Journal of Pedagogy and Education Science (JPES)
Vol. 4, No. 03, pp. 530-545
journal.iistr.org/index.php/JPES
DOI: 10.56741/IISTR.jpes.001103

Digital Storytelling as an Innovative Tool for Improving Academic Writing Skills Among English Major Students: A Mixed-Methods Approach

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ARTICLE INFO

Article history
Received 13 June 2025
Revised 3 September 2025
Accepted 9 September 2025

ABSTRACT

This study investigates the effectiveness of digital storytelling as an innovative pedagogical tool for enhancing academic writing skills among English major students in Indonesian higher education. Digital storytelling, which combines traditional narrative techniques with multimedia elements, has emerged as a promising approach to address the challenges students face in developing academic writing competencies. A mixed-methods research design was employed to examine the impact of digital storytelling interventions on students' writing performance, engagement, and skill development. The study involved 60 English major students from a public university in Indonesia, divided into experimental and control groups. Quantitative data were collected through pre- and post-assessment writing tests, while qualitative data were gathered through interviews, focus group discussions, and reflective journals. Results indicated significant improvements in academic writing skills among students who participated in digital storytelling activities compared to those receiving traditional instruction. The findings revealed enhanced narrative competence, improved technological literacy, and increased student motivation and engagement. This research contributes to the growing literature on innovative pedagogical approaches in language education. It provides practical implications for educators seeking to integrate technology-enhanced learning in academic writing instruction.

Keywords
Academic Writing Skills
Digital Storytelling
English Major Students
Higher Education

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Introduction

Developing academic writing skills remains a critical challenge in English language education, particularly in non-English speaking countries like Indonesia. Based on Sağlamel and Kayaoğlu, English major students often struggle with academic writing due to various factors, including limited exposure to authentic academic discourse, insufficient writing practice, and traditional pedagogical approaches that fail to engage contemporary learners. The conventional product-oriented approach to writing instruction has proven inadequate in addressing the complex needs of digital native students who are accustomed to multimodal learning environments [1].

According to Hadj [2], digital storytelling has emerged as an innovative pedagogical tool combining narrative with multimedia technology to create engaging learning experiences. This approach leverages students' familiarity with digital platforms while developing essential academic writing competencies through authentic, meaningful tasks. Research indicates that digital storytelling can enhance multiple literacies, including digital, visual, technological, and information literacy skills.

The significance of this study lies in its potential to address the persistent challenges in academic writing instruction within Indonesian higher education contexts. By examining the effectiveness of digital storytelling through a mixed-methods approach, this research aims to provide comprehensive insights into how innovative technological tools can transform traditional writing pedagogy. The study responds to calls for more engaging, student-centered approaches to academic writing instruction that recognize the changing nature of literacy in the digital age. The primary research questions guiding this study are:

- How does digital storytelling impact the academic writing skills of English major students?
- What are students' perceptions and experiences regarding using digital storytelling in academic writing instruction?
- What challenges and opportunities arise when implementing digital storytelling in higher education writing courses? These questions address both quantitative outcomes and qualitative dimensions of the digital storytelling intervention.

The next section comprehensively reviews relevant literature on digital storytelling, academic writing skills development, and mixed-methods research approaches in educational technology. Following that, the Materials and Methods section details the research design, participant characteristics, data collection instruments, and the implementation of the digital storytelling intervention. The Results section then reports quantitative findings with statistical analyses alongside qualitative themes derived from interviews and focus groups. This is

followed by a Discussion that integrates quantitative and qualitative results, compares them with previous studies, and considers the practical implications and challenges of using digital storytelling in academic writing instruction. Finally, the article concludes with a summary of key findings, limitations of the study, and suggestions for future research.

Literature Review

A. Digital Storytelling in Educational Contexts

Digital storytelling represents a convergence of traditional narrative practices with contemporary multimedia technologies, creating opportunities for enhanced learning experiences. Ameer defines digital storytelling as "the practice of using digital technology to tell stories that have a purpose and present a particular point of view" through integrating text, visuals, audio, and video elements [3]. This pedagogical approach has gained significant attention in educational research due to its potential to engage students in meaningful learning while developing multiple competencies [4].

