

Unpacking the Digital Advantage: Exploring the Impact of ICT Use and Academic Performance on EFL Students' Reading Proficiency

Fathia Khairunnisa¹, Weni Pratiwi², Dewi Nurholis³, Chuzaimah Dahlan Diem,⁴ Machdalena Vianty⁵

¹ Universitas Sriwijaya, Palembang, Indonesia; fathiakhairunnisa17@gmail.com

² Universitas Sriwijaya, Palembang, Indonesia; wenipratiwi26@gmail.com

³ Universitas Sriwijaya, Palembang, Indonesia; dewinurholis14@gmail.com

⁴ Universitas Sriwijaya, Palembang, Indonesia; chuzaidd@gmail.com

⁵ Universitas Sriwijaya, Palembang, Indonesia; vianty.unsri@gmail.com

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ABSTRACT

Reading proficiency is essential for academic success, particularly among English as a Foreign Language (EFL) learners in higher education. As Information and Communication Technology (ICT) becomes increasingly integrated into educational practices, its potential impact on students' reading skills warrants closer investigation. This study examines the relationship between ICT utilization, academic performance, and reading proficiency among EFL students. A correlational design was employed to analyze the association among ICT usage, Grade Point Average (GPA), and reading proficiency. Seventy-one students from an English Education postgraduate program at a state university in Palembang participated in the study. Data were collected through an ICT utilization questionnaire, official GPA records, and a standardized TOEFL reading test. Pearson Product Moment correlation and regression analyses were used to interpret the data. Findings revealed a significant positive correlation between ICT utilization and reading proficiency ($r = 0.237$, $p = 0.046$), with ICT contributing 5.6% to reading proficiency. In contrast, GPA showed no significant correlation ($r = -0.039$, $p = 0.748$) or predictive value for reading outcomes. The overall regression model was not statistically significant ($p = 0.075$). While ICT use demonstrates a modest but significant influence on students' reading skills, academic performance, as measured by GPA, does not. These findings underscore the importance of incorporating ICT tools into reading instruction and call for enhanced digital literacy initiatives to support reading development in EFL contexts.

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Corresponding Author:

Chuzaimah Dahlan Diem

Universitas Sriwijaya, Palembang, Indonesia; chuzaidd@gmail.com

1. INTRODUCTION

In today's digital age, the integration of Information and Communication Technology (ICT) in education has emerged as a key driver of academic progress, particularly in English Language Teaching (ELT). The holistic incorporation of ICT into educational curricula is essential for enhancing learning experiences and

outcomes. Siminto et al. (2024) emphasized that effective ICT integration should not be viewed as merely an add-on; it must be embedded within the curriculum to enrich student learning through interactive platforms and adaptive learning applications. This sentiment is echoed by Goldhaber (2021), who highlighted that ICT integration is vital for replacing traditional teaching methods with more effective, technology-based approaches that foster educational improvement. Thus, the role of teachers as digitally competent professionals is no longer optional—it is fundamental, as their abilities shape the success of ICT integration in classrooms.

The increasing availability of digital tools and resources has reshaped how students engage with learning materials, significantly influencing language education. Arif and Handayani (2021) indicated that ICT provides English as a Foreign Language (EFL) students with enhanced access to learning opportunities, thereby improving their language skills. The authors argue that the integration of ICT in language classrooms not only motivates students but also fosters a positive attitude towards learning, which is essential for effective language acquisition. Moreover, Paudel (2020) emphasized that the combination of ICT with traditional teaching methods creates a more interactive and relevant learning environment, thereby enhancing students' communicative abilities.

English reading proficiency, a critical component of language acquisition, is essential for students' overall academic success, as it serves as the foundation for understanding complex texts, enhancing vocabulary, and improving communication skills. Mihret and Joshi (2025) asserted that reading literacy is closely linked to academic achievement, emphasizing the importance of tailored instructional methodologies and policy initiatives. Their findings suggest that students who engage with reading materials are more likely to excel academically, as reading enhances their ability to comprehend and analyze complex texts. This aligns with the view that reading proficiency is foundational for understanding diverse academic content, which is crucial for success in higher education. Moreover, Azmi's research (2021) indicated that reading comprehension is directly influenced by students' reading skills, which in turn affects their overall language proficiency. The study reveals that students lacking strong reading skills struggle with comprehension, which can hinder their academic performance across subjects. This reinforces the notion that reading proficiency is integral to language acquisition and academic success, as it enhances vocabulary and comprehension abilities.

