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The Impact of WordWorld Cartoon on Vocabulary Learning: A Quasi-Experimental Study

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36

Abstract. Vocabulary is the building block of language. However, vocabulary acquisition among young English as a Foreign Language (EFL) learners in Indonesia, often exacerbated by the limitations of traditional textbook-based instruction. To overcome these limitations, this research proposed the integration of WordWorld Cartoon, a multimedia educational program, as an innovative vocabulary learning tool. The study aimed to investigate the impact of WordWorld Cartoon on vocabulary acquisition compared to conventional textbook methods among fifth-grade students. Employing a quasi-experimental nonequivalent control group design, the research involved 40 fifth-grade students from UPT SDN 40 Panaraga Jaya, randomly assigned to either an experimental group (WordWorld Cartoon) or a control group (textbook). Findings revealed a statistically significant difference in vocabulary development between the two groups, with the experimental group demonstrating substantially higher N-Gain scores (0.70) compared to the control group (0.18). This indicates that WordWorld Cartoon significantly enhanced vocabulary acquisition. These results underscore the efficacy of multimedia learning and the potential of engaging cartoons like WordWorld to foster vocabulary growth among young EFL learners. The study carries significant implications for EFL educators, curriculum developers, and policymakers in Indonesia, advocating for the adoption of innovative and engaging multimedia resources to improve vocabulary instruction and overall language learning outcomes. The findings suggest that integrating WordWorld Cartoon into the curriculum can effectively address the vocabulary learning challenges faced by young EFL learners and promote more effective language development.

28

Keywords: cartoon, vocabulary learning, young learners

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INTRODUCTION

Vocabulary acquisition is fundamental to language proficiency, playing a pivotal role in overall communicative competence in English as a Foreign Language (EFL) contexts (Zeng et al., 2022). A robust vocabulary enables learners to comprehend complex texts, articulate ideas effectively, and engage in meaningful communication. Research highlights the multifaceted nature of vocabulary acquisition, influenced by factors such as word characteristics (cognateness, polysemy, frequency) and learning contexts (Zaytseva et al., 2019). While Mobile-Assisted Language Learning (MALL) offers promising avenues for vocabulary development (Alhuwaydi, 2022), challenges persist, particularly in exolingual environments where English exposure is limited (Arabadi & Harb, 2023). These challenges are amplified for young learners in EFL settings who often grapple with limited motivation, unfamiliar pronunciation patterns, and the cognitive demands of processing new lexical items (Astika & Kurniawan, 2020; Oktavia et al., 2022). Working memory capacity, especially phonological short-term memory, further influences vocabulary learning and retention (Teng, 2024).

Traditional vocabulary instruction, frequently relying on textbook-based approaches, often falls short in addressing these challenges. The static nature of textbook learning can fail to captivate young learners, leading to diminished motivation and superficial engagement with vocabulary (Saleh & Althaqafi, 2022; Naderiheshi, 2022). While strategies like games and contextualized learning through storybooks offer some benefits (McDonald & Reynolds, 2021), a more comprehensive approach is needed to foster effective vocabulary acquisition. The current situation at UPT SDN 40 Panaragan Jaya reflects this broader challenge, with students exhibiting low motivation and achieving lower scores in vocabulary assessments, underscoring the need for innovative instructional interventions.

Multimedia learning, capitalizing on the synergistic effects of visual and auditory input, presents a compelling solution. Research consistently demonstrates the efficacy of multimedia in language learning, particularly in vocabulary development (Alhazmi, 2024; Rahimi & Allahyari, 2019;

Katempa, 2022). This approach aligns with dual-coding theory and the cognitive theory of multimedia learning, which posit that integrating visual and verbal information enhances cognitive processing and memory retention (Kanellopoulou et al., 2019). Cartoons, as a form of multimedia, offer distinct advantages due to their inherent visual appeal, engaging narratives, and repetitive language use (Munir, 2016; Aziz & Sulicha, 2016). They facilitate incidental vocabulary acquisition (Singer, 2022), allowing learners to absorb new words naturally within a meaningful context.

