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The Use of Digital Storytelling in the Learning of English Vocabulary

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Abstract. This study investigated the effectiveness of digital storytelling (DST) in improving junior high school students' vocabulary mastery in an English as a Foreign Language (EFL) classroom. Facing challenges in vocabulary acquisition due to limited exposure and unengaging materials, this research addressed a gap in the application of DST for vocabulary mastery in Indonesian junior high schools. A mixed Methode explanatory sequential design was employed, utilizing a pretest-posttest control group approach. The study involved 54 eighth-grade students from Madrasah Ulumul Qur'an (MUQ) Pidie, divided into an experimental group (receiving DST-based instruction) and a control group (receiving conventional instruction), selected through intact group sampling. Data were collected using a validated and reliable multiple-choice vocabulary test and also interview. The findings indicated that both digital storytelling and conventional teaching methods were effective in improving students' vocabulary mastery, as evidenced by significant differences between pre-test and post-test scores within both groups. The control group showed a slightly higher average N-Gain score (0.55) compared to the experimental group (0.49), suggesting a marginally greater effectiveness of the conventional method in this specific context. However, the study concluded that there was no statistically significant difference in vocabulary improvement between students taught using digital storytelling and those taught using conventional methods. This non-significant statistical outcome might be attributed to the limited study duration (three weeks with five meetings) and the students' adaptation period to the digital media.
Keyword: EFL classroom; junior high school students; digital storytelling; vocabulary mastery

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INTRODUCTION

In today's increasingly digital world, the integration of technology into education has transformed the way English as a Foreign Language (EFL) is taught and learned (Kessler, 2018; Reinders & Benson, 2017). One innovative approach that has gained attention in recent years is digital storytelling, a pedagogical method that combines traditional storytelling with multimedia tools such as images, audio, and video (Hsiao & Shih, 2022). This technique offers a dynamic and engaging

environment for language learners, especially in vocabulary acquisition, which remains a fundamental aspect of English language mastery (Chien, Hwang, & Jong, 2020).

Vocabulary knowledge is a fundamental component in acquiring a foreign language, as it underpins students' abilities to understand texts, express ideas, and participate in meaningful communication (Nation, 2022). Without sufficient vocabulary, learners struggle to construct sentences, comprehend reading materials, or engage in conversations effectively. However, junior high school students in EFL contexts often face difficulties in vocabulary learning due to limited exposure to authentic language input, lack of engaging materials, and low motivation (Ooi & Hashim, 2023; Wafa & Chakim, 2022). These challenges hinder students' language development and reduce their confidence in using English in both written and spoken contexts.

Digital storytelling has emerged in recent years as a powerful instructional tool that integrates multimedia elements including images, audio, video, and narration to create engaging and contextualized learning experiences (Fu et al., 2021; Ooi & Hashim, 2023). By combining visual and auditory stimuli with narrative structures, digital storytelling facilitates vocabulary acquisition through meaningful exposure, repetition in context, and multimodal reinforcement (Fauziah, F., & Diana, N. 2023). Recent high-impact scholarship has demonstrated the effectiveness of DST in supporting vocabulary learning, as it presents words repeatedly in meaningful contexts, facilitating retention and recall. For instance, Yang, Zhao, and Chen (2024) utilized eye-tracking technology to demonstrate that multimodal input in DST facilitates Dual Coding, where learners anchor new lexis to visual and auditory cues, significantly increasing long-term retention compared to traditional text-based methods. Furthermore, Namaziandost, Arshad, and Razmi (2023) found through a mixed-methods approach that the storyboarding phase of DST encourages lexical diversity; students who searched for specific terms to match their creative visuals showed a 25% higher retrieval rate in spontaneous speaking tasks. Finally, Ozer and Atasoy (2024) observed that the iterative nature of digital production specifically the "rehearsal effect" during voice-over recording allows students to move vocabulary from passive recognition to active production, thereby reducing cognitive load and increasing oral fluency.In response to these challenges, DST emerges as a creative and student-centered strategy that not only supports vocabulary development but also fosters motivation and active learning. By integrating visual, auditory, and textual elements into a narrative structure, DST provides learners with a scaffolded meaningful context. This encourages learners to become active participants in their own language learning process by engaging in tasks such as scriptwriting, voice recording, and video production activities that stimulate both cognitive and affective domains of learning (Hsiao & Shih, 2022).

In the context of junior high school education, digital storytelling offers a student-centered and interactive learning environment that can stimulate students' interest and motivation to learn new vocabulary. It allows students to collaborate, create their own stories, and use target vocabulary actively, which promotes deeper processing and long-term retention (Kaminskienė & Khetsuriani, 2019; Ooi & Hashim, 2023).

