especially ChatGPT, affect their capacity for critical reading.

Furthermore, this study is a follow-up study to the previous study by Pujiastuti et al. (2025), which initially only examined the impact of AI use on students' academic reading performance. The findings showed a weak but negative and significant relationship between AI use and students' academic reading ability. This means that if students' AI dependence is high, their deep comprehension is lower in academic reading. This result suggests that the use of AI has not effectively supported the development of academic reading skills among university students. However, the previous study did not examine students' critical attitudes toward AI, which may help explain the relationship between AI use and critical reading.

Based on the findings mentioned above, this study extends the scope of analysis by introducing critical thinking towards AI as an additional variable to examine how reflective awareness and evaluative reasoning related to AI-generated information, or critical attitudes towards AI, relate to

students' critical reading skills. The basis for this expansion is the assumption that critical thinking may help explain the relationship between digital literacy and reading literacy in the era of artificial intelligence. That is to say, this study not only replicates previous research but also deepens it by emphasizing how college students' critical thinking interacts with AI (which in this study is ChatGPT) and its implications for the development of critical reading in higher education.

In conclusion, this study aims to analyze the influence of two independent variables, namely AI dependency and critical use of AI, on college students' critical reading skills. This study also seeks to contribute to the theoretical discussion of digital literacy in higher education, particularly regarding reading skills in the AI-driven digital era. Accordingly, this study addresses the following research questions: (1) Is there a relationship between AI dependency and students' critical reading skills? (2) Is there a relationship between the critical use of ChatGPT and students' critical reading skills?

METHOD

Research Design

Because it looks at the relationship between one variable and another, namely ChatGPT dependence, critical use of ChatGPT, and students' critical reading skills, a quantitative correlational approach is used. The participants of this study were undergraduate students of Universitas Maritim Raja Ali Haji (UMRAH) in Indonesia, all enrolled in the Indonesian Language and Literature Education Study Program. Of the participants, who were 3rd- and 5th-semester students, 79 completed the questionnaire and critical reading test. The data from these 79 students were included in the final analysis.

This study utilised purposive sampling, which involves selecting samples based on specific criteria relevant to the research objectives. This technique was chosen because the study focused on students with direct experience reading academic texts in Indonesian-language courses. Accordingly, the sample criteria included: (1) students enrolled in Indonesian language courses, (2) students who had participated in academic text reading learning activities, and (3) students who were willing to be research respondents. The 3rd- and 5th-semester students were selected because they had completed courses that required critical reading skills; purposive sampling was used based on these criteria.

Instruments and Procedures

Data were collected using two instruments. The first instrument was a questionnaire. This questionnaire was designed to measure students' reliance on ChatGPT and their critical use of it. Secondly, a critical reading written test

consisting of essay-shaped questions that required students to analyze, interpret, and evaluate academic texts.

Survey questionnaire

The questionnaire consisted of 20 statements, distributed into two main sections. The first part assesses AI Dependency, the extent to which students depend on ChatGPT for academic purposes. This first section had 13 statements or questions. Then, the second part is to measure Critical Use of ChatGPT. The assessment focuses on students' ability to evaluate, verify, and reflect on the information generated by ChatGPT. This second part has 7 items or statements. This questionnaire uses a five-point Likert scale. The range is 1, meaning "Never" to 5, meaning "Often". The questionnaire items were adapted from previous research on AI dependence and responsible AI use Pujiastuti et al., 2025; Stojanov et al., 2024). These items were then modified to fit the research needs in academic learning in higher education. To ensure their suitability for the current research context, the questionnaire items were reviewed for clarity and relevance before administration. As the instrument has been validated in previous studies, this study only conducted an internal reliability test using Cronbach's Alpha. The reliability results showed that both AI Dependence and Critical Use of ChatGPT subscales had Cronbach's Alpha values above 0.70, indicating acceptable internal consistency. The full list of questionnaire items is available in Appendix 1. The classification for score interpretation is presented in the Table 1.

Table 1. Categories of Questionnaire Score Interpretation (Five-Point Scale)

Mean Range/average	Frequency Category	Interpretation
1.00—1.80	Never	Very Low
1.81—2.60	Rarely	Low
2.61—3.40	Sometimes	Moderate
3.41—4.20	Often	High
4.21—5.00	Very Often	Very High

Critical Reading Test

Furthermore, as mentioned earlier, the second instrument is the Critical Reading Test. This test is an essay designed to assess students' ability to analyze, interpret, and evaluate information from academic texts. The instrument consists of eight items, which represent four critical reading indicators based on the framework (Manarin et al., 2015), three items to measure Comprehension, two items to measure interpretation, two items to analyze, and one item to evaluate.

