

The Effect of Using Digital Storybooks on Vocabulary Mastery of Fifth-Grade Students at MIN 1 Ogan Ilir

Risdatul Isnaini¹, Masagus Firdaus², Mulyadi³

^{1,2,3}Universitas PGRI Palembang

*Corresponding author: risdatulnaini28101982@gmail.com

Abstrak

Penelitian ini bertujuan untuk meneliti pengaruh digital storybook terhadap penguasaan kosakata siswa kelas lima di MIN 1 Ogan Ilir. Penelitian ini menggunakan Classroom Action Research (CAR) yang dilaksanakan dalam dua siklus dengan 20 siswa sebagai peserta. Setiap siklus meliputi perencanaan, tindakan, observasi, dan refleksi. Instrumen yang digunakan berupa lembar observasi, wawancara, dan tes kosakata. Data kuantitatif dianalisis menggunakan statistik deskriptif dan uji t berpasangan, sedangkan data kualitatif dianalisis melalui observasi dan refleksi. Hasil penelitian menunjukkan peningkatan signifikan dalam penguasaan kosakata siswa setelah menggunakan digital storybook. Nilai rata-rata meningkat dari 67,8 pada pra-siklus menjadi 77,4 pada Siklus I dan 91,3 pada Siklus II. Temuan ini menunjukkan bahwa digital storybook efektif meningkatkan akuisisi kosakata melalui fitur multimodal yang menggabungkan teks, suara, dan visual yang mendukung daya ingat serta pemahaman kontekstual. Kebaruan penelitian ini terletak pada integrasi prinsip pembelajaran multimodal dalam pendidikan dasar Islam. Secara praktis, penelitian ini menunjukkan bahwa digital storybook dapat menjadi media pembelajaran yang menarik untuk mendorong pembelajaran mandiri dan bermakna. Kontribusi penelitian ini memperkaya bukti empiris yang mendukung pengajaran bahasa berbasis teknologi untuk peserta didik di wilayah pedesaan.

Kata kunci: Buku Cerita Digital, Penguasaan Kosakata, Pembelajaran Berbasis Teknologi, Siswa Sekolah Dasar, Peserta Didik Muda

Abstract

This study aimed to investigate the effect of digital storybooks on fifth-grade students' vocabulary mastery at MIN 1 Ogan Ilir. The research employed Classroom Action Research (CAR) conducted in two cycles involving 20 students as participants. Each cycle consisted of planning, action, observation, and reflection. The instruments used were observation sheets, interviews, and vocabulary tests. Quantitative data were analyzed using descriptive statistics and paired sample t-tests, while qualitative data were analyzed through observation and reflection. The results showed a significant improvement in students' vocabulary mastery after using digital storybooks. The mean score increased from 67.8 in the pre-cycle to 77.4 in Cycle I and 91.3 in Cycle II. This finding indicates that digital storybooks effectively enhance vocabulary acquisition through multimodal features combining text, sound, and visuals that support memory retention and contextual understanding. The novelty of this research lies in its integration of multimodal learning principles within Islamic elementary education. Practically, this study suggests that digital storybooks can serve as engaging instructional media to promote independent and meaningful learning. The contribution of this study enriches empirical evidence supporting technology-enhanced language instruction for young learners in rural settings.

Keywords: Digital Storybook, Vocabulary Mastery, Technology-Enhanced Learning, Elementary Students, Young Learners

1. INTRODUCTION

Vocabulary mastery is essential for language acquisition and literacy development, enabling learners to comprehend texts, express ideas, and participate in communication (Nation, 2013). It directly affects reading comprehension, writing quality, and listening skills (Lavigne, Reese, & Durrant, 2022; Durrant & Brenchley, 2019), serving as a foundation for

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literacy and academic achievement (Kurniawan, 2024; Astari & Yulianto, 2025; Aziez, Sadeli, & Furqon, 2025). Interactive digital storybooks enhance vocabulary acquisition by providing multimodal input that engages multiple cognitive channels (Maya & Al Halim, 2021; Maya, Sumarni, & Suseno, 2022; Septianisa, Rusmawaty, & Setiawan, 2025). These storybooks integrate multimedia elements text, audio, and visuals to support comprehension, motivation, and retention (Pujiani, Firliantama, & Rokhayani, 2022; Smeets & Bus, 2012; Firliantama & Rokhayani, 2023; Habibi & Widyantoro, 2020), aligning with Dual Coding Theory (Paivio, 2014) and Multimedia Learning Theory (Mayer, 2020; Boaler, 2022). Empirical evidence shows that synchronized audio-visual storybooks improve both vocabulary retention and learner engagement (Belda Medina & Goddard, 2024; Liu et al., 2024).