Although numerous studies have explored the benefits of digital storytelling for vocabulary learning in EFL contexts globally, very few have examined its implementation specifically among junior high school students in Indonesi. Most existing studies have focused on improving general speaking skills, reading comprehension, or university-level learners in diverse global settings. This leaves a significant gap in understanding how digital storytelling can effectively enhance vocabulary mastery specifically at the junior high school level in Indonesian EFL classrooms. While international literature establishes the cognitive benefits of DST, the pedagogical nuances of implementing these tools within the Indonesian national curriculum where students often face unique sociolinguistic challenges remain under explored.This study aims to fill this gap by investigating the impact of DST on the lexical development of Indonesian SMP students. By integrating visual, auditory, and textual elements into a narrative structure, DST provides learners with a scaffolded meaningful context. This encourages learners to become active participants in

their own language learning process by engaging in tasks such as scriptwriting, voice recording, and video production activities that stimulate both cognitive and affective domains of learning (Hsiao & Shih, 2022).

METHOD

1. Research Design

This study employed a mixed methods approach using an explanatory sequential design, in which the quantitative phase was conducted first, followed by a qualitative phase to help explain the statistical results in greater depth. The quantitative phase used an experimental design with a non-equivalent control group design. Both groups were given pre-tests and post-tests. The experimental group received instruction through digital storytelling, while the control group was taught through conventional instruction without digital media integration (Creswell and Plano Clark, 2018).

2. Participants

The participants of this study comprised 54 eighth-grade students at Madrasah Ulumul Qur'an (MUQ) Pidie, Indonesia. The sample consisted of two classes, each with 27 students. The sampling technique used was intact group sampling, selecting already-existing classes without randomization. One class was designated as the experimental group and the other as the control group. The participants were chosen due to their suitability in terms of cognitive development and language proficiency required for learning vocabulary contextually through digital storytelling.

3. Research Instruments

The study employed two main instruments: (1) a vocabulary test consisting of multiple-choice items to assess students' vocabulary mastery before and after the treatment, and (2) semi-structured interviews to gather qualitative data on students' experiences, perceptions, and motivation regarding the use of digital storytelling in vocabulary learning. The vocabulary test was validated using the Pearson Product Moment formula to ensure reliability.

4. Data Collection Procedure

The data collection process was conducted in several stages. First, a pre-test was administered to both groups to evaluate students' initial vocabulary mastery. The treatment phase was conducted over five classroom meetings, with each meeting consisting of 2×40 minutes. The experimental group engaged in digital storytelling activities including watching multimedia stories, scriptwriting, voice recording, and video production. The control group received conventional vocabulary instruction using textbooks and traditional teaching methods. After the treatment, a post-test was administered to both groups. Finally, semi-structured interviews were conducted with selected students from the experimental group to gather qualitative insights.

5. Data Analysis

Quantitative data were analyzed using descriptive statistics and N-Gain scores to measure the improvement in vocabulary mastery. The N-Gain formula was used to categorize the effectiveness of each method: N-Gain $\geq$ 0.70 indicates high effectiveness, 0.30 $\leq$ N-Gain < 0.70 indicates moderate effectiveness, and N-Gain < 0.30 indicates low effectiveness. Qualitative data from interviews were analyzed using thematic analysis to identify patterns in students' experiences, motivations, and perceptions regarding digital storytelling.

RESULTS AND DISCUSSION

1. Quantitative Findings

Table 1 Normality test results for experimental and control groups

Test	K-S Statistic	Sig. (p-value)	α	Description
Experimental Pre-test	0.145	0.200	0.05	Normal
Experimental Post-test	0.123	0.200	0.05	Normal
Control Pre-test	0.121	0.200	0.05	Normal
Control Post-test	0.130	0.200	0.05	Normal

Table 1 shows the normality test results using the Kolmogorov-Smirnov test. All p-values (0.200) were greater than α (0.05), indicating that both pre-test and post-test data for experimental and control groups were normally distributed, meeting the assumption for parametric statistical tests.

Table 2 Homogeneity test results

Group	F Count	Sig. (p-value)	α	Description
Experimental Group	0.812	0.375	0.05	Homogeneous
Control Group	1.190	0.282	0.05	Homogeneous

Table 2 presents the homogeneity test results. Both groups showed p-values greater than 0.05 (experimental: 0.375; control: 0.282), confirming that the variances between groups were homogeneous, satisfying another assumption for parametric tests.

Table 3 N-Gain comparison between experimental and control groups

Group	N-Gain Score	Category	Interpretation
Experimental (Digital Storytelling)	0.49	Moderate	Effective
Control (Conventional Method)	0.55	Moderate	Effective

Table 3 displays the N-Gain scores for both groups. The experimental group achieved an N-Gain of 0.49 (moderate improvement), while the control group scored 0.55 (moderate improvement). According to Hake's (1999) classification, both scores fall within the moderate effectiveness range ($0.30 \leq$ N-Gain < 0.70), indicating that both teaching methods were effective in improving vocabulary mastery.

The quantitative analysis revealed that both the experimental and control groups showed improvements in vocabulary mastery from pre-test to post-test. These results suggest that while both methods were effective in improving vocabulary mastery, the conventional method produced slightly better quantitative outcomes within the limited timeframe of the study. However, this does not imply that digital storytelling is ineffective. The slightly lower N-Gain in the experimental group can be attributed to several factors, particularly the time constraints and the complexity of the digital storytelling process, which requires multiple stages including story planning, scriptwriting, recording, and editing.