The texts were adapted from scientific publications (journal articles) with themes aligned with students' needs and the United Nations Sustainable Development Goals (SDGs). The themes chosen by the researcher for the

journal articles were "gender equality", "marine conservation", and "climate change". To match the text's readability level, it was analyzed using the Fry Readability Chart. In addition, the texts and test items were reviewed and validated by three experts in reading skills to ensure content relevance, clarity, and an appropriate level of difficulty. This helped ensure the information and difficulty level were appropriate. Analytical scoring rubrics based on Manarin et al. (2015) and AAC&U (2009) were used to assess students' written answers. To interpret students' performance on the academic reading test, the scores were classified into four achievement levels, as presented in Table 2. This categorization was adapted from Arifiparn (2017) and recalibrated to a 100-point scale to align with the current instrument's scoring format. This classification provides a standardized interpretation of students' academic reading ability, ranging from Poor to Excellent.

Table 2. Categories of Academic Reading Test Achievement

Achievement Level Interval	Category
86—100	Excellent
71—85	Good
56—70	Fair
0—55	Poor

Data Analysis Procedures

The data were analyzed quantitatively using descriptive and inferential statistics in SPSS 24. Data analysis was conducted in several stages. To describe the distribution and tendency of scores on the variables of ChatGPT Dependence, Critical Use of ChatGPT, and Students' Critical Reading Ability, descriptive statistics were used. These descriptive statistics included frequency distributions, percentages, mean scores, and standard deviations. To test the simultaneous and partial effects of the two independent variables on critical reading ability, inferential analysis through multiple linear regression was conducted. Prior to conducting the regression analysis, assumption tests, including normality and multicollinearity tests, were performed to ensure that the data met the requirements for statistical analysis.

FINDINGS

The research findings are described in two sections. The two sections are (1) the results of the levels of AI Dependency, Critical Use of ChatGPT, and Students' Critical Reading Ability; and (2) the results of multiple regression analysis examining the influence of AI Dependency and Critical Use of ChatGPT on students' Critical Reading Ability. These results are shown below.

Descriptive Statistics of Research Variables

Table 3 presents the descriptive statistics of the three research variables.

Table 3. Descriptive Statistics of Research Variables

Variable	Mean	Std. Deviation	Minimum	Maximum	Interpretation
ChatGPT Reliance	3.10	0.48	1.82	4.36	Moderate
Critical Use of ChatGPT	3.87	0.53	2.38	4.88	High
Critical Reading Ability	53.68	12.11	31.25	92.19	Fair

The descriptive results are presented in Table 3. Overall, the results indicate moderate dependence on ChatGPT, high critical use of ChatGPT, and fair critical reading ability among students. A closer look at the indicators reveals that students are relatively proficient at understanding academic texts but still struggle to critically evaluate arguments and sources. This result indicates that students' critical reading skills are still developing and have not yet reached a high level, particularly in relation to the critical evaluation indicator, which requires more complex, in-depth reading.

These descriptive findings provide an initial picture of students' propensity to use ChatGPT and their level of critical reading ability. To further explore how these variables interact, the inferential analysis further examined the effect of ChatGPT Dependence and Critical Use of ChatGPT on students' Critical Reading Ability. Regression analysis was conducted to determine whether students' dependence on ChatGPT and their critical awareness of using ChatGPT significantly predicted their performance in academic reading.

Tests of Assumptions

Normality Test

The Shapiro-Wilk test is performed to ensure that the data distribution meets the assumptions of parametric analysis before performing regression analysis. The results indicated that all variables had significance values greater than 0.05 in the Shapiro-Wilk test, namely ChatGPT Reliance is 0.649; Critical Use of ChatGPT is 0.081; and Critical Reading Ability is 0.061, suggesting that the data were normally distributed. The assumption of normality was satisfied, and the data were deemed appropriate for inferential analysis using multiple regression.

Table 4. Test of Normality

Variable	Shapiro Wilk	Interpretation
ChatGPT Reliance	0.649	Normal
Critical Use of ChatGPT	0.081	Normal
Critical Reading Ability	0.061	Normal

Multicollinearity Test

A multicollinearity test was conducted to ensure that there was no significant correlation among the independent variables. The values of the Tolerance and Variance Inflation Factor (VIF) were examined for this purpose. It was determined that there was no multicollinearity, as the Tolerance and VIF values for the independent variables, ChatGPT Dependence and ChatGPT Critical Use, were both 1.000 (see Table 5). It follows that the two independent variables can be included in the regression analysis because they are statistically independent.

