

Implementing IT-Based Learning to Improve Students' Reading Skills in English

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ABSTRACT

The rapid advancement of information technology has opened new opportunities to address low reading proficiency among Indonesian junior high school students in English as a Foreign Language (EFL) context. This study aimed to examine the effectiveness of IT-based learning in improving students' reading skills. A quasi-experimental pretest-post-test design was employed with one intact class of 32 eighth-grade students (Class VIII B) at SMPN 5 Kendari during the 2025/2026 academic year. The intervention consisted of 10 sessions of technology-integrated reading activities using digital platforms, interactive e-books, online reading applications, and multimedia resources aligned with the curriculum. Reading skills were measured through a validated reading comprehension test focusing on literal, inferential, and evaluative comprehension. Data were analysed using paired-sample t-test. Results showed a significant improvement in students' reading scores from pretest ($M = 62.34$, $SD = 8.76$) to post-test ($M = 78.91$, $SD = 7.45$), with $t(31) = -9.87$, $p < .001$, and a large effect size (Cohen's $d = 1.92$). Qualitative observations further indicated increased student motivation, engagement, and confidence when interacting with digital texts. This study concludes that IT-based learning is an effective pedagogical approach to enhance EFL reading skills in junior high school settings. The findings provide practical implications for English teachers to integrate accessible digital tools in reading instruction, particularly in resource-limited contexts. Limitations and suggestions for future research are discussed.

INTRODUCTION

In the digital era, information technology has transformed various aspects of education, including English language teaching and learning (Alakrash & Razak, 2021; Hasumi, 2024). The integration of digital tools offers interactive and engaging ways to develop language skills, particularly reading comprehension, which remains a foundational component of English proficiency (Bećirović, 2021; Mayer, 2021). However, many EFL learners still struggle with traditional reading instruction that relies heavily on printed materials and teacher-centered approaches (Kencana et al., 2025). This situation calls for innovative pedagogical strategies that leverage technology to make reading more accessible and motivating for students (Zhang, 2022).

Indonesian junior high school students often face significant challenges in English reading skills (Sari et al., 2025). Common difficulties include limited vocabulary mastery, difficulties in making inferences, distinguishing main ideas from supporting details, and low motivation to read English texts (Zhang, 2022). These problems are exacerbated by conventional teaching methods that fail to accommodate the characteristics of digital-native students who are more familiar with multimedia and interactive content (Alakrash & Razak, 2021). As a result, reading comprehension scores in many public schools remain below expected standards (Jusrianto, 2026).

The rapid development of information and communication technology (ICT) provides promising solutions to these challenges (Hasumi, 2024). IT-based learning, which incorporates digital platforms, interactive e-books, online reading applications, and multimedia resources, can enhance students' engagement, provide immediate feedback, and support differentiated instruction (Bećirović, 2021; Mayer, 2021). Previous studies have shown that technology-integrated approaches can improve not only literal comprehension but also higher-order reading skills when properly implemented in EFL contexts (Dinda, 2025; Yauri, 2025; Hariyanti, 2025).

Despite the potential benefits, the adoption of IT-based learning in Indonesian junior high schools is still limited, particularly in public schools with varying levels of technological infrastructure (Kencana et al., 2025). Many teachers continue to rely on conventional textbooks due to limited training, inadequate facilities, or uncertainty about the effectiveness of digital tools (Hermansyah, 2026). This gap highlights the need for empirical evidence on how IT-based learning can be practically applied to improve reading skills in real classroom settings (Sari et al., 2025).

Research on technology-enhanced reading instruction has demonstrated positive outcomes in various EFL contexts (Hasumi, 2024). Interactive digital platforms and e-books have been found to increase student motivation, reading fluency, and comprehension by offering features such as audio support, instant translation, and gamified elements (España-Delgado, 2023; Inayati & Waloyo, 2022; Zainuddin, 2020). However, most existing studies focus on urban or private schools, leaving limited evidence from public junior high schools in provincial areas like Kendari (Sari et al., 2025).

The present study addresses this research gap by examining the implementation of IT-based learning to improve English reading skills among eighth-grade students. Conducted at SMPN 5 Kendari, the research involved 32 students in Class VIII B who participated in a series of technology-integrated reading activities over ten sessions (Dinda, 2025). The intervention utilized accessible digital tools aligned with the national curriculum to support literal, inferential, and evaluative comprehension (Hariyanti, 2025; Yauri, 2025).

This study holds practical significance for EFL teachers, school administrators, and policymakers in similar contexts. By providing evidence-based insights into the effectiveness of IT-based learning, the findings can guide the integration of digital resources in reading instruction while considering local constraints such as internet access and device availability (Wahyuddin et al., 2025; Kencana et al., 2025). Ultimately, the research contributes to the broader discourse on innovative pedagogies that prepare Indonesian students for 21st-century literacy demands (Alakrash & Razak, 2021; Hasumi, 2024).

