

THE IMPACT OF INTERACTIVE POWERPOINT MEDIA ON EIGHT-GRADE STUDENTS' ENGLISH READING COMPREHENSION

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Kata Kunci: Interactive PowerPoint; Reading Skills; Multimedia Learning; EFL; Secondary School	Abstrak: This study investigates the effect of using interactive PowerPoint media on the improvement of English reading skills among eighth-grade secondary school students. Employing a quantitative experimental approach with a Posttest-Only Control Group Design, the research involved 60 students selected through quota sampling. The experimental group received instruction through interactive PowerPoint, while the control group was taught by the researcher using conventional methods. Data were collected through a validated multiple-choice reading test. Instrument validity was examined using biserial correlations, yielding 10 valid items, and reliability was confirmed using the KR-21 formula ($r = 0.638$; categorized as high). Data analysis included descriptive statistics, normality and homogeneity tests, and an independent-samples t-test at the 0.05 significance level. The findings revealed that the experimental group achieved a mean score of 77.26, while the control group achieved a mean score of 58.40. The t-test result ($t_{count} = 23.45 > t_{table} = 2.00$), with a statistically significant difference, $t(58) = 23.45$, $p < 0.001$. The study concluded that interactive PowerPoint media significantly improve students' English reading skills and offer practical pedagogical implications for secondary school EFL instruction.	
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INTRODUCTION

The Developments in educational technology have driven a transformation in teaching strategies at various levels of education, including English language learning in junior high schools. Reading skills are a crucial competency in mastering English, as they serve as the foundation for developing other language skills such as writing, speaking, and listening. However, in practice, classroom reading instruction is still dominated by a conventional lecture-based approach that provides limited visual and interactive stimulation for students.

This situation contributes to low interest in reading, limited active participation, and suboptimal achievement in English reading. This concern is reflected at the national level in which the Indonesia's reading literacy score in the 2022 Programme for International Student Assessment (PISA) was 359, a decline from 371 in 2018 placing Indonesian students well below the OECD average and among the lowest performers internationally (OECD, 2023). Therefore, integrating technology-based learning media is an urgent need to improve the quality of the learning process and its outcomes.



Several previous studies have shown that the use of technology-based learning media, particularly Microsoft PowerPoint, can improve student learning outcomes. Research conducted by Salmiah et al. (2016), Siti Sakinah (2020), and Sulastri (2017) demonstrated that PowerPoint is effective in improving student achievement and interest in learning across various subjects. This medium allows material to be presented visually, systematically, and interactively through a combination of text, images, animations, and audiovisual elements, thereby increasing student attention and motivation. Conceptually, PowerPoint-based instruction has been recognized as an innovative form of visual media that supports effective instructional communication.

Although numerous studies have examined the Effectiveness of Powerpoint as an instructional medium, most of them have focused on general learning achievement or subjects other than English. Only a limited number of studies have investigated its effectiveness in improving English reading comprehension among junior secondary school students through a controlled experimental design. Moreover, previous studies rarely integrate multimedia learning theory to explain how interactive PowerPoint facilitates reading comprehension. Therefore, this study addresses these gaps by investigating the effectiveness of interactive PowerPoint media in improving English reading comprehension among eighth-grade students through a quantitative experimental design grounded in multimedia learning theory.

Based on the background, this study aims to analyze the effectiveness of using interactive PowerPoint media in improving English reading skills among eighth-grade junior high school students. This study employed an experimental design that compared classes taught with PowerPoint media with those taught using conventional methods. The contribution of this study lies in providing empirical evidence on the effectiveness of interactive visual media in teaching English reading at the junior high school level. The writer expected that these findings would offer theoretical implications for the development of instructional media and practical recommendations for teachers in designing more innovative and effective teaching strategies. This article is structured into the following sections: an introduction, Literature Review, Research Methodology, Results and Discussion, Conclusions and Implications, and References.