WordWorld Cartoon, specifically designed with vocabulary instruction in mind, emerges as a promising intervention. Leveraging the principles of digital game-based learning, WordWorld provides a rich, multimodal environment that fosters motivation, authenticity, repetition, and interactivity (Rasti-Behbahani, 2021; Tseng et al., 2020). By presenting vocabulary within a visually engaging narrative structure, WordWorld aligns with research emphasizing the effectiveness of concrete nouns, Tier 2 vocabulary, and the use of semantic features (synonyms, antonyms, polysemy) for young learners (Hadley & Mendez, 2021; Dwihastuti, 2022). While previous research supports the broader use of cartoons in educational settings, particularly in language learning (Bakla, 2018; Nhung & Dieu, 2020; Prošić-Santovac, 2017; Prema & Kumar, 2018), there is a notable gap in research specifically examining the impact of WordWorld Cartoon on vocabulary acquisition. This current study aims to address this gap by investigating the following research question: To what extent does exposure to WordWorld Cartoon impact the vocabulary acquisition of fifth-grade students at UPT SDN 40 Panaragan Jaya compared to traditional textbook instruction?

The significance of this study is twofold. Practically, the findings will provide valuable insights for educators, curriculum developers, and policymakers in Indonesian elementary schools seeking evidence-based strategies to enhance vocabulary instruction. By demonstrating the efficacy of WordWorld Cartoon, this study can inform the integration of innovative, engaging multimedia resources into EFL classrooms. Theoretically, this research contributes to the growing body of knowledge on vocabulary acquisition, multimedia learning, and the use of cartoons in education. By focusing specifically on WordWorld Cartoon, the study provides nuanced understanding of the role of targeted, vocabulary-focused cartoons in facilitating language development. Furthermore, this study will contribute to the ongoing discussion regarding the role of digital media in early childhood education (Vulchanova et al., 2017; Meylan & Bergelson, 2021; Binger et al., 2023; Venker et al., 2018; Damaševičius & Sidėkerskienė, 2024; Horn and Kan, 2016; Huber et al., 2018; Moran and Moir, 2018). Specifically, it will examine how a designed educational cartoon like WordWorld can address the theoretical principles of language acquisition by providing rich input and opportunities for meaningful interaction, potentially bridging the gap between incidental and intentional learning.

METHOD

This research employed quasi-experimental study. It investigated the influence of WordWorld Cartoon on vocabulary acquisition among fifth-grade students at UPT SDN 40 Panaragan Jaya Tulang Bawang Tengah during the 2021/2022 academic year. Data collection took place from November 29, 2021, until completion. A nonequivalent control group design was employed, utilizing two intact classes (5A and 5B) as the experimental and control groups, respectively. The experimental group (5A, n=20) received vocabulary instruction using WordWorld Cartoon, while the control group (5B, n=20) continued with traditional textbook-based instruction ("Grow with English").

Pre-tests and post-tests consisting of multiple-choice vocabulary questions, aligned with the fifth-grade curriculum and reviewed by an expert for content and construct validity, were administered to both groups to assess vocabulary knowledge before and after the intervention. Item validity was analyzed using Pearson product-moment correlation coefficient, with items considered valid if $r_{xy} \geq 0.30$. Test reliability was determined using Anates software.

Data analysis included normality testing using the Chi-square test and homogeneity testing to verify assumptions for parametric statistical procedures. An independent samples t-test was conducted to compare the mean vocabulary scores of the experimental and control groups, determining if a statistically significant difference existed ($p < .05$) between the two instructional approaches. Documentation was used to collect supplementary school data, including student demographics. The intervention consisted of using selected WordWorld cartoons across three sessions that focused on relevant vocabulary for the students. All data analysis was conducted in SPSS v. 26.