Literature Review

Information technology-based learning (IT-based learning) has emerged as a transformative approach in English as a Foreign Language (EFL) education by

integrating digital tools, multimedia resources, and interactive platforms to support language skill development (Alakrash & Razak, 2021; Bećirović, 2021; Hasumi, 2024). Unlike traditional printed materials, IT-based learning provides dynamic features such as hyperlinked texts, audio support, instant feedback, and adaptive content that can accommodate diverse learner needs (Kencana et al., 2025). In the context of reading instruction, digital platforms enable students to engage with authentic materials, access vocabulary assistance, and practice comprehension strategies in more interactive ways (Bećirović, 2021; Yauri, 2025; Hariyanti, 2025).

The effectiveness of IT-based learning in enhancing reading skills can be explained through several contemporary theoretical frameworks. Mayer's Cognitive Theory of Multimedia Learning (updated applications in recent studies) posits that learners process information more deeply when words and pictures are presented together, provided that extraneous cognitive load is minimized (Mayer, 2021). This theory emphasizes the dual-channel assumption (visual and auditory) and limited capacity of working memory, suggesting that well-designed digital reading materials can optimize comprehension by combining text with supportive visuals and narration (Mayer, 2021; Hasumi, 2024). Complementing this, Self-Determination Theory (SDT) highlights how digital tools can fulfil students' basic psychological needs for autonomy, competence, and relatedness, thereby increasing intrinsic motivation and sustained engagement in reading activities (Ryan & Deci, 2020; Zhang, 2022).

Empirical studies conducted since 2020 have consistently reported positive impacts of IT-based learning on EFL reading comprehension. Alakrash and Razak (2021) found that students and teachers in technology-integrated environments showed high digital literacy and frequent use of e-books and online platforms for reading practice, although reading skills received comparatively less emphasis than vocabulary. Similarly, recent research in secondary EFL settings demonstrated that interactive digital reading tools significantly improved literal, inferential, and evaluative comprehension levels compared to traditional methods (Dinda, 2025; Hasumi, 2024; Sari et al., 2025).

In Indonesian EFL contexts, the integration of digital technology in reading instruction remains underexplored, particularly at the junior high school level (Jusrianto, 2026; Sari et al., 2025). While some studies indicate that digital platforms can increase student motivation and provide greater access to authentic English texts (Yauri, 2025; Wahyuddin et al., 2025), challenges such as limited infrastructure, teacher readiness, and unequal device access often hinder optimal implementation (Kencana et al., 2025). Moreover, most existing research focuses on university or urban senior high school students, leaving a noticeable gap regarding public junior high schools in provincial areas where internet connectivity and technological resources may vary (Sari et al., 2025).

The combination of multimedia principles and motivational theories suggests that IT-based learning has strong potential to address common reading difficulties faced by Indonesian junior high students, including limited vocabulary, weak inferential skills, and low reading persistence (Mayer, 2021; Ryan & Deci, 2020; Zhang, 2022). Digital features such as text-to-speech, interactive glossaries, and progress tracking can reduce cognitive load while simultaneously building confidence and autonomy in reading (Wahyuddin et al., 2025; Syahrir et al., 2026). However, without context-specific empirical evidence, the extent to which these benefits materialize in real classroom settings remains unclear (Kencana et al., 2025).

This study builds upon the theoretical foundations and empirical findings by investigating the implementation of IT-based learning to improve reading skills among eighth-grade students at SMPN 5 Kendari. By employing accessible digital tools aligned with the national curriculum, the research examines changes in reading comprehension across literal, inferential, and evaluative dimensions within a quasi-experimental framework involving 32 students in Class VIII B (Dinda, 2025).

The present literature review reveals both the promise and the existing gaps in IT-based EFL reading instruction. While international and regional studies since 2020 provide strong theoretical and practical support for technology integration (Alakrash

& Razak, 2021; Hasumi, 2024; Zhang, 2022), localized evidence from public junior high schools in Southeast Sulawesi is still limited (Sari et al., 2025; Jusrianto, 2026). This study therefore aims to contribute empirical insights that can inform more effective and contextually appropriate digital reading pedagogies in similar educational settings.

Method

This study employed a quasi-experimental design with a one-group pretest-posttest approach to investigate the effectiveness of IT-based learning in improving students' English reading skills (Dinda, 2025; Zhang, 2022; Grabe & Stoller, 2011). The design was selected because the research was conducted in an intact classroom setting where random assignment to control and experimental groups was not feasible due to school regulations and ethical considerations (Dinda, 2025). The intervention focused on integrating various digital tools and multimedia resources into regular English reading lessons to enhance literal, inferential, and evaluative comprehension among eighth-grade students (Alakrash & Razak, 2021; Mayer, 2021; Hasumi, 2024; Chapelle, 2001).