Learning Media in English Language Learning

Learning media plays a central role in creating meaningful learning experiences. Traditionally, learning media has been viewed as merely a supporting tool to assist teachers in delivering content. However, contemporary educational studies position learning media as an integral component of pedagogical design, actively influencing cognitive engagement, motivation, and knowledge construction. In English language learning, media functions as a mediating artifact that bridges linguistic input and learner comprehension, particularly in English.

According to Richard E. Mayer's Cognitive Theory of Multimedia Learning (2009), learning becomes more meaningful when learners process verbal and visual information simultaneously through two cognitive channels. This theory emphasizes that a carefully designed multimedia environment can enhance comprehension by encouraging active cognitive processing while reducing unnecessary cognitive load. In the interactive PowerPoint slides used in this study, this principle was applied by placing key vocabulary, supporting images, and short explanatory text on the same screen, reflecting Mayer's spatial contiguity principle, which holds that related words and pictures should be positioned near each other rather than separated on the page or screen. Complementing this perspective, John Sweller's Cognitive Load Theory (2011) explains



that learning materials should be structured to optimize working memory capacity. Poorly designed media can overwhelm learners, while well-organized multimedia presentations facilitate schema construction and long-term retention.

From a sociocultural perspective, Lev Vygotsky's constructivist theory highlights the importance of scaffolding within the Zone of Proximal Development (ZPD). Interactive media provides targeted support that helps learners go beyond their current competencies. Furthermore, John Keller's ARCS Motivation Model (2010) emphasizes how instructional design should capture attention, ensure relevance, build confidence, and generate satisfaction like elements often embedded in multimedia-based instruction.

Recent empirical studies reinforce this theoretical foundation. Xin and Zhang (2024) found that multimedia-supported reading instruction significantly improved EFL learners' comprehension and retention compared to traditional methods. Similarly, Hasumi (2024) identified technology-enhanced language learning (TELL) as a dominant research trajectory in Scopus-indexed publications, with consistent positive effects on receptive skills such as reading. Research published in *Computers & Education* further demonstrates that structured digital environments foster deeper understanding than lecture-based instruction. Thus, integrating multimedia into English language teaching is not just a technological trend, but also a theoretically grounded pedagogical necessity.

Microsoft PowerPoint has evolved from a tool for simple slides to a versatile platform that supports text, animations, links, quizzes, audio, and interactive features. When created with a clear purpose, interactive PowerPoint becomes a well-organized learning space rather than just a series of slides that go one after another.

Empirical evidence supports its instructional value. Nurwindasari and their team in 2025 found that using interactive PowerPoint presentations helped young readers improve their early reading abilities, especially in correctly decoding words and understanding what they read. This study, conducted at the elementary school level, demonstrated how structured multimedia slides can support learning through scaffolding. At the secondary school level, Zikri et al. (2023) found that using PowerPoint in teaching helped students better understand texts and made them more engaged in class than with older teaching methods. Nasr (2024) found that using visual support and a well-organized slide order greatly improved students' understanding of the text. Zahroyat and others in 2017 found that using PowerPoint in EFL classes helped students improve their reading skills.

Besides reading, digital teaching tools help improve other language abilities. In 2026, Oktaviana and Kuspiyah found that using video-based media improved writing skills, and Kartikawati also showed that digital apps can boost vocabulary. These results show that using technology in learning environments helps develop language skills in many ways. Nikishova and Kryvonosova (2022) also showed that teaching language through media helps secondary school students improve both their listening and speaking abilities. Al-Seghayer (2021) showed that structured multimedia environments are very helpful for EFL reading comprehension, especially when learners don't get much exposure to real English texts.



Interactive PowerPoint as a Multimedia-Based Instructional Innovation

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Interactive PowerPoint works well because several theories help explain why Mayer's theory holds that using both words and pictures helps people better understand. According to Sweller's theory, clearly organized slides make it easier for the brain to process information. Vygotsky's approach sees interactive features as tools that support learning step by step. Keller's model suggests that using different media makes learning more interesting. Paivio's theory from 1986 says that combining images and words helps remember things longer. When combined, these theories view interactive PowerPoint as a well-organized multimedia tool that supports learning, participation, and information retention.