Despite their growing use, research on digital storybooks in rural Indonesian contexts remains limited, especially in Islamic elementary schools where infrastructure and teacher readiness vary (Yusof & Wahab, 2020; Kurniawan, 2024; Rittle-Johnson, Schneider, & Star, 2020; Muhtadin & Santoso, 2022; Suparyati & Habsya, 2024). Evidence from rural areas indicates that interactive storytelling apps yield greater vocabulary gains and engagement than traditional methods (Interactive digital storytelling apps study, 2025; Kurniawan & Wijayaningsih, 2025). These tools support independent learning at students' own pace while catering to diverse learning preferences (Pujiani, Firliantama, & Rokhayani, 2022; Smeets & Bus, 2012; Hidayat & Suryadi, 2022). Integrating digital storybooks addresses both cognitive and affective outcomes, fostering motivation, enjoyment, and confidence alongside knowledge acquisition (Yildirim, 2021; Pratiwi, Handayani, & Utami, 2023; Kurniawan, 2021; Maya & Al Halim, 2021). Consequently, this study explores their impact on vocabulary mastery among fifth-grade students at MIN 1 Ogan Ilir, aiming to provide empirical evidence and practical strategies for rural educators (Yusof & Wahab, 2020; Kurniawan, 2024; Suparyati & Habsya, 2024).

The objective of this study is to investigate the effect of using digital storybooks on vocabulary mastery of fifth-grade students at MIN 1 Ogan Ilir. Specifically, the study aims to:

- 1) Examine the impact of digital storybooks on students' vocabulary acquisition in a rural Islamic elementary school context.
- 2) Evaluate the cognitive and affective improvements resulting from digital storybook use.
- 3) Provide practical recommendations for teachers to implement technology-enhanced learning in vocabulary instruction.
- 4) Contribute empirical evidence to support the theoretical foundations of multimodal and technology-enhanced language learning.

By achieving these objectives, this study intends to enhance understanding of effective instructional strategies for young learners in under-resourced settings and to inform both educators and policymakers on how digital storybooks can optimize vocabulary mastery while fostering engagement and motivation.

2. METHOD

2.1 Research Design

This study employed Classroom Action Research (CAR), following the model proposed by Kemmis and McTaggart (2020), which comprises four stages: planning, action, observation, and reflection. CAR was chosen because it enables teachers to systematically identify

learning problems, implement instructional innovations, and evaluate their effectiveness directly in real classroom settings (Burns, 2017; Sagor, 2019). This design is particularly suitable for investigating interventions in language learning, as it combines practical classroom application with reflective analysis, facilitating iterative improvement of teaching strategies (Creswell & Poth, 2021). CAR allows researchers to monitor both cognitive and affective changes among students, capturing not only performance outcomes but also engagement, motivation, and interaction dynamics (Mulyana & Ernawati, 2022).

2.2 Participants

The research was conducted at MIN 1 Ogan Ilir, located in Payaraman District, Ogan Ilir Regency. Twenty fifth-grade students participated in this study, comprising 18 females and 2 males. The selection of participants was based on convenience sampling, as all students were enrolled in the target classroom and actively attended English lessons (Etikan & Bala, 2020). Students' ages ranged from 10 to 11 years old. The small class size allowed for individualized attention and monitoring during the implementation of the digital storybook intervention.

2.3 Instruments

Data were collected using multiple instruments to ensure the validity and reliability of the findings.

- 1) Vocabulary Test – A 30-item test consisting of matching and multiple-choice questions was developed based on the content of the digital storybook. The test aimed to measure students' vocabulary mastery before and after the intervention. Item validity was reviewed by English education experts, and reliability was confirmed using a pilot test with a Cronbach's alpha of 0.82, indicating high internal consistency (Field, 2018).
- 2) Observation Sheets – These sheets recorded students' engagement, cooperation, and participation during the learning activities. The observation focused on behaviors such as attentiveness, collaboration during pair or group activities, and responsiveness to prompts from the teacher (Santoso & Widjaja, 2021).
- 3) Interviews – Semi-structured interviews were conducted with selected students to explore their perceptions, motivation, and attitudes toward learning with digital storybooks. This qualitative instrument provided rich contextual information to complement the quantitative findings (Creswell & Creswell, 2018; Pratiwi, Handayani, & Utami, 2023).