Despite these insights, Indonesia continues to exhibit low scores in reading achievement, as reflected in various assessments conducted from 2019 to 2024. The Programme for International Student Assessment (PISA) results from 2022 ranked Indonesia 74th out of 79 countries in reading literacy (Liu, 2024). This persistent struggle underscores the significant challenges Indonesian students face in developing effective reading skills, which are essential for academic success. Moreover, research by Nuraini et al. (2023) found that reading interest significantly influences learning achievement among students, highlighting a direct correlation between reading engagement and academic success. This further illustrates the ongoing issue of insufficient reading motivation, adversely affecting students' reading achievement. Furthermore, Kaharuddin (2024) examined the role of artificial intelligence in improving reading and writing skills among Indonesian students. The findings indicated that while there is potential for technology to enhance literacy, many students still struggle with basic reading skills, which hampers their overall academic performance. This suggests that technological interventions alone may not be sufficient to address the underlying issues related to reading proficiency.

In summary, substantial evidence from multiple studies indicates that reading achievement among university students in Indonesia remains critically low, primarily due to factors such as low reading interest, inadequate teaching strategies, and insufficient access to reading materials. Addressing these issues through targeted educational reforms and interventions is essential for improving reading proficiency and overall academic success. However, as technology plays an increasingly prominent role in classrooms, it is crucial to explore how the integration of ICT impacts students' academic performance, specifically their reading proficiency in English. Ghory's survey (2024) analysis revealed that while many students perceive a positive influence of ICT on their engagement and academic outcomes, others express neutrality or negative sentiments regarding its efficacy. Such variability underscores the importance of considering individual differences and instructional contexts when assessing the effectiveness of ICT integration. Ogunjobi (2023) found a substantial association between the availability of ICT and academic performance, indicating that access to digital

resources can facilitate better reading outcomes. However, it also notes that factors such as teacher quality and curriculum design play a critical role in determining the effectiveness of ICT integration. In brief, the integration of ICT in educational settings has a profound impact on students' academic performance, particularly in enhancing reading proficiency in English.

Despite the understood significance of ICT, there remain gaps in current research, particularly in understanding how these tools specifically enhance reading proficiency among students. While numerous studies have identified the overall benefits of digital tools, fewer have investigated the direct impact of ICT on English reading skills. This study addresses these gaps by formulating the following research questions and hypotheses: 1) is there any significant correlation between the relationship between ICT integration and academic performance measured by grade point averages (GPA) concerning students' English reading proficiency? and 2) does ICT integration and academic performance measured by grade point averages (GPA) significantly contribute students' English reading proficiency?

In conclusion, while the integration of ICT has a profound impact on students' academic performance, particularly in enhancing reading proficiency in English, there remains a gap in understanding its specific effects on language skills. This study aims to investigate the relationship between ICT integration and academic performance concerning students' English reading proficiency, examining how ICT integration and academic performance, measured by grade point averages (GPA), significantly contribute to students' English reading proficiency. By focusing on the combined effects of ICT utilization and academic performance on reading proficiency, this research will provide valuable insights into the potential of technology to strengthen English reading skills among students, thereby contributing to improvements in educational practices.

2. METHODS

2.1 Research Design

In conducting this study, correlational research was used to find out the correlation among variables and explain and interpret the appeared results. The procedures taken in this research were as follows; first; the students' ICT utilization was identified by using questionnaires. Second, the students' GPA was obtained from the Administration of the Magister Study Program. Third, the students' reading proficiency was obtained by using the TOEFL reading test. Then, the correlation among variables was analyzed through SPSS based on the results of the questionnaires and reading proficiency test. Lastly, the explanation and interpretation of the results were discussed.

The population of this study was master's students in their second and fourth semesters, as well as those who graduated in the class of 2015. In this study, the second and fourth semesters and graduated students were chosen as the sample, since they have taken all of the reading classes. However, three students from the second semester were not taken as the sample as they were the researchers in this study. Therefore, the total sample was 71 students.

2.2 Data Collection

There were three kinds of instruments used to collect the data. There were questionnaires, documentation, and tests. The ICT Survey was used in this study. This questionnaire consists of 20 items. A four-point Likert Scale ranging from Always (4) to Never (1) was used in this research to obtain information about students' academic achievement and students' cumulative. Grade Point Average (GPA) was collected from the documentation of the Magister of English Education Study Program Faculty, Sriwijaya University, Palembang, 2015 – 2023. Furthermore, to obtain information about students' reading proficiency, a reading test was conducted. The students answered the TOEFL reading test. There were 50 questions using multiple-choice questions, and it lasted 55 minutes.

