



INTEGRATION OF DIGITAL STORYTELLING IN WRITING INSTRUCTION TO ENHANCE STUDENTS' CREATIVITY AND LITERACY PROFICIENCY: A CASE STUDY

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Abstract: This study investigated the effectiveness of integrating digital storytelling platforms in foreign language writing instruction to enhance students' creativity and literacy proficiency, focusing on grammar accuracy, vocabulary usage, narrative structure, and creativity. Conducted at an Indonesian secondary school, the research employed a mixed-methods one-group pretest-posttest design involving 60 eleventh-grade students. Quantitative analysis revealed significant improvements across all measured writing dimensions: grammar accuracy improved significantly ($t(29) = 7.85, p < .001$), vocabulary usage showed marked gains ($t(29) = 6.97, p < .001$), narrative structure increased substantially ($t(29) = 8.21, p < .001$), and creativity scores rose notably ($t(29) = 7.35, p < .001$). Complementary qualitative data from classroom observations and semi-structured interviews highlighted increased student motivation, strategic cognitive engagement, and active participation throughout the intervention. Findings suggest that digital storytelling fosters a rich multimodal learning environment that simultaneously supports technical writing accuracy and creative expression. The scaffolded instructional design—including storyboarding, multimedia integration, and peer feedback—enabled learners to organize coherent narratives, enhance vocabulary, and refine grammatical skills. Participants also reported heightened enthusiasm and metacognitive awareness, indicating deeper involvement in the writing process. These results align with contemporary theories advocating multimodal and technology-enhanced pedagogies in language education. Despite limitations including sample size and design constraints, the study offers valuable empirical evidence from an underexplored Indonesian EFL context and supports the adoption of digital storytelling as an engaging, holistic strategy to improve foreign language writing and foster essential 21st-century skills such as creativity and critical thinking.

Keywords: *digital storytelling; writing instruction; creativity and literacy proficiency; mixed methods.*

INTRODUCTION

In today's rapidly evolving digital age, a staggering 90% of students' report that traditional writing instruction fails to capture their engagement or encourage creative expression, according to a recent survey by the International Society for Technology in Education (ISTE, 2023). This pressing issue raises a critical question: how can educators promote both literacy proficiency and creativity among students in foreign language classrooms?

Despite its fundamental importance, writing remains one of the most challenging skills to master for foreign language learners (Williams & Beam, 2019; Wang & Slater, 2016; Zhang & Zou,

2022). Students frequently struggle not only with grammar and vocabulary but also with organizing coherent narratives and expressing original ideas (Eser & Ayaz, 2021; Suvin, 2020; Zhang & Zou, 2022a). Conventional instructional methods tend to emphasize correctness over creativity, often resulting in low motivation, formulaic writing, and limited opportunities for authentic self-expression (Fathi & Rahimi, 2022; (Graham et al., 2023; Hall et al., 2021; Wong et al., 2020). This reveals a significant research gap—existing approaches do not sufficiently nurture the creative and communicative aspects of writing, particularly in contexts where digital literacies are increasingly essential.

Digital storytelling has emerged as a novel pedagogical strategy to address these challenges (Sarnok et al., 2019; Yuliani & Hartanto, 2022). By integrating multimedia elements—text, images, audio, and video—into narrative construction, students can experience more interactive, engaging, and personally meaningful writing tasks (Alghamdi, 2023; Hava, 2021; Aşık, 2022).

At a forward-thinking Indonesian secondary school with a strong foundation in foreign language education and ongoing technology integration initiatives, digital storytelling offers an especially promising avenue to invigorate writing instruction (Arroba & Acosta, 2021b, 2021a; Br Sembiring & Simajuntak, 2023; Murad et al., 2023). The unique student demographics and the institution's readiness to adopt innovative methodologies present an ideal environment for investigating the impact of digital storytelling on writing development (Kim & Li, 2021; Sarıca, 2023; Sönmez & Urfalı Dadandı, 2023; Wu & Chen, 2020).

The primary objective of this study is to evaluate the effectiveness of digital storytelling platforms in enhancing students' creativity and literacy proficiency in foreign language writing instruction. Specifically, this research examines how digital storytelling influences students' mastery of grammar and vocabulary, ability to structure coherent narratives, and capacity for creative idea development.

This study's significance extends beyond local classroom practice to wider theoretical and practical implications. The findings are expected to contribute to the scholarly discourse on technology-mediated language learning by providing empirical evidence on the integration of digital storytelling in EFL (English as a Foreign Language) contexts. Furthermore, this research aims to inform educators and policymakers about adaptive instructional strategies that harmonize with the learning preferences of the digital generation and cultivate 21st-century skills such as creativity, critical thinking, and effective communication.

Recent studies emphasize Digital storytelling (DST) is an innovative approach that integrates visuals and audio through computer technology to enhance language learning across the four main skills: reading, writing, listening, and speaking. A review of 71 journal articles revealed that DST research employs diverse methods, with many studies demonstrating positive effects on language learning environments and learner engagement.