Recent studies have demonstrated the effectiveness of digital storytelling across various educational levels and disciplines. In higher education, digital storytelling has been successfully implemented in language learning, teacher education, and content area instruction. Manalu & Wilujeng found that digital storytelling activities significantly improved students' creative thinking abilities and digital literacy skills [5]. Similarly, Prabowo et al. [6] reported enhanced student engagement and collaborative learning outcomes when digital storytelling was integrated into the university curriculum.

The theoretical foundations of digital storytelling draw from constructivist learning theory, which emphasizes active knowledge construction through authentic experiences. This approach aligns with narrative pedagogy principles that recognize storytelling as a fundamental human activity for meaning-making and knowledge transmission [7]. Digital storytelling also incorporates elements of project-based learning, encouraging students to engage in complex, real-world tasks that develop both content knowledge and digital competencies [8].

B. Academic Writing Skills Development

Academic writing represents a complex set of competencies extending beyond basic language proficiency to critical thinking, argumentation, and disciplinary discourse knowledge [9]. English major students face particular challenges in developing these skills due to the specialized nature of academic writing conventions and the cognitive demands of producing coherent, well-structured texts [10]. Research has identified several key areas where students struggle, including thesis development, evidence integration, coherence and cohesion, and appropriate academic register.

Traditional approaches to academic writing instruction have often emphasized product-oriented methodologies focusing on final written outcomes rather than the writing process itself [11]. However, contemporary research advocates for process-oriented approaches emphasizing planning, drafting, revising, and editing as integral components of writing development. These approaches recognize writing as a recursive, iterative process that benefits from collaborative feedback and reflective practice [12].

The integration of technology in academic writing instruction has shown promising results in addressing traditional pedagogical limitations. Computer-assisted writing instruction, online collaboration tools, and multimedia platforms have been found to enhance student motivation, provide immediate feedback, and support diverse learning styles. Research by Hastomo [13] demonstrated that technology-enhanced writing instruction significantly improved academic writing quality and student engagement.

C. Digital Storytelling and Writing Skills

Recent educational research has extensively documented the relationship between digital storytelling and writing skills development. Digital storytelling activities require students to engage in multiple aspects of the writing process, including planning, scripting, revising, and presenting their narratives in multimedia formats [14]. This multifaceted approach addresses various dimensions of writing competency while maintaining high levels of student engagement.

Studies have shown that digital storytelling can improve writing skills, including narrative structure, character development, and descriptive language use. Research by Zhao [15] found that students who participated in digital storytelling projects demonstrated significantly improved organization, voice, and word choice than control groups receiving traditional instruction. These improvements were attributed to the authentic nature of digital storytelling tasks and the immediate feedback provided through multimedia creation tools [16].

Furthermore, digital storytelling has been found to enhance metacognitive awareness of the writing process [17]. Students engaged in creating digital stories report increased understanding of audience considerations, purpose-driven writing, and the importance of revision and editing. This metacognitive development is crucial for academic writing success, enabling students to monitor and regulate their writing processes more effectively.

Materials and Methods

A. Research Design

This study employed a mixed-methods research design to comprehensively examine the effectiveness of digital storytelling in improving academic writing skills among English major students. Specifically, an explanatory sequential mixed-methods design was utilized, where

quantitative data collection and analysis occurred first, followed by qualitative data collection to explain and contextualize the quantitative findings. This design was chosen because it allows for measuring intervention effects while providing deeper insights into the mechanisms underlying these effects.

The study was conducted over a 16-week academic semester, with the digital storytelling intervention implemented for 12 weeks and pre- and post-assessments conducted during the remaining weeks. The mixed-methods approach enabled triangulation of data sources, enhancing the validity and reliability of the research findings while providing a comprehensive understanding of the impact of the digital storytelling intervention.

Mixed-methods research approaches have become increasingly important in educational technology studies because they capture both quantitative outcomes and qualitative experiences of technology-enhanced learning. This methodological approach allows researchers to examine whether an intervention works and how and why it produces particular effects. In the context of digital storytelling research, mixed-methods designs provide comprehensive insights into both learning outcomes and learner experiences.

Several advantages of mixed-methods research in educational contexts include enhanced validity through triangulation, a comprehensive understanding of complex phenomena, and practical insights for educational practitioners. These advantages are particularly relevant for digital storytelling research involving complex interactions between technology, pedagogy, and learner characteristics.