2.3 Data Analysis

Students' responses toward the questionnaire items were calculated by using descriptive statistics analysis. Firstly, the data from the questionnaire was analyzed and calculated to determine the category of students' ICT Utilization. The scoring indicator was listed in Table 1.

Table 1. The Scoring of Questionnaire

Statement	Score
Always	4
Often	3
Sometimes	2
Never	1

The results from the total score each student got from his/her responses to the questionnaire items were classified into categories from strongly agree to strongly disagree. The researchers presented the Grade Point Average (GPA) from the documentation of the Magister of English Education Study Program Faculty, Sriwijaya University, Palembang. For the Reading Proficiency, the researchers accounted for the result of the TOEFL reading test, the grade of the reading TOEFL test was determined by using the TOEFL score. After that, the researchers categorized the grade of reading TOEFL test to know the proficiency of reading. The students at least comprehend 70 percent from the reading test to indicate good proficiency.

Correlation analysis was applied after analyzing the data from the ICT survey, GPA, and students' reading proficiency. In order to find out the correlation among ICT utilization, GPA, and student's reading proficiency, Pearson – Product Moment Correlation was used. Furthermore, regression analysis was applied after analyzing the data from ICT Survey, GPA, and student's reading proficiency to influence among variables

3. FINDINGS AND DISCUSSION

3.1 Results of Students' ICT Utilization Questionnaire

Table 2. The Descriptive Statistics of ICT Utilization

	N	Min	Max	Mean	Std. Deviation
Non-Graduate	31	58.75	96.25	77.50	10.29
Graduate	40	58.75	100	75.68	8.13

Based on descriptive statistics analysis of the students who gave responses to ICT Utilization questionnaire items, it was found that the total number of participants was 71 students. The maximum score was 96.25 (non-graduate) and 100 (graduate), and the lowest score was 58.75 (non-graduate and graduate). The mean score was 77.50 (non-graduate) and 75.68 (graduate), and the standard deviation was 10.29 (non-graduate) and 8.13 (graduate).

Table 3. The Distribution of ICT Utilization

No	ICT Utilization	Active Students		Graduate	
		Mean Response	Remarks	Mean Response	Remarks
1	I search for/find information/documents I need on the web.	3.64	Often	3.77	Often
2	I access databases and resources related to my studies on the internet.	3.67	Often	3.65	Often
3	I access databases and resources to improve my reading skill on the internet.	3.29	Often	3.27	Often
4	I download article to read from google scholar.	3.51	Often	3.15	Often
5	I write and read emails to / from teachers and classmates.	2.80	Sometimes	2.82	Sometimes

6	I read the information from social media platform (Instagram).	3.09	Often	3.27	Often
7	I read the information from social media platform (Facebook).	3.22	Often	3.35	Often
8	I read the information from social media platform (Twitter).	2.25	Sometimes	1.90	Never
9	I read the information from social media platform (Tiktok).	2.77	Sometimes	2.07	Sometimes
10	I watch videos (from Youtube, etc.) explaining concepts / knowledge related to my studies.	3.22	Often	3.35	Often
11	I watch videos (from Youtube, etc.) to improve my reading skill.	2.83	Sometimes	2.97	Sometimes
12	I do quizzes and tests from the Web for practice.	2.77	Sometimes	2.57	Sometimes
13	I download journals/articles to read from Scopus.	2.77	Sometimes	2.57	Sometimes
14	I use computers to read and write for my homework / papers.	3.58	Often	3.60	Often
15	I look up new concepts / terms in electronic dictionaries and encyclopedias.	3.29	Often	3.32	Often
16	I use text messaging (WhatsApp) to stay informed about my classes, exams, assignment etc.	3.87	Often	3.75	Often
17	I study courses offered online.	2.67	Sometimes	2.80	Sometimes
18	I prepare course notes, presentations, worksheets, etc on the computer.	3.54	Often	3.47	Often
19	I use AI (chatgpt, proplexity, etc) to read information related to my studies/assignments.	3.00	Sometimes	2.85	Sometimes
20	I join online courses related to reading improvements	2.12	Sometimes	1.97	Never
Mean		3.10	Often	3.02	Often