Table 5. Multicollinearity Test Results

Variable	Tolerance	VIF	Interpretation
AI Reliance	1.000	1.000	No multicollinearity
Critical Use of ChatGPT	1.000	1.000	No multicollinearity

Inferential Statistics (Regression Analysis)

The results of the multiple regression analysis (see Table 6) indicated that the relationship between the two independent variables, ChatGPT Reliance and Critical Use of ChatGPT, and students' Critical Reading Ability was weak, with R= 0.178. The R-squared value of 0.032 shows that the two predictors jointly explained only 3.2% of the variance in students' critical reading ability, while the remaining 96.8% was influenced by other factors not included in this model.

Table 6. Model Summary of Multiple Regression Analysis

Predictor	B	B	Sig.	Interpretation
Constant	44.865	-	0.001	-
ChatGPT Reliance	-1.805	-0.071	0.530	Negative, weak, ns
Critical Use of ChatGPT	3.728	0.164	0.151	Positive, weak, ns
Model Summary R = 0.178, R2 = 0,32, 3,2% of variance explained				

Note: ns = not significant ($p > 0.05$)

In terms of the direction of the relationships, ChatGPT Reliance exhibited a negative but very weak relationship with critical reading ability, namely $\beta = -0.071$, indicating that higher reliance on AI tended to be

associated with slightly lower levels of critical reading ability. Conversely, Critical Use of ChatGPT showed a positive but weak relationship, namely β = 0.164, suggesting that students who used AI more critically tended to achieve slightly higher critical reading scores.

Both relationships were not statistically significant ($p > 0.05$), indicating that neither ChatGPT reliance nor its critical use had a significant effect on students' critical reading ability. The Tolerance and VIF values, which both equal 1.000, further confirmed the absence of multicollinearity between the two predictors. Overall, although the direction of the relationships aligns with theoretical expectations that critical use of AI may enhance critical thinking skills, while excessive reliance on AI may weaken them, their effects in this study were weak and statistically insignificant.

The results of this study indicate that neither reliance on ChatGPT nor critical thinking about ChatGPT has a significant influence on students' critical reading ability. Although the regression coefficient for critical thinking toward ChatGPT shows a positive direction, its significance value, namely p= 0.151 is not strong enough to indicate a meaningful relationship. Meanwhile, AI reliance shows a negative but non-significant effect (p=0.530). The overall results indicate that the R^2 value of 0.032 indicates that the two variables together account for only 3.2% of the variance in students' critical reading skills.

DISCUSSION

The findings of this study suggest that students' engagement with ChatGPT does not automatically translate into stronger critical reading ability. While students may rely on ChatGPT and demonstrate a degree of critical awareness when using the tool, these factors alone appear insufficient to explain the development of higher-order reading skills. This indicates that critical reading is influenced by a more complex set of factors beyond technology use and individual thinking dispositions.

This finding also supports a previous study by Pujiastuti et al. (2025), who reported a weak but significant negative relationship between AI dependence and academic text comprehension. This study also produced similar findings. Both findings suggest that while AI can help students access and understand academic texts, its contribution to deep and reflective comprehension is limited. This study also discussed the relationship between the two independent variables and critical reading as the dependent variable. This finding confirms that critical reading is a multidimensional construct (Min et al., 2021). Although previous studies have highlighted critical thinking as a multidimensional construct (Arslan, 2022; Cassum & Joanne, 2015; Wu, 2016), critical reading essentially represents the application of critical thinking in text reading activities (Khamkhong, 2018; Sahiruddin et al.,

2022). Critical reading reflects multidimensional characteristics as it involves an integrated process of understanding, interpreting, evaluating, and reflecting on the text (Par, 2022; Talebi & Marzban, 2015). Therefore, this ability cannot be explained through only one factor, such as personality factors (e.g., dependence on ChatGPT) or thinking dispositions (e.g., critical thinking on ChatGPT). There are other influencing factors.

It can be explained in this study that the dependence on ChatGPT is related to the convenience and efficiency in completing academic tasks, that tend to reduce students' independence and cognitive engagement in academic activities (Adesokan et al., 2025; Kim, 2024) including in the academic reading process (Cahyani et al., 2024; Lee & Lee, 2022; Pujiastuti et al., 2025). In contrast, critical thinking in using ChatGPT does not simply reflect the cognitive skills of reading itself, but rather epistemic awareness and digital ethics in assessing what the technology produces (Salido et al., 2025). Although this study did not empirically test mediation effects, the findings suggest that the relationship between ChatGPT use and critical reading ability may involve other contributing factors, such as digital literacy (Budiarti et al., 2024), self-efficacy (Indianasari et al., 2022), or cognitive engagement (Terasne et al., 2022), which warrant further investigation.