Recent mixed-methods studies in digital storytelling have employed various design approaches, including convergent parallel, explanatory sequential, and exploratory sequential designs. Each design offers unique advantages depending on the research questions and practical constraints of the study context. The choice of a mixed-methods design significantly impacts the types of insights that can be generated and the practical implications of the research findings.

B. Participants

The study involved 60 English major students from a public university in Indonesia, recruited through purposive sampling from third-year undergraduate students enrolled in academic writing courses. Participants were randomly assigned to experimental (n=30) and control (n=30) groups to ensure equivalence between groups. The experimental group received digital storytelling-enhanced academic writing instruction, while the control group received traditional academic writing instruction using conventional pedagogical approaches.

Inclusion criteria for participation included: enrollment in an English major program, completion of prerequisite writing courses, basic digital literacy skills, and consent to participate in all research activities. Participants ranged from 20 to 22 years, with 65% female

and 35% male students. All participants had intermediate to advanced English proficiency levels determined by their academic records and placement test scores.

The selection of the 20 participants for qualitative data collection was based on specific inclusion and exclusion criteria to ensure the relevance and quality of insights gathered. Inclusion criteria required participants to be enrolled as third-year English major students who had completed prerequisite academic writing courses and actively participated in the digital storytelling intervention. Additionally, participants were expected to have basic digital literacy skills sufficient to engage effectively with multimedia tools used in the study. Students who consistently attended and engaged throughout the 12-week intervention were prioritized to ensure rich and meaningful reflections. Exclusion criteria involved students who withdrew from the course, had significant absences during the intervention, or lacked consent to participate in interviews, focus groups, or reflective journal submissions. These criteria were applied through purposive sampling to select a diverse subset of students who could provide comprehensive perspectives on their experiences and writing development within the digital storytelling framework.

C. Data Collection Instruments

Academic writing performance was assessed using a standardized writing assessment rubric adapted and validated for the Indonesian context. The rubric evaluated five key dimensions: content and ideas, organization and structure, language use and vocabulary, grammar and mechanics, and overall coherence. Each dimension was scored on a scale of 1-5, with detailed descriptors for each level.

Pre- and post-intervention writing assessments required students to produce 500-word academic essays on assigned topics related to their field of study. Two trained raters independently scored all writing samples to ensure inter-rater reliability, with Cohen's kappa coefficient calculated to measure agreement. A pilot study with 20 students was conducted to validate the assessment instrument and ensure its appropriateness for the target population.

Semi-structured interviews were conducted with 15 participants from the experimental group to explore their experiences with digital storytelling and perceptions of its impact on their writing skills. Interview questions addressed motivation and engagement, learning experiences, challenges encountered, and perceived benefits of the digital storytelling approach. Interviews were conducted in English and Bahasa Indonesia to ensure participants' comfort and comprehensive responses.

Focus group discussions involving 6-8 participants each were conducted to capture collective perspectives on the digital storytelling intervention. These discussions provided insights into peer interactions, collaborative learning experiences, and group dynamics during

digital storytelling activities. Reflective journals were also collected from experimental group participants throughout the intervention to document their learning processes and evolving perspectives.

The standardized writing assessment rubric used in this study comprised 25 items, with five items corresponding to each key dimension: content and ideas, organization and structure, language use and vocabulary, grammar and mechanics, and overall coherence. Each item was scored on a 1–5 scale, where 1 indicated poor performance and five represented excellence, based on detailed descriptors defining performance levels for each criterion. The final score for each dimension was calculated as the average of its five item scores, providing a dimension-specific rating. In contrast, the overall writing score was derived from the average across all 25 items. For example, in the Results section, the experimental group's post-test mean score for the content and ideas dimension improved from 2.76 to 4.21, reflecting a significant advancement in students' ability to develop and present ideas effectively. This scoring procedure ensured a comprehensive and nuanced evaluation of multiple facets of academic writing competence.

D. Digital Storytelling Intervention

The digital storytelling intervention was designed based on established frameworks, incorporating seven key elements: point of view, dramatic question, emotional content, voice, soundtrack, economy, and pacing. Through workshops and hands-on activities, students were introduced to digital storytelling concepts and tools. The intervention involved three main phases (See Fig. 1):

- preparation and planning (weeks 1-3), where students learned digital storytelling principles and selected topics related to academic themes;
- creation and production (weeks 4-9), where students developed scripts, gathered multimedia elements, and created their digital stories using software tools; and
- presentation and reflection (weeks 10-12), where students shared their digital stories and engaged in peer feedback and reflection activities.