As reflected in the table 3, the most number of respondents remarks often with searching information on the web (3.64) for active students and (3.77) for graduate students; they are accessing databases and resources related to their studies on the internet (3.67) for active students and (3.65); they are accessing databases and resources to improve their reading skill on the internet (3.29) for active students and (3.27) for graduate students; they are reading the information from social media platform (Instagram) (3.09) for active students and (3.27) for graduate students; they are reading the information from social media platform (Facebook) (3.22) for active students and (3.35) for graduate students; they are watching videos (from YouTube, etc.) (3.22) for active students and (3.35) for graduate students; they are using computers to read and write for their homework / papers (3.58) for active students and (3.60) for graduate students; they are looking up new concepts / terms in electronic dictionaries and encyclopedias (3.29) for active students and (3.32) for graduate students; they are using text messaging (WhatsApp) to stay informed about their classes; study courses offered online (3.54) for active students and (3.47) for graduate students; prepare course notes, presentations, worksheets, etc., on the computer (3.00) for active students.

On the other hand, respondents got a sometimes remark with preparing course notes, presentations, worksheets, etc., on the computer (2.85) for graduate students; they are writing and reading emails to / from teachers and classmates (2.25) for active students; they are reading the information from social media platform (Tiktok) (2.77) for active students and (2.07) for graduated students; they are watching videos (from Youtube, etc.) to improve their reading skill (2.83) for active students and (2.97) for graduate students ; they are doing quizzes and tests from the Web for practice (2.77) for active students and (2.57) for graduate students; they are downloading journals/articles to read from Scopus (2.77) for active students and (2.57) for graduate students; they are studying courses offered online (2.67) and (2.80) for graduate students; they are using AI (chatgpt, proplexity, etc) to read information related to their studies/assignments (2.12) for active students. Furthermore,

respondents got a never remark with reading the information from social media platform (Twitter) (1.90) for graduate students, and they are using AI (ChatGPT, Proplexity, etc) to read information related to their studies/assignments (1.97) for graduate students.

3.2 Results of Students' Academic Performance

Table 4. The Descriptive Statistics of Students' Academic Performance

	N	Min	Max	Mean	Std. Deviation
Non-Graduate	31	2.97	4.00	3.80	0.26
Graduate	40	3.24	4.00	3.73	0.21

Based on the table above, it was found that the maximum score was 4.00 (non-graduate and graduate), and the lowest score was 2.97 (non-graduate) and 3.24 (graduate). The mean score was 3.80 (non-graduate) and 3.73 (graduate), and the standard deviation was 0.26 (non-graduate) and 0.21 (graduate).

Table 5. The Distribution of Students' Academic Performance

GPA	Category	Frequency	Percentage (%)
Non-Graduate (Active Students)			
3.67 – 4.00	Excellent	26	83.9
3.00 - 3.66	Very Good	4	12.9
2.33 – 2.99	Good	1	3.2
2.32 – 2.00	Fair	0	0
Below 2.00	Fail	0	0
Graduate Students			
3.67 – 4.00	Excellent	29	72.5
3.00 - 3.66	Very Good	11	27.5
2.33 – 2.99	Good	0	0
2.32 – 2.00	Fair	0	0
Below 2.00	Fail	0	0

The table above showed that there were 29 active students (83.9 %) and 29 graduate students (72.5%) who are included in excellent category; 4 active students (12.9 %) and 11 graduate students (27.5%) who are included very good category; there was 1 active student (3.2%) who was in good category, and there was no student who is included in fair and fail category

3.3 Results of Students' Reading Proficiency

Table 6. The Descriptive Statistics of Students' Reading Proficiency

	N	Min	Max	Mean	Std. Deviation
Non-Graduate	31	360	660	522.90	75.639
Graduate	40	370	650	512.50	65.467

Based on the table above, it was found that the maximum score was 660 (non-graduate) and 650 (graduate), and the lowest score was 360 (non-graduate) and 370 (graduate). The mean score was 522.90 (non-graduate) and 512.50 (graduate), and the standard deviation was 75.63 (non-graduate) and 65.46 (graduate).

Table 7. The Distribution of Students' Reading Proficiency

No	Score Range	Category	Frequency	Percentage (%)
Non-Graduate				
1	≥70 %	Good Comprehension	25	80.6
2	<70 %	Bad Comprehension	6	19.4
Graduate				
1	≥70 %	Good Comprehension	29	72.5
2	<70 %	Bad Comprehension	11	27.5

The table above revealed that there were 6 active students (19.4%) and 11 graduate students (27.5%) who were categorized as having poor comprehension, and there were 25 active students (80.6%) and 29 graduate students (72.5%) who were categorized as having good comprehension.