Reading Skills in EFL Contexts

Reading in a foreign language involves a complex process that requires various cognitive and language-related skills, such as decoding the text, accessing vocabulary, understanding sentence structure, making inferences, and critically evaluating the content. Contemporary literacy research views reading comprehension as a process in which the reader, the text, and the sociocultural environment interact (Grabe, 2009). Research in Educational Technology: Research and Development shows that combining visual aids with written information greatly improves the ability to make inferences and helps retain information for longer.

Farrar and their team in 2024 highlight that digital classrooms require students to have multimodal literacy, meaning they must be able to understand and interpret text, images, and other visual elements. In English as a Foreign Language settings, a limited vocabulary can often prevent full understanding. Multimedia scaffolding offers a visual context that helps learners



acquire vocabulary and develop inferential reasoning skills (Xin & Zhang, 2024). Interactive slides that emphasize key terms, include guiding questions, and present information in a logical order can help students develop metacognitive reading skills, such as making predictions, summarizing content, and tracking their understanding.

Moreover, engagement acts as an intermediary factor that influences comprehension outcomes. Keller's motivational theory indicates that using eye-catching multimedia components helps to boost continued engagement and mental involvement. Therefore, teaching reading through interactive visual media supports both the cognitive and motivational aspects of learning. Cahyani and Liansari (2023) also found that using multimedia in reading environments significantly increases students' interest in longer texts, helping them understand the material more deeply.

Research Gap and Theoretical Positioning

Although extensive research on instructional media exists, certain limitations remain in the literature.

1. Many studies focus more on overall learning results instead of particular reading skills within a controlled experiment environment.
2. Many studies have concentrated on teaching methods for primary school students, while there is limited research on language learning in secondary education settings.
3. Few studies use controlled experiments to compare the effectiveness of interactive PowerPoint presentations with traditional teaching methods at the junior secondary education level.
4. Limited studies incorporate multimedia learning theory directly into the teaching practices of Indonesian junior secondary schools.

This study addresses these gaps by focusing on the English reading abilities of secondary school students. It uses a quantitative experimental approach to compare the effectiveness of interactive PowerPoint presentations against traditional teaching methods. The results are analyzed through the lenses of multimedia, cognitive, constructivist, and motivational learning theories. This study contributes to both theory and teaching practice by combining theoretical concepts with hands-on experimentation in the classroom, thereby advancing technology-supported English as a Foreign Language teaching in secondary schools.

METHOD

This study employed a quantitative experimental design with a posttest-only control group to examine the effect of interactive PowerPoint media on secondary school students' English reading skills. The independent variable was the use of interactive PowerPoint presentations integrating visual elements, animation, structured text sequencing, and guided comprehension tasks, while the dependent variable was students' reading comprehension achievement.

The population consisted of eighth-grade students at a secondary school, and a sample of 60 students was selected via quota sampling. The participants were divided equally into an experimental group ($n = 30$) that received instruction via interactive PowerPoint and a control group ($n = 30$) that was taught using conventional teacher-centered methods. Both groups were exposed to the same reading materials and instructional duration to ensure comparability and minimize confounding variables. Because this study employed a Posttest-Only Control Group



Design, pretest scores were not collected; group comparability was instead supported by drawing both groups from the same grade level, school, and instructor, combined with quota sampling to form equally sized groups. This reflects the logic of the Posttest-Only Control Group Design, in which comparability is established through equivalent group formation rather than pretest matching (Sugiyono, 2014). The absence of pretest data is acknowledged as a limitation of this design and is addressed further in the Conclusion.

Data were collected through a multiple-choice reading comprehension posttest focusing on descriptive texts. The instrument was developed to measure students' ability to identify main ideas, supporting details, vocabulary in context, and factual information. The instrument's construct validity was tested empirically using the biserial correlation coefficient (rather than through expert content validation), with items considered valid when r_{count} exceeded r_{table} at $\alpha = 0.05$. From 30 initial items, 10 met the validity criteria and were retained for the final instrument.