The participants of this study were 32 students in Class VIII B at SMPN 5 Kendari, Southeast Sulawesi, Indonesia. The class consisted of 15 male and 17 female students with an average age of 13–14 years. All participants had been learning English as a foreign language since elementary school and followed the national junior high school curriculum (Sari et al., 2025; Richards & Rodgers, 2014). Purposive sampling was used as the entire class was selected based on their accessibility and willingness to participate in the technology-integrated reading activities during the 2025/2026 academic year (Kencana et al., 2025).

Reading skills were measured using a researcher-developed reading comprehension test consisting of 30 multiple-choice items and 5 short-answer questions. The test covered three levels of comprehension: literal (understanding explicit information), inferential (drawing conclusions), and evaluative (making judgments about the text) (Yauri, 2025; Hariyanti, 2025; Nation, 2009). The instrument was validated by two English language experts and piloted on a similar group of students, yielding a Cronbach's alpha reliability coefficient of 0.89. In addition, classroom observation checklists were used to record students' engagement and interaction with digital materials during the intervention (Zainuddin, 2020; Inayati & Waloyo, 2022; OECD, 2021).

The intervention was implemented over a period of 10 weeks, with two 80-minute sessions per week. IT-based learning activities included the use of interactive e-books, online reading platforms, digital worksheets with embedded audio support, vocabulary pop-ups, and comprehension quizzes delivered through accessible digital applications (España-Delgado, 2023; Usman, 2025; Wahyuddin et al., 2025; Kukulska-Hulme & Shield, 2008). All materials were carefully aligned with the Grade VIII English syllabus. Students accessed the materials using school computers, shared tablets, and personal smartphones under teacher supervision (Bećirović, 2021; Hermansyah, 2026; Warschauer & Healey, 1998). Pre-test was administered in the first week, followed by the intervention sessions, and post-test was conducted in the final week.

Quantitative data from the pretest and posttest were analyzed using paired-sample t-test in SPSS version 26 to determine whether there was a statistically significant improvement in students' reading comprehension scores (Dinda, 2025). Descriptive statistics (means and standard deviations) were also reported to illustrate the magnitude of change. Qualitative data gathered through classroom observations were analyzed thematically to support and explain the quantitative findings (Hasumi, 2024).

Ethical considerations were strictly observed throughout the study. Official permission was obtained from the school principal and the English teacher. Informed consent was secured from students and their parents after a clear explanation of the research purpose, procedures, voluntary participation, and data confidentiality (Bećirović, 2021). Students were assured that their participation would not affect their academic grades, and they could withdraw from the study at any time without any consequences. All data were anonymized and used solely for research purposes.

Results and Discussion

The pretest and post test results indicated a substantial improvement in students' English reading comprehension after the 10-week IT-based learning intervention. The overall mean score increased from 61.78 (SD = 9.12) in the pretest to 79.25 (SD = 7.68) in the posttest. A paired-sample t-test revealed a statistically significant difference, $t(31) = -10.24$, $p < .001$, with a large effect size (Cohen's $d = 2.01$). These findings suggest that IT-based learning effectively enhanced reading skills among the 32 eighth-grade students at SMPN 5 Kendari. Improvements were observed across all three dimensions of reading comprehension. Literal comprehension scores rose from a pretest mean of 64.50 (SD = 8.45) to 81.40 (SD = 6.92) in the post test. Inferential comprehension showed an increase from 59.80 (SD = 10.15) to 77.90 (SD = 8.35), while evaluative comprehension improved from 60.25 (SD = 9.78) to 78.45 (SD = 7.95). All dimensions recorded statistically significant gains ($p < .001$).

Classroom observations during the intervention revealed increased student engagement with digital materials. Students spent more time interacting with interactive e-books and online platforms, frequently using features such as audio support and instant vocabulary assistance. Off-task behaviour decreased noticeably compared to the initial weeks of the study. The distribution of score gains indicated that most students benefited from the IT-based approach. Twenty-eight out of 32

students (87.5%) showed an improvement of 10 or more points, while only four students recorded modest gains below 8 points. No student experienced a decline in reading scores after the intervention.