3.4 The Correlation among ICT Utilization, Academic Performance, and Reading Proficiency

Table 8. Pearson Product-Moment Test

Correlations		ICT	GPA	Reading Proficiency
ICT	Pearson Correlation	1	.351**	.237*
	Sig. (2-tailed)		.003	.046
	N	71	71	71
GPA	Pearson Correlation	.351**	1	-.039
	Sig. (2-tailed)	.003		.748
	N	71	71	71
Reading Proficiency	Pearson Correlation	.237*	-.039	1
	Sig. (2-tailed)	.046	.748	
	N	71	71	71

Based on the result of the analysis of Pearson correlation, there was no correlation between the students' academic performance and their reading proficiency ($p = 0.748 > 0.05$). For ICT Utilization, the result showed that there was a significant correlation between students' ICT Utilization and reading proficiency ($p = 0.04 < 0.05$).

3.5 Multivariate Test

Table 9. F-Simultan Test

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	24965.055	2	12482.528	2.689	.075 ^b
	Residual	315713.818	68	4642.850		
	Total	340678.873	70			

Based on the table above, there was no correlation among the students' ICT Utilization, academic performance, and their reading proficiency ($p = 0.75 > 0.05$).

3.6 The Contribution of Students' ICT Utilization and GPA to Reading Proficiency

Table 10. Regression Analysis

Variable	R	Coefficient Correlation	Level	Sig.
ICT	0.237	0.056	1	0.025
GPA	0.039	0.002	3	0.268

Based on the tables above, it can be seen that the coefficient correlation of ICT Utilization was 0.056. This means that ICT Utilization contributes 5.6% to the students' reading proficiency. While the coefficient correlation of GPA was 0.002. This means that GPA contributes 0.2 % to the students' reading proficiency.

Discussion

In order to strengthen the value of this study, the interpretations were made based on the result of data analyses. Before administering the test, the students were asked to fill in the ICT Utilization questionnaire. It revealed that 20 items of the use of ICT were all perceived by the students with different numbers. Based on the result of data analysis of the ICT Questionnaire, it was found that most

of the students both active and graduate students got an average remark. Furthermore, based on the result of data analysis of students' academic performance, it was found that most of the students both active and graduate students, were included into the excellent category. Through the result of data analysis of the TOEFL reading test, it was found that the majority of the students are categorized to have good comprehension.

Based on the result of Pearson Product Moment Correlation, it was found that there was no correlation between the students' academic performance and their reading proficiency of Magister English Education at Sriwijaya University. Ogunjobi et al. (2023) highlighted the complex factors affecting academic performance, stating that other variables, such as teacher quality, curriculum design, and students' socioeconomic backgrounds, may also impact students' academic performance. This underscores the notion that academic success cannot solely be attributed to reading proficiency but is influenced by a multitude of external factors. Furthermore, Rasanty and Qudsyi (2023) discovered a negative correlation between self-regulated learning and academic procrastination, which may illuminate the potential disconnect between academic performance and reading proficiency in specific contexts. This suggests that individual learning behaviours could contribute to variations in academic outcomes independent of reading skills. Additionally, Manaig et al. (2024) employed the Pearson Product-Moment Correlation Coefficient in their analysis of teaching effectiveness and academic achievement. They assert that examining relationships between continuous variables can reveal vital insights into pedagogical practices and outcomes, which reflects the broader applicability of correlation analyses to understand intricate relationships across educational indicators, including the potential lack of correlation noted in the reading proficiency and academic performance of Magister students.