RESULTS AND DISCUSSION

Results

Table 1. Construct Validity Analysis

Question	r table	r hitung	Criteria
1	0.444	0.307	Invalid
2	0.444	0.316	Invalid
3	0.444	0.487	Valid
4	0.444	0.605	Valid
5	0.444	0.259	Invalid
6	0.444	0.649	Valid
7	0.444	0.163	Invalid
8	0.444	0.636	Valid
9	0.444	0.682	Valid
10	0.444	0.516	Valid
11	0.444	0.682	Valid
12	0.444	0.613	Valid
13	0.444	0.550	Valid
14	0.444	0.650	Valid
15	0.444	0.626	Valid

Content validity of the vocabulary test was established through expert validation, deemed feasible after minor revisions. Construct validity assessment revealed 4 out of 15 test items as invalid. The remaining 11 items demonstrated sufficient validity and were used in the study. Reliability analysis indicated high internal consistency with a Cronbach's alpha of 0.719, exceeding the acceptable threshold of 0.444. This result confirms that the test is reliable and appropriate to be research instrument.

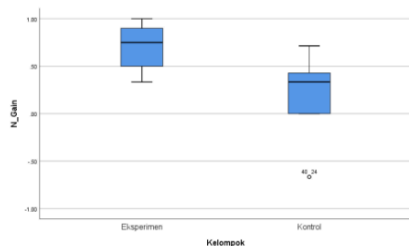


Figure 1. Graph of Vocabulary Development N-Gain Improvement

Table 2. N-Gain test

Class	N	Pre-test Mean	Post-test Mean	N-Gain	Classification
Experiment	20	43	87	0.6992	Medium
Control	20	45	61.5	0.1804	Low

The N-Gain analysis revealed a significant difference in vocabulary development between the experimental and control groups. The experimental group, exposed to WordWorld Cartoon, exhibited a medium N-Gain of 0.6992, while the control group showed a low N-Gain of 0.1804. This suggests that the use of WordWorld Cartoon had a more substantial positive impact on vocabulary acquisition compared to traditional textbook instruction. This was graphically illustrated in a chart showing that the N-gain increase in the experimental group was higher than the control group.

Table 3. Kolmogorov-Smirnov Normality Test Result

Group	p-Value
Post-test Experiment	0.115
Post-test Control	0.193

Both the experimental and control group data were normally distributed, as confirmed by the Kolmogorov-Smirnov test ($p > 0.05$ for both groups; Experimental group, $p = 0.115$; Control Group $p = 0.193$). Homogeneity of variance was also established (Levene's test, $p = 0.709$), satisfying the assumptions for parametric statistical analysis. These results fulfilled the requirement to conduct an independent sample t-test.

Table 4. Independent Sample T-Test Result

Data	T-value	p-Value	Inference
Control Post-test v. Experimental Post-test	13.399	0.00	Significant difference

The independent samples t-test revealed a statistically significant difference ($t(38) = 13.399, p < 0.05$) in N-Gain scores between the experimental ($M = 0.6992, SD = 0.231$) and control groups ($M = 0.1804, SD = 0.415$). This result supports the rejection of the null hypothesis and acceptance of the alternative hypothesis, confirming that the use of WordWorld Cartoon significantly enhanced vocabulary acquisition compared to the traditional textbook approach. The result confirmed that there is a significant difference between using cartoon media and textbook media in teaching vocabulary.

Discussion

This study investigated the efficacy of WordWorld Cartoon in enhancing vocabulary acquisition among fifth-grade students at UPT SDN 40 Panaragan Jaya, comparing its impact to traditional textbook instruction. The findings unequivocally demonstrate the superiority of the cartoon-based intervention. As hypothesized, students exposed to WordWorld Cartoon exhibited significantly greater gains in vocabulary knowledge than their counterparts relying on textbook learning. This aligns with the introductory assertion regarding the limitations of traditional vocabulary instruction, often characterized by rote memorization and decontextualized learning (Saleh & Althaqafi, 2022; Naderiheshi, 2022). The observed low motivation and subpar vocabulary scores among students at UPT SDN 40 Panaragan Jaya prior to the intervention (as noted in the introduction) further underscore the need for innovative pedagogical approaches.