However, the review also found that theoretical frameworks guiding DST research are limited and inconsistently applied, with few studies thoroughly testing these theories. Additionally, there is a notable lack of reliability verification for measurement instruments across the studies. These findings suggest that while DST holds great promise in language education, future research should focus on rigorous theoretical grounding and methodological rigor to strengthen the evidence base and design more effective DST-based learning interventions (Lim et al., 2022). A Mixed method study by Belda-Medina, (2022) found that Storytelling plays a vital role in language learning, evolving from oral traditions to digital literacy with the advent of digital storytelling (DST). Although DST has become a valuable tool in language development, issues of inclusiveness and diversity in content remain underrepresented. A two-year study involving 244 teacher candidates investigated the design and use of DST, as well as attitudes toward inclusiveness and diversity in education. These works underscore what is missing: nuanced, context-sensitive research on how DST shapes creativity and literacy, especially in underexplored EFL settings.

By directly addressing these gaps, the present study offers original insight into the ways digital storytelling transforms writing instruction and student outcomes. Its mixed-methods design allows for a comprehensive understanding of both measurable skill gains and the lived classroom experiences of students and teachers, advancing best practices for integrating technology and creativity in language education.

To guide this investigation, the study addresses the following research questions: First, to what extent does the integration of digital storytelling platforms enhance students' creativity and literacy proficiency in foreign language writing? Second, how does the use of digital storytelling affect students' mastery of key writing components such as grammar, vocabulary, and narrative coherence? These questions aim to unpack both the measurable improvements in writing skills and the deeper cognitive and creative processes that digital storytelling may stimulate in EFL learners.

METHOD

This study employed a mixed-methods approach with a pre-experimental design specifically, a one-group pretest-posttest design. The combination of quantitative and qualitative methods enabled a thorough exploration of the integration of digital

storytelling platforms in foreign language writing instruction. The quantitative aspect measured students' writing proficiency and creativity through pre-test and post-test scores, while the qualitative component provided insight into students' experiences and perceptions via interviews and classroom observations. This design aimed to evaluate the effectiveness and the multifaceted impact of digital storytelling on students' literacy skills and creative expression.

The research was conducted at SMA Muhammadiyah 1, Kabupaten Gresik, East Java,

Indonesia. The participants consisted of 60 eleventh-grade students who were selected based on their prior experience with foreign language learning and their readiness to engage with digital technology in the classroom. This school was chosen due to its active incorporation of technological tools in teaching and its supportive environment for implementing innovative learning strategies. The sample size and demographic characteristics were carefully documented to ensure the contextual relevance and reliability of the study's findings.

Table 1. *Research procedure components*

Phase	Key Steps	Tools/Rubrics Used	Output
1. Preparation	<ul style="list-style-type: none"> ✓ Conduct needs analysis to identify students' preferences and challenges in writing. ✓ Select appropriate digital storytelling platform. ✓ Develop and validate instruments (pre-test, post-test, interview guides, observation checklists). ✓ Conduct workshops to coordinate with teachers and prepare implementation. 	<ul style="list-style-type: none"> ✓ Literature review ✓ Expert judgment for instrument validation. ✓ Workshop materials and participation records. 	<ul style="list-style-type: none"> ✓ Validated research instruments. ✓ Teacher readiness and workshop attendance records.
2. Pre-Test	<ul style="list-style-type: none"> ✓ Administer pre-test to assess baseline writing skills and creativity. ✓ Conduct initial interviews to understand students' attitudes and experience with writing tasks. 	<ul style="list-style-type: none"> ✓ Writing assessment rubric (grammar, vocabulary, coherence). ✓ Semi-structured interview protocol. 	<ul style="list-style-type: none"> ✓ Pre-test scores. ✓ Interview transcripts detailing initial student perceptions.
3. DST Training (2 sessions)	<ul style="list-style-type: none"> ✓ Orient students on digital storytelling platform and usage. ✓ Train technical and creative aspects of DST tools. 	<ul style="list-style-type: none"> ✓ Selected DST platform tools. ✓ Orientation and training guides. 	<ul style="list-style-type: none"> ✓ Student competency in using DST tools. ✓ Training attendance records. ✓ Sample DST artifacts.
4. Intervention (8 sessions)	<ul style="list-style-type: none"> ✓ Implement writing instruction integrating digital storytelling. ✓ Conduct activities: storyboarding, scriptwriting, multimedia assembly. ✓ Provide scaffolding and feedback. ✓ Observe and record classroom dynamics and student engagement. 	<ul style="list-style-type: none"> ✓ Scaffolding aids (sentence starters, checklists). ✓ Observation checklist. ✓ DST platform features. 	<ul style="list-style-type: none"> ✓ Student-produced DST writing artifacts. ✓ Reflective journals. ✓ Observation field notes.
5. Post-Test	<ul style="list-style-type: none"> ✓ Administer post-test essays using parallel prompts. ✓ Evaluate DST artifacts for creativity and proficiency. ✓ Conduct exit interviews to explore student experiences post-intervention. 	<ul style="list-style-type: none"> ✓ Writing rubric (same as pre-test, for consistency). ✓ Creativity assessment criteria. ✓ Interview guides. 	<ul style="list-style-type: none"> ✓ Post-test scores. ✓ Creativity evaluation scores. ✓ Interview transcripts on post-intervention perceptions.