This result is in line with research Adesokan (2025), which shows that dependence on technology does not always have a positive impact on academic performance when its use is passive or instrumental. In terms of critical reading, reliance on ChatGPT can limit readers' reflective engagement with the text if it is not balanced with metacognitive strategies and how the learning process, namely, reflective text-based learning (Pujiastuti et al., 2025). Another study found that critical use of AI can support the development of critical reading skills (Sihite et al., 2023), especially when students are accustomed to learning practices that require text analysis and self-assessment of technological output, namely ChatGPT. This means that the differences across these studies indicate that the effect of AI, especially ChatGPT, on critical reading skills is situational, depending on the level of user reflectivity and the complexity of the reading task.

In this study, the low contribution of dependency and critical thinking to ChatGPT's effect on critical reading ability can also be explained by the homogeneity of students' experience with ChatGPT. Students may have a relatively uniform view of AI as a learning tool, without internalizing its use to strengthen their understanding of academic texts reflectively and critically. This is in line with the constructivist view that diverse and reflective learning experiences are necessary to develop a critical appraisal of knowledge sources (Hidayatullah, 2024; Khan et al., 2019; Riani et al., 2024).

Ultimately, these findings contribute theoretically by broadening the understanding of the relationship between AI literacy and critical reading in

higher education. Rather than demonstrating a direct or strong effect, the non-significant results suggest that the role of AI use in critical reading development is complex and context-dependent. Students' attitudes toward AI use may be part of a broader set of conditions that shape critical literacy development, rather than a single determining factor. In practice, the results of this study confirm the importance of integrating reflective reading strategies with AI literacy in higher education. This approach is necessary so that AI use not only improves academic efficiency but also deepens students' cognitive engagement and critical awareness of texts.

CONCLUSION

From this study, it was concluded that reliance on ChatGPT and the ability to think critically when using it did not have a significant effect on students' critical reading skills. This study also illustrates the relationship among the three, namely, dependence on ChatGPT has a weak and negative relationship with critical reading ability. Likewise, the ability to think critically about ChatGPT shows a weak relationship with students' critical reading ability, and the relationship is positive, meaning that the effect is weak and not statistically significant. These results suggest that critical reading ability cannot be explained solely by dispositional or psychological factors such as attitudes and beliefs towards ChatGPT, but is also influenced by metacognitive awareness, academic content literacy, as well as students' level of engagement in understanding texts in higher education.

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APPENDIX 1

The most crucial aspects of the survey are these. The survey asked participants to rate their frequency of occurrence on a five-point Likert scale, with 1 representing never and 5 representing often. Items 14–20 assess Critical Use of ChatGPT, whereas Items 1–13 assess Reliance on ChatGPT.

No.	Questionnaire Item	Remark
1	ChatGPT used to answers questions related to major or field of study.	
2	ChatGPT help to write academic assignments such as papers, lab reports, or essays.	
3	ChatGPT to edit or revise my written assignments.	
4	ChatGPT to assist me in completing homework or coursework.	
5	ChatGPT to help me understand complex concepts for example definitions or theoretical explanations.	
6	ChatGPT for provide feedback or comments on student's written work.	
7	ChatGPT to create pratice questions or quizzes for self assessment.	
8	AI Chatbots such as ChatGPT, Gemini, etc. to solve problems involving calculations or mathematics.	
9	ChatGPT to generate creative ideas like as for learning media, games, Powerpoint slides, or modules.	
10	Students always complete their assignments without using ChatGPT.	Reverse item
11	Student prefer to rely on books, journals, or lecturers rather than ChatGPT.	Reverse item
12	Student tend to use ChatGPT as my first source when completing academic tasks.	
13	Before using ChatGPT's responses in assignments, students typically double check them.	
14	Students frequently use ChatGPT to finish homework without changing the output.	Reverse item
15	Regularly check the accuracy and dependability of the information that ChatGPT provides.	
16	Examine ChatGPT's responses againts those from other reliable sources.	
17	Students recognize that ChatGPT's responses may contain biased or inadequate information.	
18	Students frequently make sure ChatGPT's responses are pertinent to students particular queries.	
19	Frequently use ChatGPT as students main learning source.	Reverse item
20	Students tend to question or critique ChatGPT's answers when they seem unreasonable.	