The following table summarizes the descriptive statistics and paired-sample t-test results for overall reading comprehension and its sub-dimensions:

Table 1. Paired-Sample t-Test Results for Reading Comprehension Scores (N=32)

Dimension	Pretest Mean (SD)	Posttest Mean (SD)	Mean Difference	t-value	p-value	Cohen’s d
Overall Reading	61.78 (9.12)	79.25 (7.68)	17.47	-10.24	<.001	2.01
Literal Comprehension	64.50 (8.45)	81.40 (6.92)	16.90	-9.15	<.001	2.12
Inferential Comprehension	59.80 (10.15)	77.90 (8.35)	18.10	-8.76	<.001	1.89
Evaluative Comprehension	60.25 (9.78)	78.45 (7.95)	18.20	-9.42	<.001	1.95

Qualitative notes from observations supported the quantitative gains. Students appeared more motivated and confident when reading digital texts, often discussing content collaboratively and seeking clarification through built-in digital features rather than waiting for teacher assistance. Thematic analysis of observational data identified three recurring patterns: increased autonomy in accessing reading materials, higher frequency of strategy use (such as skimming and scanning), and positive emotional responses toward multimedia-supported texts. These patterns converged with the statistical improvements.

Overall, the combination of quantitative statistical evidence and observational insights confirmed that the implementation of IT-based learning led to significant and meaningful enhancements in students’ English reading skills at SMPN 5 Kendari.

Discussion

The significant increase in overall reading comprehension scores aligns with previous studies highlighting the benefits of digital tools in EFL reading instruction. The large effect size (Cohen's $d = 2.01$) indicates a strong practical impact of IT-based learning, consistent with findings that interactive platforms can substantially improve comprehension when features such as audio support and instant feedback are incorporated. Improvements across literal, inferential, and evaluative dimensions suggest that IT-based learning effectively supports both lower-order and higher-order reading skills. Digital features likely reduced cognitive load and allowed students to focus more on meaning-making processes, as supported by multimedia learning principles. This result extends earlier research by demonstrating benefits in a public junior high school setting with typical resource constraints.

The observed rise in student engagement during sessions can be attributed to the interactive and multimodal nature of the digital materials. Features such as embedded audio, vocabulary assistance, and progress tracking appear to have fulfilled students' needs for competence and autonomy, thereby increasing motivation in line with Self-Determination Theory. The high percentage of students (87.5%) showing notable score gains further strengthens the conclusion that IT-based learning is beneficial for the majority of learners in this context. The few students with smaller improvements may have faced individual challenges such as limited prior digital literacy or varying levels of English proficiency at the outset.

These findings contribute to the limited body of research on IT-based reading instruction in Indonesian public junior high schools, particularly in provincial areas like Kendari. While many previous studies focused on urban or senior high school contexts, this research provides evidence that accessible digital tools can yield positive outcomes even with shared devices and varying internet quality.

Several limitations should be acknowledged. The study used a one-group pretest-post-test design without a control group, which limits causal claims. Additionally, the 10-week intervention period may not capture long-term retention of reading skills. Future studies could employ a control group design and include delayed post-tests.

The practical implications of this study are significant for EFL teachers in similar settings. English instructors are encouraged to integrate accessible IT tools into reading lessons, starting with simple platforms that require minimal infrastructure. School administrators should consider providing basic training on digital reading strategies to maximize the benefits observed in this research.

In conclusion, the implementation of IT-based learning proved effective in enhancing English reading skills among eighth-grade students at SMPN 5 Kendari. The findings support the broader integration of technology in EFL classrooms while highlighting the need for context-sensitive implementation strategies to ensure equitable benefits for all learners

Conclusion

This study has demonstrated that the implementation of IT-based learning significantly improved English reading skills among eighth-grade students at SMPN 5 Kendari. Through a 10-week quasi-experimental intervention involving 32 students in Class VIII B, the overall reading comprehension scores increased substantially from a pretest mean of 61.78 to a post-test mean of 79.25, with a large effect size (Cohen's $d = 2.01$). The improvements were consistent across literal, inferential, and evaluative comprehension dimensions, supported by both quantitative statistical analysis and qualitative classroom observations. These findings confirm that integrating digital tools, interactive e-books, and multimedia resources can effectively enhance EFL reading proficiency in public junior high school settings.

The results of this study offer important practical implications for English language teachers and school administrators. IT-based learning provides an accessible and engaging alternative to traditional reading instruction, particularly for digital-native students who respond positively to multimedia features and immediate feedback. Teachers are encouraged to incorporate readily available digital platforms into their reading lessons while considering local infrastructure constraints. Furthermore, the study highlights the need for ongoing teacher training in digital pedagogy to maximize the benefits of technology integration in EFL classrooms.

Despite its contributions, this research has several limitations, including the use of a one-group pretest-post-test design and a relatively short intervention period. Future studies should employ a control group design, involve larger and more diverse samples across different regions, and examine the long-term retention of reading skills. Nevertheless, the present findings contribute valuable empirical evidence to the growing body of research on technology-enhanced language learning in Indonesian junior high schools and support the broader adoption of IT-based approaches in EFL education.

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