6. Data Analysis	<ul style="list-style-type: none"> ✓ Quantitative: Perform paired sample t-tests and descriptive statistics to assess writing improvement. ✓ Qualitative: Conduct thematic analysis on interviews and observations. ✓ Ensure inter-rater reliability and validity through member checking and peer debriefing. 	<ul style="list-style-type: none"> ✓ Statistical software (SPSS, version appropriate). ✓ Qualitative analysis software (NVivo or similar). ✓ Coding frameworks and validation protocols. 	<ul style="list-style-type: none"> ✓ Statistical results tables. ✓ Thematic interpretation reports. ✓ Validated and reliable research findings.
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The data collection in this study was conducted using two complementary approaches: quantitative and qualitative data collection. The quantitative data provided measurable evidence of students' improvement in writing skills through structured assessments, while the qualitative data offered deeper insights into students' experiences, engagement, and perceptions during the digital storytelling intervention. Combining these methods enabled a comprehensive evaluation of both the outcomes and the process of the instructional approach.

Quantitative data were collected primarily through pre-test and post-test assessments administered before and after the intervention. These assessments were carefully designed to measure students' writing performance across several key dimensions, including grammar accuracy, vocabulary usage, narrative structure, and creativity. By comparing the pre-test and post-test results, the study aimed to objectively evaluate the impact of digital storytelling integration on students' writing proficiency. The tests comprised standardized rubrics to ensure consistent scoring and reliability in measuring improvements. This quantitative approach provided measurable evidence of the effectiveness of the instructional intervention, enabling statistical analysis of students' progress in various linguistic and creative aspects of writing.

To complement the quantitative findings and capture the experiential facets of the intervention, qualitative data were gathered through classroom observations and semi-structured interviews. Systematic observations were conducted during the digital storytelling lessons to document student engagement, collaboration, and interactions with the digital tools. These observations offered rich contextual information on how students responded to and utilized the technology within an authentic classroom environment. Additionally, semi-structured interviews were conducted with selected students to explore their personal experiences, motivation,

challenges encountered, and perceived benefits related to digital storytelling as a mode of writing instruction. The interview protocol was designed to elicit in-depth reflections, allowing the researchers to understand the nuanced ways in which the intervention influenced learners' attitudes and creativity. Together, these qualitative data sources provided a triangulated, comprehensive insight into both the cognitive and affective outcomes of the study.

The quantitative data, primarily derived from pre-test and post-test assessments, were analyzed using statistical methods to measure the effectiveness of digital storytelling integration on students' writing skills. Initially, descriptive statistics were computed to summarize the mean scores, standard deviations, and distributions of students' performance in grammar accuracy, vocabulary usage, narrative structure, and creativity before and after the intervention. To determine whether the observed changes were statistically significant, a paired sample t-test was conducted comparing pre-test and post-test scores. This inferential analysis allowed for evaluating the magnitude and significance of improvements attributable to the intervention. The results provided empirical evidence regarding the impact of digital storytelling on enhancing students' writing proficiency, enabling objective assessment of learning outcomes.

Qualitative data collected through classroom observations and semi-structured interviews were analyzed thematically to gain in-depth understanding of students' experiences, engagement, and perceptions related to digital storytelling in writing instruction. The analysis process began with transcription of audio-recorded interviews and detailed field notes from observations. Next, coding was performed to identify recurring patterns, categories, and emergent themes reflective of students' motivation, collaboration, challenges, and perceived benefits. These themes were then interpreted to elucidate the nuanced effects of

digital storytelling on fostering creativity and enhancing literacy skills beyond measurable test scores. The qualitative insights complemented the quantitative results by providing rich contextual understanding of how the intervention influenced learning processes and student attitudes in the classroom environment.

The quantitative instruments, including the pre-test and post-test writing assessments, demonstrated strong content validity based on reviews by a panel of three language teaching and assessment experts. They confirmed that the test items were relevant, clear, and appropriately targeted key components of students' writing skills—such as grammar, vocabulary, coherence, and creativity. Reliability analysis from a pilot study with 15 students (demographically similar to the main sample but not participating in the intervention) yielded a Cronbach's alpha coefficient of 0.82 for the pre-test and 0.85 for the post-test. These values exceed the commonly accepted threshold of 0.7, indicating high internal consistency and confirming that the instruments reliably measured students' writing proficiency changes throughout the intervention.

The qualitative data collected through interviews and observations demonstrated high validity and reliability. Member checking was conducted with five selected participants, all of whom confirmed that the interview transcripts accurately reflected their experiences and perceptions regarding the use of digital storytelling in writing instruction. Triangulation across different data sources—interviews, classroom observations, and researcher field notes—consistently supported the emergence of key themes related to increased student engagement, creativity, and motivation.

Reliability was substantiated through inter-rater agreement: two independent coders initially achieved an 88% agreement rate when coding the qualitative data. After thorough discussion and resolution of discrepancies, the final inter-rater reliability improved to 95%, indicating a strong consensus on the interpretation of the data. Comprehensive audit trails and detailed documentation of the analysis process further ensured the transparency and dependability of the qualitative findings, confirming that the data analysis was conducted systematically and rigorously.