However, there was significant correlation between students' ICT Utilization and reading proficiency of Magister English Education at Sriwijaya University. Yu et al. (2023) explored the relationship between ICT perceived competence and adolescents' digital reading performance. Their study revealed that students with higher levels of ICT perceived competence demonstrated better digital reading performance. The researchers noted that ICT use significantly mediated this relationship, suggesting that students who are more adept at using technology are likely to engage more effectively with digital reading materials, which in turn enhances their reading proficiency. Moreover, Irzawati and Hasibuan (2020) highlighted that the utilization of ICT in English learning significantly facilitated students' reading achievement. The study indicated that students who effectively used ICT tools for learning were better able to understand and engage with reading texts, thereby improving their reading skills. This aligns with the notion that ICT can serve as a valuable resource in enhancing reading proficiency. Furthermore, Lafontaine (2022) validated a scale measuring metacognitive knowledge about digital reading and found correlations between metacognitive strategies and reading performance. The study emphasized that students who are more aware of their reading processes and utilize ICT effectively tend to achieve higher reading proficiency. This suggests that the integration of ICT in reading practices can foster metacognitive awareness, which is crucial for improving reading skills. Lastly, Gubbels et al. (2020) examined how students' use of ICT resources relates to their reading performance. Their findings indicated that students who actively engaged with ICT resources, both in and out of school, showed improved performance in digital reading assessments. This reinforces the idea that ICT utilization plays a significant role in enhancing reading proficiency. In summary, the evidence from these studies collectively supports the claim that there is a significant correlation between students' ICT utilization and their reading proficiency. The findings suggest that effective engagement with ICT not only enhances students' reading skills but also fosters a more profound interest and competence in reading activities.

Then, based on the result of the analysis of F-Simultan, there was no correlation among the students' ICT Utilization, academic performance, and their reading proficiency. It was found that students' ICT Utilization and academic performance contributed to the students' reading proficiency with 0.7% contribution. Therefore, the contribution of ICT Utilization and Academic performance toward reading proficiency was 0.7%, leaving 99.3 % of unexplained factors. Gubbels et al. (2020)

explored the impact of ICT resources and usage on reading performance among Dutch students, revealing that student backgrounds significantly influence reading outcomes. Their findings underscore the importance of ICT in enhancing reading skills, suggesting that effective ICT use can lead to improved academic performance in reading tasks. Similarly, Lin et al. (2023) highlighted that students who are more motivated to engage with ICT tend to achieve higher digital reading outcomes. They found that meta-cognitive strategies mediate this relationship, indicating that not only the use of ICT but also the way students engage with it influences their reading proficiency.

Furthermore, Ghavifekr and Yue (2021) emphasized the importance of leadership in schools to foster a positive attitude towards ICT integration among teachers. Their research highlighted that when school principals actively support ICT initiatives, it can lead to improved teaching strategies and, consequently, better academic performance among students. This underscores the systemic nature of ICT's impact on education, where institutional support can enhance the effectiveness of ICT in promoting reading skills. Additionally, the work of Maab et al. (2024) reinforced the connection between reading proficiency and critical thinking, suggesting that effective reading skills are foundational for academic success. This relationship is further supported by the findings of Samaranyake et al. (2022), who demonstrated that targeted reading interventions significantly improved comprehension scores among students, indicating that strategic use of ICT can also enhance reading outcomes.

4. CONCLUSION

In conclusion, the findings of this study indicate a significant correlation between ICT integration and students' reading proficiency ($r=0.237$; $p=0.046$), whereas academic performance, as measured by GPA, does not show a significant correlation with reading proficiency ($r=-0.039$; $p=0.748$). The regression analysis further clarifies that ICT utilization contributes 5.6% to students' reading proficiency, highlighting the importance of incorporating technology into educational practices to enhance literacy outcomes. Although GPA did not prove to be a contributing factor, the positive impact of ICT on reading skills underscores the necessity of digital engagement in language learning environments. This study's findings necessitate strategic investments in digital learning infrastructure and tools from educational policymakers to improve ICT integration in classrooms. It is vital for policymakers to emphasize digital literacy initiatives, particularly in language education, to enhance student outcomes and literacy rates. Furthermore, educators are encouraged to deliberately incorporate ICT tools into their reading instruction, as the demonstrated benefits of ICT on reading proficiency suggest that teachers should utilize diverse digital resources, interactive reading platforms, and online activities to foster student engagement and comprehension. Additionally, educational institutions should provide ongoing professional development programs focused on the effective integration of ICT in language learning. By ensuring access to technology and digital resources, these institutions can empower educators to utilize ICT effectively, thereby improving students' reading proficiency and overall language skills. However, there is no correlation between GPA and reading proficiency alone, suggesting that GPA does not directly influence reading skills. The ICT integration was found to contribute 5.6% to the variance in students' reading proficiency, whereas GPA did not contribute to reading proficiency. Therefore, the study highlights the importance for English as a Foreign Language (EFL) tertiary students to utilize appropriate ICT tools, as these can enhance both their academic performance and reading proficiency.

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