The substantial difference in N-Gain scores between the experimental (0.70) and control (0.18) groups strongly supports the central argument presented in the introduction: that multimedia learning, particularly through engaging cartoons, can effectively address the shortcomings of traditional methods. WordWorld Cartoon, with its vibrant visuals, captivating narratives, and repetitive use of target vocabulary, provided a rich, multimodal learning environment consistent with principles of effective multimedia instruction (Alhazmi, 2024; Rahimi & Allahyari, 2019; Katemba, 2022). The documented positive student responses to cartoon-based learning (Aziz & Sulicha, 2016) resonate with the present study's observations of increased student engagement and motivation in the experimental group. This aligns with the premise that cartoons facilitate incidental vocabulary acquisition, enabling learners to absorb new words effortlessly within a meaningful context (Singer, 2022).

However, the study's findings extend beyond simply confirming the benefits of multimedia and cartoons in education. The significant improvement in the experimental group's vocabulary scores aligns with research highlighting the impact of digital games and virtual environments on language acquisition (Rasti-Behbahani, 2021; Tseng et al., 2020). WordWorld Cartoon, by incorporating elements of interactive gameplay and presenting vocabulary within a virtual world, leveraged these advantages to foster deeper learning. This resonates with the introduction's emphasis on the potential of digital tools to create authentic, motivating, and repetitive learning experiences, crucial for vocabulary retention.

While the previous studies demonstrating the general effectiveness of cartoons in educational settings (Arif Bakla, 2018; Nhung & Dieu, 2020; Prošić-Santovac, 2017; Prema & Kumar, 2018), this study provides specific evidence for WordWorld Cartoon's impact. This addresses a gap in the literature, highlighted in the introduction, regarding research specifically focused on WordWorld's efficacy in vocabulary instruction. Furthermore, the study's focus on a specific Indonesian context (UPT SDN 40 Panaragan Jaya) adds to the growing body of knowledge on culturally relevant language learning interventions.

Conversely, the lower N-gain scores in the control group reinforce concerns about the limitations of textbook-based instruction, particularly in engaging young learners and promoting deep vocabulary knowledge. This directly contrasts with the potential of multimedia learning, as emphasized in the introduction, to cater to diverse learning styles and enhance cognitive processing through dual-coding (Paivio, 1986) and active construction of mental models (Mayer, 2009). The findings thus challenge the continued reliance on traditional methods in contexts where access to engaging digital resources like WordWorld Cartoon is feasible.

This study underscores the complex interplay of factors influencing vocabulary acquisition, highlighted in the introduction. While word characteristics (Yu et al., 2022) and learning contexts (Zaytseva et al., 2019) undoubtedly contribute, the pedagogical approach employed plays a crucial role. The findings suggest that interventions leveraging the power of multimedia, specifically well-designed educational cartoons like WordWorld, can effectively mitigate challenges faced by young EFL learners (Astika & Kurniawan, 2020; Oktavia et al., 2022) and promote significant vocabulary growth. Critically, this study's findings should be interpreted within its limitations. The quasi-experimental design, using intact classrooms, may introduce potential confounding variables. Future research employing randomized controlled trials and larger sample sizes could strengthen the generalizability of the findings. Additionally, exploring the long-term effects of WordWorld Cartoon on vocabulary retention and its impact on other language skills would provide a more comprehensive understanding of its educational potential.