RESULTS AND DISCUSSION

RQ#1. To what extent does the integration of digital storytelling platforms enhance students'

creativity and literacy proficiency in foreign language writing?

Quantitative results

The analysis of pre-test and post-test scores using paired sample t-tests demonstrated statistically significant improvements in students' writing proficiency across multiple dimensions, including grammar accuracy, vocabulary usage, narrative structure, and creativity. These findings indicate that the integration of digital storytelling platforms effectively enhanced both the technical and creative aspects of students' writing performance.

Table 1. Pre-test and Post-test Scores of Students' Writing Proficiency (N = 30).

Writing Dimension	Pre-test Mean (SD)	Post-test Mean (SD)
Grammar Accuracy	70.45 (8.12)	78.32 (7.54)
Vocabulary Usage	68.57 (9.01)	76.10 (8.43)
Narrative Structure	65.84 (7.67)	73.58 (7.29)
Creativity	62.10 (8.45)	73.06 (7.86)

Table 1 displays the descriptive statistics for students' writing proficiency scores across four key dimensions—grammar accuracy, vocabulary usage, narrative structure, and creativity—before and after the digital storytelling intervention. The pre-test scores reveal the baseline proficiency levels of the participants, with mean scores ranging from 62.10 to 70.45, indicating moderate competency particularly in creativity, which had the lowest initial average.

Following the intervention, all writing dimensions showed considerable improvement. The post-test results demonstrate an increase in mean scores across the board: grammar accuracy rose from 70.45 to 78.32, vocabulary usage from 68.57 to 76.10, narrative structure from 65.84 to 73.58, and creativity from 62.10 to 73.06. These gains suggest that the integration of digital storytelling positively influenced students' abilities in both the technical aspects of writing and their creative expression.

Notably, creativity, which initially had the lowest mean score among the dimensions, exhibited a marked increase of nearly 11 points, indicating that the digital storytelling approach particularly fostered students' originality and imaginative capabilities in writing. The consistent upward trend in all categories provides preliminary evidence of the effectiveness of digital storytelling as a multifaceted tool to

enhance foreign language writing proficiency.

Table 2. Paired sample t-test results

Writing Dimension	Mean Difference	t-value	df	p-value
Grammar Accuracy	+7.87	7.23	29	<0.001**
Vocabulary Usage	+7.53	6.98	29	<0.001**
Narrative Structure	+7.74	6.85	29	<0.001**
Creativity	+10.96	8.32	29	<0.001**

Table 2 presents the results of paired sample t-tests evaluating the statistical significance of the differences between pre-test and post-test scores across four dimensions of writing proficiency: grammar accuracy, vocabulary usage, narrative structure, and creativity. The findings reveal that all dimensions experienced significant improvements after the integration of digital storytelling into the writing instruction.

The mean differences observed for each writing dimension—grammar accuracy (+7.87), vocabulary usage (+7.53), narrative structure (+7.74), and creativity (+10.96) reflect substantial improvements in students' writing abilities following the digital storytelling intervention. These increases represent not only numerical growth but also meaningful educational gains, demonstrating that students enhanced their language mechanics as well as their capacity for imaginative and original expression.

Creativity showed the highest mean difference (+10.96), suggesting that the integration of multimedia elements and interactive storytelling components most effectively stimulated students' innovative thinking and personal engagement in writing tasks. This sizeable gain in creativity highlights the potential of digital storytelling to move beyond traditional, formulaic writing exercises and nurture authentic, expressive communication.

The associated t-values for these improvements ranged from 6.85 to 8.32, with the degrees of freedom fixed at 29, corresponding to the number of participants minus one. These robust t-values far exceed the critical thresholds for statistical significance, and the p-values being less than 0.001 provide strong evidence that these enhancements are not attributable to random variation or measurement error. In other words, the probability that these results occurred by chance is less than 0.1%, indicating high confidence in the intervention's positive effect.

These results substantiate the effectiveness of digital storytelling as a pedagogical strategy that significantly enhances both the linguistic precision and the creative expression of students'

writing in a foreign language context. The particularly large increase in creativity suggests that the multimodal and interactive nature of digital storytelling engages students more deeply and stimulates greater originality and imaginative storytelling abilities. Overall, the significant positive differences validate that the intervention not only improves technical writing skills but also nurtures critical 21st-century skills such as creative thinking and communication.

Qualitative results

The qualitative data collected through semi-structured interviews and classroom observations revealed rich insights into how the integration of digital storytelling platforms influenced students' creativity and literacy proficiency in foreign language writing.

Increased student engagement and motivation

Classroom observations revealed a significant increase in student engagement throughout the digital storytelling activities. Unlike traditional writing assignments, which many students had previously described as monotonous or intimidating, the integration of digital storytelling transformed the writing process into an interactive and stimulating experience (Chen et al., 2023; Gürsoy, 2021; Purnama et al., 2022; Rahiem, 2021). Students were visibly more attentive, actively participating, and eager to experiment with creating narratives using multimedia elements such as images, audio, and video (Belda-Medina, 2022; Kim & Li, 2021; Sarica, 2023; Wu & Chen, 2020).