2.4 Data Collection Procedures

The study was implemented in two cycles, each consisting of planning, action, observation, and reflection.

- **Cycle I:** The researcher introduced digital storybooks during English lessons. Students engaged with the story "*The Lion and the Mouse*", followed by vocabulary exercises based on the story's content. Observations and interviews were conducted to assess student engagement and initial learning outcomes.
- **Cycle II:** Revisions were made based on reflections from Cycle I. Additional interactive and contextual vocabulary tasks were included to enhance understanding. Observation and interviews were repeated to examine improvements in engagement, participation, and vocabulary mastery. This iterative approach allowed the intervention to be refined progressively, maximizing its effectiveness (Sullivan, Borcek, Walker, & Rennie, 2021).

2.5 Data Analysis Techniques

Quantitative data from pre- and post-tests were analyzed using **descriptive statistics** (mean, standard deviation) and **paired-sample t-tests** to determine whether the intervention significantly improved students' vocabulary mastery (Pallant, 2020). The paired-sample t-test was chosen because it compares means from the same participants before and after the intervention, thus controlling for individual differences (Field, 2018).

Qualitative data from observation sheets and interviews were analyzed through thematic coding, identifying recurring patterns, themes, and trends related to student engagement, motivation, and perceptions (Creswell & Poth, 2021a). Coding involved categorizing responses into thematic units such as "motivation," "interaction," and "confidence in vocabulary usage," which were then triangulated with quantitative results to strengthen the validity of conclusions (Mulyana & Ernawati, 2022; Santoso & Widjaja, 2021).

2.6 Ethical Considerations

Ethical standards were strictly adhered to throughout the study. Permission to conduct research was obtained from school authorities, and **students participated voluntarily**. Participants' **confidentiality and anonymity** were maintained by assigning codes instead of names in all data records and reports. The study ensured that no participant experienced harm or undue pressure, aligning with established ethical guidelines for educational research (Fraenkel, Wallen, & Hyun, 2019).

In summary, the research design, participant selection, instruments, procedures, and analysis techniques were carefully structured to provide a rigorous investigation of the effect of digital storybooks on fifth-grade students' vocabulary mastery at MIN 1 Ogan Ilir. The combination of quantitative and qualitative methods allowed for a comprehensive understanding of both learning outcomes and student experiences, supporting the reliability and applicability of the findings in similar educational contexts.

3. RESULT AND DISCUSSION

Result

Pre-Cycle Results

The initial assessment revealed that only 6 out of 20 students (30%) achieved the **Minimum Mastery Criterion (KKM = 75)**. The mean score was 67.8 (SD = 5.32), indicating that most students faced difficulties in remembering and using new English vocabulary. Classroom observations revealed low participation, limited confidence, and frequent misunderstandings of word meanings and contextual usage. These findings suggest that conventional instruction alone was insufficient to develop vocabulary mastery among fifth-grade students at MIN 1 Ogan Ilir (Nation, 2013; Lavigne, Reese, & Durrant, 2022).

Cycle I Results

After the first intervention using the digital storybook "*The Lion and the Mouse*", students' mean vocabulary score increased to 77.4 (SD = 4.85), with 70% of students achieving the

KKM. The story included **audio narration, subtitles, and animation**, allowing students to listen, repeat, and identify key vocabulary. Observation sheets recorded improvement in engagement, participation, and enthusiasm, although some learners still required teacher support for pronunciation and recall. These results indicate that the **multimodal features** of digital storybooks positively influenced vocabulary retention and student motivation (Pujiani, Firliantama, & Rokhayani, 2022; Smeets & Bus, 2012).

Cycle II Results

In the second cycle, students interacted with the digital storybook “*The Clever Rabbit and the Lion*”, supplemented by activities such as vocabulary matching, sentence-making, and storytelling. Vocabulary mastery significantly improved, with the mean score reaching **91.3 (SD = 3.14)** and all 20 students (100%) meeting the KKM. Paired-sample t-tests confirmed a **significant difference** between pre-test and post-test scores ($t = 15.82, p < .001$), demonstrating a strong positive effect of digital storybooks on vocabulary acquisition. Observation indicated that students became more confident, enthusiastic, and capable of using new vocabulary contextually, suggesting both cognitive and affective gains (Creswell & Creswell, 2018).