Despite these limitations, this study offers compelling evidence for the efficacy of WordWorld Cartoon in enhancing vocabulary acquisition. The findings not only substantiate the arguments presented in the introduction but also contribute new insights into the specific benefits of this intervention. By demonstrating a clear link between engaging multimedia learning and improved vocabulary outcomes, this research advocates for a shift towards more interactive and learner-centered pedagogical approaches in EFL contexts, particularly in settings like UPT SDN 40 Panaragan Jaya where traditional methods have proven insufficient. The alignment of WordWorld with theoretical frameworks of language acquisition (Vulchanova et al., 2017; Meylan & Bergelson, 2021; Binger et al., 2023) further strengthens its potential as a valuable tool for promoting language development in young children, particularly in addressing the needs of diverse learners and those with specific language challenges (Venker et al., 2018). The findings also support the broader potential of virtual worlds and digital environments in education (Damaševičius & Sidekierskienė, 2024), suggesting that these immersive platforms can facilitate a wider range of cognitive and social-emotional skills, while carefully considering the design and implementation of such interventions (Horn & Kan, 2016; Huber et al., 2018; Moran & Moir, 2018). This study adds to the growing body of evidence that challenges traditional views of educational media and highlights the opportunities for leveraging technology to create engaging and effective learning experiences. Further exploration of how interventions like WordWorld align with developmental trajectories and support individual learning differences is crucial to maximizing their impact on language outcomes.

CONCLUSION

This study conclusively demonstrates the significant positive impact of WordWorld Cartoon on vocabulary acquisition among fifth-grade students at UPT SDN 40 Panaragan Jaya. The implementation of WordWorld Cartoon as a pedagogical tool resulted in substantially greater vocabulary gains compared to traditional textbook instruction, as evidenced by significantly higher N-Gain scores in the experimental group. This outcome validates the initial hypothesis and underscores the effectiveness of multimedia learning, particularly through engaging cartoons, in enhancing vocabulary development. The study's findings strongly support the integration of WordWorld Cartoon into EFL classrooms as a viable alternative to conventional textbook-based approaches.

The research contributes valuable insights for educators, curriculum developers, and policymakers seeking to improve vocabulary instruction in EFL contexts. It highlights the potential of utilizing engaging multimedia resources, specifically educational cartoons like WordWorld, to address the limitations of traditional methods and cater to the learning needs of young learners. The findings underscore the importance of creating interactive, motivating, and contextually rich learning environments that foster incidental vocabulary acquisition and promote deeper engagement with language. By demonstrating a clear link between the use of WordWorld Cartoon and improved vocabulary outcomes, this study advocates for a shift toward more innovative and learner-centered pedagogical practices in EFL education. The documented success of WordWorld Cartoon in the Indonesian context of UPT SDN 40 Panaragan Jaya provides a compelling case for its wider adoption in similar settings.

While the study provides compelling evidence for WordWorld Cartoon's efficacy, it also acknowledges limitations inherent in its quasi-experimental design. Future research employing randomized controlled trials with larger, more diverse samples could further strengthen the generalizability of the findings. Longitudinal studies exploring the long-term impact of WordWorld Cartoon on vocabulary retention and its effects on other language skills are also recommended. Furthermore, investigating the specific elements of WordWorld Cartoon that contribute most significantly to vocabulary learning would provide valuable insights for optimizing its educational impact. This includes examining the role of individual learner differences, such as prior vocabulary knowledge and learning styles, in mediating the effectiveness of the intervention. Finally, comparative studies evaluating WordWorld Cartoon against other multimedia or technology-based vocabulary interventions could offer a more nuanced understanding of its relative strengths and weaknesses. Despite these limitations, the present study contributes significantly to the growing body of evidence supporting the use of engaging multimedia resources like WordWorld Cartoon to foster vocabulary development and enhance language learning outcomes in young EFL learners. The findings encourage a reevaluation of traditional pedagogical practices and advocate for the integration of innovative, evidence-based approaches that leverage the power of technology to create more effective and enjoyable learning experiences.

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