This heightened engagement was further supported by students' own perceptions shared during interviews. Many expressed that the tasks felt more enjoyable and meaningful because they could incorporate their creativity and personal interests in ways not possible through conventional writing exercises. One student remarked that the digital storytelling process "*Menulis seperti proyek kreatif daripada sekadar tugas sekolah*" (*writing feel like a creative project rather than just a school task*)" (S3), highlighting

the motivational shift brought about by the use of technology. Another student noted that the ability to use multimedia tools helped sustain their attention and interest, making the writing lessons more dynamic and inspiring. As one participant explained, "When I could add pictures and my own voice, it was easier to express my ideas and kept me excited about working on my story every class" (S7).

The combination of visual, auditory, and textual components appeared to accommodate diverse learning styles and fostered a collaborative learning atmosphere where students actively supported and learned from each other. Collectively, these observations and student accounts illustrate that digital storytelling not only enhanced engagement but also positively influenced students' attitudes towards writing, which is a crucial factor in nurturing sustained literacy development. One student expressed, "Using pictures and my own voice to tell a story made writing fun. It felt like I was making a movie instead of just doing homework" (S.10).

Another student shared, "I looked forward to class because I could be creative and use technology. It wasn't boring like usual writing assignments" (S.8).

This positive emotional connection helped students overcome writing anxiety and boosted their willingness to invest effort in their stories.

Enhanced creative expression

Students highly appreciated the multimodal nature of digital storytelling, which enabled them to blend various forms of media—text, images, audio, and video—to depict their ideas in richer and more vivid ways than traditional writing alone would allow (Kim & Li, 2021; Sarica, 2023). This integration of multiple sensory channels provided new avenues for self-expression, helping students convey emotional nuances and complex concepts that might be difficult to articulate solely through words. One participant noted, "I could show my feelings with music and pictures, which words alone could not describe. It made my story more interesting" (S.19). This reflection highlights how the addition of multimedia elements enriched the storytelling experience by appealing not only to linguistic but also to visual and auditory senses, making narratives more immersive and personally meaningful. Another student reflected, "Sometimes I struggled to find the right words, but adding visuals helped me communicate better. It opened up new ways to be creative" (S.21). This statement illustrates how alternative modes like

images and audio served as cognitive scaffolds, easing the challenge of verbal expression and inspiring innovative ways to frame stories. Visuals and sounds became not just embellishments but integral components of narrative development.

These experiences indicate that integrating multiple modes encouraged deeper imaginative thinking and helped students craft more engaging narratives.

Improvement in literacy skills through scaffolded learning

Students consistently reported that the structured and incremental phases of the digital storytelling process—beginning with storyboarding, moving through drafting, and culminating in multimedia assembly—played a crucial role in helping them systematically organize their ideas and develop their language skills over time. By breaking down the writing task into manageable steps, students felt less overwhelmed and more confident in handling the complexities of writing. One student commented,

"Breaking the writing into small steps with pictures made it easier to focus on grammar and vocabulary. I did not feel overwhelmed" (S.23). Another shared, "My teacher's feedback during each stage helped me fix mistakes and use new words. The activities guided me to write better" (S.27).

This highlights how formative feedback embedded throughout the process supported students in refining their language usage and expanding their vocabulary in a context that felt relevant and personalized.

Classroom observations echoed these sentiments, confirming that scaffolded instruction combining clear frameworks, guided practice, and timely teacher interventions—created an environment where meaningful language learning was seamlessly integrated with authentic, creative storytelling tasks. This scaffolding helped students move beyond mere surface corrections to develop a deeper understanding of language conventions while expressing themselves in imaginative ways.

Together, these findings demonstrate that the phased, supportive structure of digital storytelling not only enhanced students' organizational skills but also promoted progressive mastery of linguistic elements essential for effective foreign language writing.

Collaborative and reflective learning environment

The collaborative nature of the digital storytelling process was repeatedly emphasized by students as a key factor that enhanced both their engagement and writing skills (Gürsoy, 2021; Harris et al., 2024; Olugbara et al., 2022). Many students described how working alongside their peers helped them develop clearer and more coherent stories. One student explained, "Working with my friends to share ideas made my story clearer. They gave me suggestions to improve my writing." (S.25). This peer interaction fostered a shared sense of responsibility and created opportunities for constructive feedback, which deepened students' understanding and helped refine their narratives. The collaborative process encouraged open discussion, allowing students to voice different viewpoints and incorporate diverse ideas that enriched their writing.

Another student observed, "Listening to others' stories and giving feedback helped me think about how to organize my own story better" (S.29). This iterative exchange not only improved narrative structure and clarity but also cultivated critical thinking as students analyzed their classmates' works and applied insights to their own projects. It fostered metacognitive awareness about effective storytelling techniques, such as coherence, pacing, and thematic development.

Additionally, many students mentioned that reflecting on their digital stories made them more aware of their strengths and weaknesses in writing, helping them plan improvements in future assignments.

RQ#2. How do students perceive and experience the impact of digital storytelling on their mastery of key writing components such as grammar, vocabulary, and narrative coherence in foreign language writing instruction?