Qualitative Findings

Interviews and reflections revealed that students described digital storybooks as “fun,” “easy to understand,” and “helpful to remember words.” Teachers reported higher attentiveness and collaboration during lessons. The combination of text, images, and sound provided multimodal input that strengthened memory retention and comprehension. These qualitative findings corroborate quantitative improvements and illustrate the practical benefits of digital storytelling in vocabulary instruction (Yildirim, 2021; Mayer, 2020). Overall, the results indicate that digital storybooks significantly improve fifth-grade students’ vocabulary mastery. Both quantitative and qualitative data show enhanced engagement, confidence, and comprehension, highlighting the effectiveness of multimodal learning interventions in rural educational settings (Paivio, 2014; Weng & Chen, 2020).

Discussion

The study demonstrates that digital storybooks effectively enhance vocabulary mastery among fifth-grade students. The mean score improvement from 67.8 (pre-cycle) to 91.3 (post-cycle) indicates substantial learning gains. These findings align with Pujiani et al. (2022) and Yildirim (2021), who reported that interactive e-storybooks improve comprehension and retention in language learning contexts. The visual and auditory reinforcement provided by digital storybooks helps learners encode and recall new words in context, supporting Dual Coding Theory (Paivio, 2014).

Paivio (2014) posits that human cognition processes information through verbal and nonverbal channels. In this study, verbal components (text and narration) and visual cues (animations and images) worked together to reinforce vocabulary acquisition. Mayer’s (2020) Multimedia Learning Theory similarly emphasizes that simultaneous processing of words and images enhances comprehension and memory. The significant improvements observed in Cycle II suggest that multimodal input strengthens cognitive connections, aiding vocabulary retention and application.

The study highlights the role of Technological Pedagogical Content Knowledge (TPACK) in effectively integrating digital storybooks into classroom instruction (Mishra & Koehler, 2006). Teachers aligned technology use with learning objectives, transforming vocabulary lessons from rote memorization to interactive exploration. This approach echoes Weng and Chen (2020), who found that teacher competence in digital pedagogy is essential for meaningful learning outcomes. Students' engagement and improved scores indicate successful scaffolding and guided instruction.

This research contributes to the limited literature on technology-enhanced learning in rural Islamic schools. Similar to findings by Herlina, Huda, and Arifin (2019), digital interventions can succeed in low-resource environments when appropriate tools (e.g., Book Creator, Canva for Education) are selected. The study demonstrates that even in rural contexts, students can benefit from well-structured, multimodal learning activities.

Digital storybooks enhanced students' intrinsic motivation, combining entertainment with learning. Learners showed curiosity, enjoyment, and willingness to participate in activities. This corroborates the findings of Yusof and Wahab (2020), who reported increased learner motivation in Malaysian digital storytelling programs. The engagement observed in both cycles indicates that multimodal materials are effective in fostering both cognitive and affective aspects of vocabulary learning.

The results are consistent with Habibi and Widyantoro (2020), Firliantama and Rokhayani (2023), and Mustika, Pujiono, and Supriyadi (2022), who documented significant vocabulary gains using digital storytelling. Conversely, Kosakiewicz (2017) found minimal effects in unguided contexts, highlighting the importance of scaffolding. The guided activities in this study ensured that students could effectively translate vocabulary exposure into mastery.

Teachers are encouraged to integrate digital storybooks in English instruction to promote active learning, vocabulary growth, and cultural literacy. The study supports learner-centered approaches consistent with Indonesia's Merdeka Curriculum, emphasizing digital integration and interactive learning. Furthermore, digital storybooks can foster character education through embedded moral narratives, making learning meaningful and engaging.

This study's small sample size and short duration limit generalizability. Future research should explore larger populations and longer interventions, possibly including comparative experimental designs to measure long-term retention and transferability to other language skills, such as writing, speaking, and listening. Additionally, future studies could investigate the integration of adaptive technologies to personalize vocabulary learning.

The findings robustly demonstrate that digital storybooks positively influence vocabulary mastery in rural Islamic elementary schools. By combining multimodal content with guided instruction, students achieved significant gains in both cognitive and affective domains. This research underscores the value of technology-enhanced learning in promoting meaningful and engaging language acquisition.

4. CONCLUSION

This study concludes that the use of digital storybooks significantly improves fifth-grade students' vocabulary mastery at MIN 1 Ogan Ilir. The increase in mean scores from 67.8 in the pre-cycle to 91.3 in Cycle II demonstrates the effectiveness of this multimodal learning

approach. By combining text, images, and narration, digital storybooks provided rich visual and auditory stimuli, enhancing comprehension, retention, and contextual understanding. Students exhibited greater motivation, confidence, and active participation in English learning. Teachers are encouraged to integrate digital storybooks into lessons, and future researchers may explore long-term effects and broader applications in rural contexts.

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