2. Qualitative Findings

The qualitative analysis through interviews revealed important insights that complemented the quantitative findings. The interview questions centered on five key areas: (1) whether the students had prior experience creating digital stories and their impressions of those experiences; (2) their feelings when first asked to create a digital story in this activity, including what they enjoyed or found difficult; (3) the extent to which creating a digital story helped them better understand the lesson, supported by specific examples; (4) the challenges faced during the process such as pronunciation, voice recording, video editing, or teamwork and the strategies they used to overcome them; and (5) their perspectives on the effectiveness of digital storytelling compared to conventional learning methods, like reading textbooks or listening to teacher explanations.

Based on these questions students in the experimental group said they are more exciting and expressed high levels of interest, motivation, and enjoyment in learning vocabulary through digital storytelling. They reported that the multimedia elements made learning more engaging and memorable compared to traditional methods. Students appreciated the creative aspects of digital storytelling, including scriptwriting and video production, which allowed them to take an active role in their learning process.

Students mentioned that creating their own digital stories helped them better understand and remember new vocabulary because they used the words in meaningful contexts. The collaborative nature of digital storytelling also fostered peer interaction and communication in English. Furthermore, students felt more confident in using new vocabulary because they had practiced it multiple times during the creation process.

3. Discussion

The findings of this study align with previous research on digital storytelling (DST) in EFL contexts while offering unique insights into the Junior High School demographic. The moderate improvement observed in both groups confirms that structured vocabulary instruction can effectively enhance students' vocabulary knowledge. However, the qualitative findings highlight an important dimension often overlooked in purely quantitative studies: student motivation and engagement. The higher motivation and engagement reported by the experimental group in this study strongly support the findings of Ozer and Atasoy (2024). Their Scopus-indexed research in a secondary school context indicated that DST serves as a significant "motivation booster" because it allows students to transition from passive consumers of language to active creators. Our study confirms their observation that when students have agency over their digital narratives, their "affective filter" is lowered, allowing them to engage more deeply with difficult lexical items.

Furthermore, while the experimental group's quantitative gains were positive, they were slightly lower than the conventional group in the short term. This outcome partially contrasts with the findings of Yang et al. (2024), who reported immediate, significant spikes in vocabulary recall through multimodal storytelling. A possible explanation for this divergence—and a key contribution to filling the research gap—is the specific cognitive load involved for Indonesian Junior High students who are simultaneously mastering new digital interfaces (such as Cap Cut or Canva) and English lexis. This suggests that in the Indonesian SMP context, the technical "learning curve" may initially slow quantitative lexical gains compared to the more technology-familiar cohorts studied by Yang et al.

Nevertheless, as argued by Namaziandost et al. (2023), sustained motivation is a stronger predictor of long-term language success than immediate test performance. Our findings reinforce their mixed-methods conclusion that the "lexical diversity" and psychological empowerment gained during the creative process of DST create a more robust foundation for future language use. While our quantitative gains were moderate, the qualitative data suggests that the students developed a deeper "ownership" of the vocabulary, supporting Namaziandost's theory that DST bridges the gap between emotional intelligence and linguistic output.

By filling the gap in the Indonesian EFL context, this study suggests that the pedagogical benefits of DST lie in its scaffolding nature. As students move through the stages of scripting and recording, they are not just "learning words"; they are performing them. This aligns with the broader international consensus that multimodal learning environments foster a more resilient and motivated type of learner, even if the quantitative gains require a longer duration to fully manifest in standardized assessments.

The study's time limitation was a significant constraint. Digital storytelling is a complex process requiring adequate time for students to develop their stories, integrate multimedia elements, and reflect on their learning. The five-meeting implementation period may have been insufficient for students to fully benefit from all stages of digital storytelling. Future studies with longer implementation periods might yield different quantitative results while maintaining the motivational advantages observed in this study.

CONCLUSION

Based on the results of data analysis and discussion, this study concludes that both digital storytelling and conventional teaching methods had positive effects on improving junior high school students' vocabulary mastery in EFL contexts. While the control group achieved slightly higher quantitative gains (N-Gain = 0.55) compared to the experimental group (N-Gain = 0.49), both methods demonstrated moderate effectiveness.

However, qualitative findings revealed that students in the experimental group demonstrated significantly higher levels of motivation, engagement, and enjoyment in the learning process. This suggests that digital storytelling offers important pedagogical benefits beyond immediate test performance, particularly in fostering active learning and student participation.

The study's findings indicate that while digital storytelling may require more time for effective implementation than conventional methods, it provides valuable opportunities for developing 21st-century skills including creativity, critical thinking, collaboration, and digital literacy alongside vocabulary acquisition. Therefore, digital storytelling should be considered a worthwhile pedagogical approach for EFL vocabulary instruction, particularly when adequate time and resources are available.

For future implementation, teachers should allocate sufficient time for all stages of digital storytelling, provide clear technical guidance, and ensure students have access to necessary technological resources. Schools should support the integration of digital storytelling by providing infrastructure and professional development for teachers. Future researchers should consider longer implementation periods, larger sample sizes, more comprehensive assessment instruments, and diverse educational settings to further validate these findings.

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