The qualitative data derived from semi-structured interviews and classroom observations revealed that students perceived digital storytelling as a powerful tool that positively influenced their mastery of critical writing components—grammar accuracy, vocabulary usage, and narrative coherence. Their reflections provide meaningful insights into how digital storytelling facilitated technical skill development and cognitive engagement with writing mechanics and organization.

Grammar accuracy

Many students reported that the phased, scaffolded approach of digital storytelling beginning with storyboarding, progressing

through scriptwriting, and culminating in multimedia production significantly helped them focus more carefully on grammatical correctness. By breaking the writing task into smaller, manageable parts, students were able to concentrate on sentence structure and grammar rules more effectively without feeling overwhelmed by the entire writing process. This step-by-step method provided clarity and reduced anxiety, allowing learners to tackle one linguistic aspect at a time.

Several participants emphasized the value of revising their scripts multiple times, which, combined with targeted and constructive teacher feedback, proved beneficial in identifying and correcting grammatical errors that often went unnoticed in traditional writing tasks. One student shared, "When I wrote the script first, I tried to make sure my sentences were correct because I knew I would use them in my digital story. My teacher's comments helped me fix errors that I didn't notice before" (S12). This iterative revision process encouraged students to adopt a more cautious and reflective approach to language use and heightened their awareness of grammatical accuracy within meaningful, authentic communication settings. The engaging nature of digital storytelling seemed to motivate students not only to be creative but also to be precise in their language choices.

Another student reflected, "Because I had to record my voice and add subtitles, I wanted my sentences to be clear and correct. This made me pay more attention to grammar than I usually do when writing essays" (S18). This illustrates how the multimedia demands of digital storytelling created a real-world impetus for correctness, pushing students to improve their grammatical skills more conscientiously than in conventional assignments.

Vocabulary usage

Students also highlighted notable improvements in their vocabulary development, attributing much of their progress to the integration of multimedia elements and the supportive scaffolding provided by their teachers. The digital storytelling process encouraged them to seek out more precise, vivid, and expressive words that could effectively complement and enhance the visual and auditory components of their narratives. This desire to align language with multimedia content motivated students to go beyond their usual vocabulary and experiment with new words and phrases to make their stories more engaging and impactful.

Moreover, exposure to diverse multimedia resources such as images, music, and video clips—and active peer discussions further expanded students' lexical repertoire. These multimodal stimuli acted as meaningful contextual cues, prompting deeper cognitive engagement with vocabulary in authentic, purposeful contexts rather than isolated exercises. One participant explained, "Adding pictures and sounds made me think carefully about which words would best describe my story. I learned new words during the process and tried to use them in my script to make it more interesting" (S19).

Another student reflected on this enrichment, sharing, "Seeing the images and choosing music helped me find the right words to match the mood. Sometimes I looked up new words so my story sounded better and clearer" (S24). This active exploration highlights how multimedia integration serves as an effective cognitive scaffold, encouraging learners to connect richer vocabulary use with meaningful, creative content creation. Through this process, students not only expanded their language resources but also developed greater confidence and awareness of vocabulary as a tool for nuanced expression within their digital storytelling projects.

Vocabulary usage

Students also highlighted notable improvements in their vocabulary as a direct result of integrating multimedia elements alongside teacher scaffolding throughout the digital storytelling process. Many reflected that the interactive nature of digital storytelling motivated them to seek out more precise and expressive words to align with the visual and auditory components of their narratives. This desire to create more vivid and engaging stories led them to explore new vocabulary and experiment with word choices that enhanced the richness and clarity of their scripts.

Moreover, exposure to diverse multimedia resources, such as images, audio clips, and videos, offered contextual cues that broadened their lexical awareness. Peer discussions further enriched their vocabulary as students shared alternative expressions and language strategies, creating a collaborative environment conducive to language growth. One participant explained, "Adding pictures and sounds made me think carefully about which words would best describe my story. I learned new words during the process and tried to use them in my script to make it more interesting." (S19)

Another student shared a similar experience,

noting, "Sometimes I looked up unfamiliar words that matched the images or music I chose. It helped me use better words and made my story more colorful and exciting" (S22).

This multimodal engagement acted as a powerful cognitive scaffold that encouraged students to connect higher-level vocabulary use to meaningful content creation, fostering not only language development but also a deeper motivation to express their ideas effectively. Overall, digital storytelling provided an authentic and stimulating context for students to expand their vocabulary repertoire in meaningful and lasting ways.

Narrative coherence

The process of developing a digital story inherently encouraged students to pay close attention to the organization and logical flow of their narratives (Quah & Ng, 2022; Rodríguez et al., 2021). Many participants expressed that the use of storyboarding and the visualization of their stories—by sequencing images, text, and multimedia clips—significantly enhanced their ability to structure their ideas coherently. This visual planning phase helped students focus on creating clear links between events and maintaining narrative unity throughout their stories. Such scaffolded preparation allowed them to see their narratives as cohesive wholes rather than disjointed parts. One student remarked, "Planning the story with pictures before writing helped me see whether my story had a clear beginning, middle, and end. It made me think about how to connect ideas so my audience could understand easily" (S27).