Reliability was calculated using the Kuder–Richardson (KR-21) formula, yielding a coefficient of 0.638, which indicates high reliability. These procedures ensured that the instrument was both valid and internally consistent for measuring reading comprehension. Data analysis involved descriptive and inferential statistics. Descriptive statistics (mean, standard deviation, and frequency distribution) were computed to summarize students' performance. Prior to hypothesis testing, assumption tests were conducted, including the Lilliefors test for normality and the F-test for homogeneity of variance at a 0.05 significance level. An independent samples t-test was then applied to determine whether there was a statistically significant difference between the experimental and control groups. The null hypothesis was rejected if t_{count} exceeded t_{table} , indicating a significant effect of interactive PowerPoint media on students' English reading skills.

RESULT AND DISCUSSION

Result

The results of this study clearly indicate that the use of interactive PowerPoint media significantly improved the English reading skills of eighth-grade secondary school students. Based on descriptive statistical analysis, the experimental group, which received instruction using interactive PowerPoint, obtained a mean score of 77.26 (SD = 10.76). In contrast, the control group, taught using conventional methods, achieved a mean score of 58.40 (SD = 10.46). The 18.86-point difference reflects a substantial improvement in reading achievement among students exposed to multimedia-supported instruction.

The median (80.31) and mode (85.11) in the experimental group were considerably higher than those of the control group (median = 56.00; mode = 54.66), indicating that the improvement was experienced by most students, not only by a small number of high achievers.

Table 1 summarizes the posttest reading comprehension scores for both groups.

Statistics	Mean	SD	Median	Mode
Experimental Group	77.26	10.76	80.31	85.11
Control Group	58.40	10.46	56.00	54.66



Assumption testing confirmed that the data met parametric requirements. The normality test (Liliefors) showed that both groups were normally distributed (L_o experimental = 0.1367; L_o control = 0.1302; $L_{table} = 0.161$, $\alpha = 0.05$). The homogeneity test also indicated equal variances ($F_{count} = 1.05 < F_{table} = 1.84$).

The independent-samples t-test produced a t-value of 23.45, which was significantly greater than the critical value $t_{table} = 2.00$ ($df = 58$, $\alpha = 0.05$). Since $t_{count} > t_{table}$, the null hypothesis (H_o) was rejected. Therefore, the statistical evidence confirms that interactive PowerPoint media significantly improve English reading skills among Grade VIII secondary school students. This finding directly answers the research question: the use of PowerPoint media significantly influences students' English reading skills.

Discussion

The findings demonstrate that interactive PowerPoint media significantly enhance students' reading comprehension. The nearly 19-point difference between groups is not only statistically significant but also pedagogically meaningful. This indicates that multimedia-based instruction contributes substantially to reading improvement in secondary school EFL classrooms. Several specific design features of the interactive PowerPoint likely contributed to this outcome, including highlighted keywords that directed students' attention to essential vocabulary, sequential slide transitions that paced students through the text structure step by step, and guided comprehension questions embedded within the slides that prompted students to actively check their own understanding as they read.

From a theoretical perspective, these results align with Mayer's Cognitive Theory of Multimedia Learning (2009), which explains that students learn more effectively when verbal and visual information are presented simultaneously. In this study, interactive PowerPoint slides combined text, images, highlighted keywords, and structured sequencing, enabling students to process reading materials through dual channels. This multimodal presentation likely enhanced comprehension by strengthening cognitive connections between textual meaning and visual representation.

The findings are also consistent with Cognitive Load Theory, which suggests that well-designed instructional media reduce unnecessary cognitive burden (Sweller, 2011). Conventional reading instruction often requires students to process dense textual information without visual guidance. In contrast, interactive PowerPoint organized information into clear segments, emphasized important ideas, and provided guided comprehension prompts. This structure likely reduced extraneous cognitive load and allowed students to focus on understanding main ideas, supporting details, and vocabulary in context.