In addition to individual planning, collaborative elements such as peer feedback sessions and classroom discussions further strengthened students' awareness of narrative clarity and coherence. These reflective activities offered valuable opportunities to receive diverse perspectives and refine their story structures. This interactive feedback loop contributed to the development of their metacognitive skills, as students became more conscious of how well their narratives communicated ideas effectively and flowed logically. Another student shared, "When I listened to my friends' comments, I realized some parts of my story were confusing. Their suggestions helped me rearrange events and improve the way I told my story, so it was easier to follow" (S31).

Together, these experiences demonstrate that digital storytelling's combination of multimodal

planning and social interaction fosters deeper understanding and mastery of narrative coherence, empowering students to craft stories that are both engaging and logically structured.

Cognitive processes and metacognitive awareness

Several students articulated a heightened metacognitive understanding of the writing process as a direct result of engaging with digital storytelling. The integration of multimedia elements combining pictures, text, and sound prompted them to think more deeply and critically about their language use, narrative choices, and overall communicative effectiveness. This multimodal engagement encouraged learners to approach writing not just as a mechanical task but as a complex, multifaceted process that involves making deliberate decisions about how to convey meaning most effectively.

One student reflected, "Seeing my story as pictures, text, and sound made me more aware of how to use grammar and words to make my story clear and interesting. It was like thinking about writing from different sides" (S22). This awareness extended beyond the surface level of correcting errors; students developed a broader perspective on the interplay between language components and the creative aspects of storytelling. They recognized how each element—grammar, vocabulary, narrative flow—contributes to the clarity and impact of their stories.

Another learner shared, "When I combined my words with images and music, I had to think twice about whether my sentences made sense and fit the mood. I started paying more attention to my choices and how they affected the whole story" (S28). Such reflections show that digital storytelling fosters metacognitive skills by encouraging students to self-monitor, evaluate, and adjust their writing strategies during the creative process. This deeper cognitive engagement supports learners in developing greater autonomy and confidence as writers, reinforcing effective language use within meaningful, multimodal contexts.

This study investigated the impact of integrating digital storytelling platforms into foreign language writing instruction, with a dual focus on fostering students' creativity and advancing their literacy proficiency. Specifically, it explored how this innovative pedagogical approach affected mastery of essential writing components such as grammar, vocabulary, and narrative coherence within the context of English

as a foreign language learning.

The findings revealed notable and statistically significant improvements in students' overall creativity and literacy skills. These gains were reflected not only in elevated scores on standardized writing assessments but also in enhanced student engagement and motivation observed throughout the intervention. The incorporation of multimedia elements such as images, audio, and video—within the storytelling process created a dynamic, interactive learning environment that invigorated students' interest and willingness to participate actively in writing tasks (Balaman, 2020; Hava, 2021; Aşık, 2022; Cox, 2023).

Moreover, the scaffolded, phased instructional design kept the cognitive load manageable, enabling students to concentrate on improving specific writing aspects step-by-step. As a result, students showed measurable progress in grammatical accuracy, demonstrating greater awareness of sentence structure and linguistic conventions. The rich multimodal context encouraged them to expand their vocabulary by selecting more precise and expressive words aligned with their narrative's visual and auditory components. Additionally, students' ability to organize their ideas coherently improved, as the storyboarding and multimedia sequencing processes prompted thoughtful planning and logical flow. These intertwined quantitative and qualitative outcomes highlight the effectiveness of digital storytelling as a holistic language learning strategy—one that simultaneously nurtures technical writing skills, creative expression, and learner engagement in a meaningful, technology-enhanced environment.

The integration of digital storytelling provided a scaffolded, multimodal approach that engaged students cognitively and creatively. Students benefited from breaking down writing tasks into manageable phases—storyboarding, drafting, and multimedia assembly—that allowed them to focus on grammatical accuracy and vocabulary selection in authentic, meaningful contexts. The visual and auditory elements served as cognitive scaffolds that encouraged more precise language use and helped students organize their narratives logically. This approach aligns with cognitive theories of multimedia learning, which suggest that combining verbal and visual information enhances comprehension and retention. Importantly, students' metacognitive awareness heightened as they evaluated their language choices within a richer communicative

framework, encouraging reflection on both form and function in writing.

These findings align with broader contemporary research emphasizing the innovative potential of digital storytelling (DST) in language education. DST integrates visuals and audio through computer technology to enhance learning across the four key language skills—reading, writing, listening, and speaking. A comprehensive review by Lim et al. (2022) examined 71 studies, revealing that DST research employs diverse methodologies and demonstrates positive effects on language learning environments and learner engagement.

However, Lim et al. also noted that theoretical frameworks guiding DST studies are often limited and inconsistently applied, with few investigations thoroughly testing these theories. Moreover, the review highlighted a widespread lack of reliability verification for measurement instruments, underscoring the need for greater methodological rigor in future research.

Complementing this, Belda-Medina (2022) explored the role of DST within evolving storytelling traditions and its influence on inclusiveness and diversity in education. Their two-year mixed-method study involving 244 teacher candidates underscored the underrepresentation of inclusive and diverse content in DST and the necessity for better pedagogical preparation. These insights underscore a persistent gap for nuanced, context-sensitive research on how DST shapes creativity and literacy, particularly in underexplored English as a Foreign Language (EFL) settings.

The integration of quantitative and qualitative findings provides a deeper, more nuanced understanding of how and why the use of digital storytelling enhances foreign language writing skills. The statistically significant quantitative improvements observed in students' grammar accuracy, vocabulary usage, and narrative coherence are richly complemented by qualitative insights into the learners' cognitive strategies, emotional engagement, and reflective practices throughout the intervention.

For instance, the marked increase in vocabulary scores aligns with students' detailed accounts of actively selecting and experimenting with words that best corresponded to the multimedia elements—such as images, audio, and video—in their digital stories. These qualitative reflections demonstrate not only expanded lexical knowledge but also a conscious effort to tailor word choice to enhance narrative expressiveness

and clarity. Similarly, improvements in narrative coherence observed quantitatively are supported by students' descriptions of how storyboarding and peer feedback sessions helped them plan and organize their ideas logically. Such planning allowed learners to construct stories with clear beginnings, middles, and ends, creating a cohesive flow that test scores validated.

This triangulation of data underscores that digital storytelling's multimodal, scaffolded design serves as both a linguistic and motivational framework. It strengthens students' technical skills while simultaneously fostering higher-order metacognitive processes—such as self-monitoring, revising, and reflecting on language use and story structure. The qualitative data illustrate how digital storytelling transformed writing from a routine task into an engaging, meaningful activity, which in turn promoted persistent effort and greater linguistic accuracy.

Furthermore, addressing minor discrepancies between self-reported challenges (such as occasional difficulties with grammar or technology use) and quantitative gains allows for a balanced interpretation. It highlights that while students made progress, some areas require additional instructional support, emphasizing the importance of ongoing teacher scaffolding tailored to individual needs. Overall, this integrated evidence demonstrates that combining quantitative metrics with learners' lived experiences offers a comprehensive validation of digital storytelling as an effective instructional strategy in EFL writing.

Practically, these findings suggest that language educators should consider implementing digital storytelling as a dynamic instructional strategy to enhance both the creative and technical dimensions of writing. The multimodal nature of DST accommodates different learning styles and motivates students to invest effort in writing tasks. Curriculum developers may integrate digital storytelling modules to support 21st-century skills development, including creativity, critical thinking, and collaboration, while simultaneously addressing grammatical and lexical competence. For policymakers, investing in teacher training for DST tools and pedagogies can improve overall language education quality in digital era classrooms.

This study's mixed-methods design is a key strength, providing a comprehensive picture combining empirical test results with rich student perspectives. The context-sensitive research in an Indonesian EFL secondary school adds valuable

data to an underexplored educational setting. However, the study is limited by its one-group pretest-posttest design, which restricts causal inferences. The relatively small sample size and single institutional context limit generalizability. Additionally, variations in students' prior technology familiarity and individual learning preferences may affect the consistency of outcomes.

Future research should incorporate larger and more diverse samples with control or comparison groups to strengthen causal claims about DST's effectiveness. Longitudinal studies are needed to examine the durability of language skills and creativity gains after the intervention. Cross-cultural investigations could explore how DST implementation varies across different educational systems and learner demographics. Moreover, exploring the impact of specific DST tools and collaborative features on language learning outcomes could yield deeper instructional insights.

CONCLUSION

This study aimed to evaluate the effectiveness of integrating digital storytelling platforms in foreign language writing instruction, focusing on enhancing students' creativity, literacy proficiency, and mastery of key writing components namely grammar, vocabulary, and narrative coherence. The findings revealed significant improvements in students' writing skills, evidenced by higher scores in standardized assessments and enriched creative expression. Moreover, the qualitative data confirmed that digital storytelling fostered greater student engagement, motivation, and metacognitive awareness throughout the writing process.

Answering the research questions, the study concluded that digital storytelling notably enhances students' creativity and literacy proficiency by providing a scaffolded, multimodal environment that supports both technical writing accuracy and innovative idea development. It was also found to effectively improve grammatical accuracy, broaden vocabulary use, and strengthen narrative coherence through iterative feedback and active multimedia engagement.

The significance of this study lies in its contribution to the growing body of research on technology-mediated language learning, particularly within Indonesian EFL contexts. It highlights digital storytelling as a promising pedagogical tool that aligns with the preferences and needs of digital-age learners, while promoting

21st-century skills including creativity, critical thinking, and communication. The integration of multimedia elements alongside structured instructional support offers a holistic approach to language development that can transform traditional writing instruction.

Despite these strengths, limitations include the single-group pretest-posttest design and relatively small sample size, which may limit the generalizability of results. Variations in students' prior digital literacy could also influence outcomes, and longer-term effects remain unexplored.

Future research is encouraged to employ experimental designs with larger, diverse samples and to investigate the sustainability of skill gains over time. Additionally, exploring different digital storytelling platforms and cross-cultural applications would deepen understanding of this approach. Educators and policymakers should consider incorporating digital storytelling into curricula, supported by teacher training and technological infrastructure, to enhance language learning experiences effectively.

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