Moreover, from a constructivist viewpoint, interactive PowerPoint functioned as a scaffold that supported students' active engagement with texts (Vygotsky, 1978). Instead of passively receiving explanations, students interacted with visually structured materials, which facilitated meaning construction. This is particularly important in EFL contexts, where students may struggle with unfamiliar vocabulary and grammatical patterns. The engagement-fostering



properties of interactive media align with Keller's ARCS model (2010), which emphasizes that motivating instructional environments increase learner attention and persistence.

The consistent improvement across the experimental group suggests that interactive PowerPoint benefits students with varying proficiency levels. The similar standard deviations between groups indicate that the improvement was not limited to high-performing students but occurred broadly within the classroom. This highlights the inclusive pedagogical value of multimedia-supported reading instruction, consistent with findings by Cahyani and Liansari (2023) and Nikishova and Kryvonosova (2022).

Importantly, the findings of this study strengthen previous research indicating that multimedia learning has positive effects on language skills (Zikri et al., 2023; Nurwindasari et al., 2025; Nasr, 2024). However, this study provides empirical evidence at the secondary school level. It focuses directly on English reading skills, thereby addressing a gap in classroom-based experimental research in junior secondary contexts.

Practical Implications for Secondary School Teachers

The findings offer several concrete implications for English teachers at the secondary level. First, teachers should design PowerPoint slides that are interactive rather than text-heavy. Effective slides should include visual cues, keyword highlighting, guiding questions, and step-by-step comprehension prompts. This helps students process reading passages systematically instead of being overwhelmed by full-text displays.

Second, multimedia elements should function as scaffolding tools. Images, diagrams, and contextual visuals should support meaning construction, especially when introducing descriptive or narrative texts. Teachers can gradually reduce scaffolding as students' comprehension improves, in accordance with Vygotsky's (1978) concept of the Zone of Proximal Development.

Third, PowerPoint should not replace reading activities; rather, it should structure them. Slides can guide pre-reading (activating background knowledge), while-reading (identifying main ideas), and post-reading (summarizing or inference tasks). When used strategically, the medium enhances instructional clarity without reducing students' cognitive engagement.

Fourth, interactive features such as embedded questions, short quizzes, or collaborative slide discussions can promote active participation. This shifts the classroom dynamic from teacher-centered explanation to guided student interaction with the text, aligning with contemporary learner-centered pedagogical principles.

CONCLUSION

This study aimed to examine whether the use of interactive PowerPoint media significantly affects English reading skills among Grade VIII secondary school students. Based on statistical analysis, the findings clearly indicate a significant positive effect of interactive PowerPoint on students' reading achievement. The experimental group outperformed the control group by a



substantial 18.86 points, and hypothesis testing confirmed that the difference was statistically significant at the 0.05 level ($t_{\text{count}} = 23.45 > t_{\text{table}} = 2.00$).

The results demonstrate that integrating structured multimedia elements, such as visual cues, highlighted keywords, and guided comprehension prompts, can enhance students' understanding of reading texts. Interactive PowerPoint not only increases classroom engagement but also directly contributes to measurable improvements in reading performance, grounded in Mayer's Multimedia Learning Theory, Sweller's Cognitive Load Theory, and Vygotsky's constructivist framework.

Therefore, it can be concluded that interactive PowerPoint media is an effective supplementary tool for improving English reading comprehension among eighth-grade EFL learners. English teachers are encouraged to consider integrating well-designed multimedia presentations as a complement to, rather than a replacement for, existing reading instruction strategies in middle school EFL classrooms. Because this study used a Posttest-Only Control Group Design without pretest data, future research is encouraged to incorporate pretest measures to further strengthen causal claims, and to examine the effects of interactive PowerPoint on other language skills, across diverse student populations and with larger sample sizes, to further validate and expand the findings of this study.

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