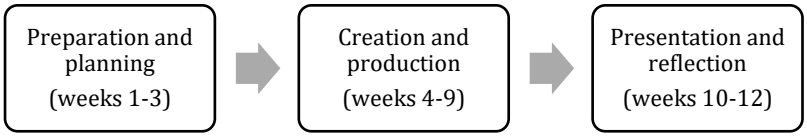

Fig 1. The Intervention Phases

Students used accessible digital storytelling tools, including Adobe Spark, WeVideo, and Flipgrid, to create their multimedia narratives. Technical support was provided throughout the intervention to ensure all students could effectively use the technology tools. The digital stories

addressed academic topics such as research methodology, literary analysis, and critical argumentation, directly connecting to academic writing skills development.

E. Data Analysis

Quantitative data analysis involved descriptive statistics to characterize participant demographics and writing performance scores. Independent samples t-tests were conducted to compare pre- and post-intervention writing scores between experimental and control groups. Effect sizes were calculated using Cohen's d to determine the practical significance of observed differences. SPSS version 28 was used for all quantitative analyses, with significance levels at $p < 0.05$.

Qualitative data analysis followed Braun and Clarke's (2006) thematic analysis approach, involving data familiarization, initial coding, theme identification, theme review, and final theme definition. Interview transcripts and focus group discussions were transcribed verbatim and coded using NVivo software. Multiple researchers participated in coding to enhance reliability and reduce researcher bias. Triangulation of quantitative and qualitative findings was conducted during the interpretation phase to provide comprehensive insights into the intervention's effectiveness.

Results

A. Quantitative Findings

1. Descriptive Analysis

Table 1 presents descriptive statistics of experimental and control groups. Both groups consisted of 30 participants. The experimental group showed improvement from a pre-test mean of 2.84 to a post-test mean of 4.12, while the control group increased from 2.79 to 3.21. Standard deviations ranged from 0.58 to 0.71, indicating moderate score variability.

Table 1. Descriptive Statistical Analysis

Variabel	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Eksperiment	30	1.8	4.2	2.84	0.67
Post-Test Eksperiment	30	3.2	5.0	4.12	0.58
Pre-Test Control	30	1.6	4.0	2.79	0.71
Post-Test Kontrol	30	2.4	4.5	3.21	0.64

2. Cohen’s d Analysis

The quantitative analysis (Table 2) revealed significant improvements in academic writing skills among students in the experimental group compared to the control group. Pre-intervention writing assessment scores showed no significant differences between groups (experimental $M = 2.84$, $SD = 0.67$; control $M = 2.79$, $SD = 0.71$; $t(58) = 0.29$, $p = 0.77$), confirming baseline equivalence. Post-intervention assessments demonstrated

substantial improvements for the experimental group (M = 4.12, SD = 0.58) compared to the control group (M = 3.21, SD = 0.64), with a statistically significant difference (t(58) = 5.87, p < 0.001, Cohen's d = 1.52).

Table 2. Comparison of Pre-Test and Post-Test Scores of Experimental and Control Groups

Group	Pre-Test M (SD)	Post-Test M (SD)	Gain Score	t-value	p-value	Cohen's d
Eksperiment (n=30)	2.84 (0.67)	4.12 (0.58)	1.28	5.87	<0.001	1.52
Control (n=30)	2.79 (0.71)	3.21 (0.64)	0.42	-	-	-

Analysis of individual writing skill components revealed significant improvements across all assessed dimensions for the experimental group. Content and ideas showed the largest improvement (experimental group gain = 1.45 points vs. control group gain = 0.38 points), followed by organization and structure (experimental gain = 1.32 points vs. control gain = 0.41 points). Language use and vocabulary also demonstrated substantial gains (experimental gain = 1.28 points vs. control gain = 0.35 points), indicating the effectiveness of digital storytelling in enhancing multiple aspects of academic writing competency.

3. Effect of Size

The effect sizes for all writing skill dimensions (Table 3) exceeded Cohen's criteria for large effects (d > 0.8), with content and ideas showing the largest effect (d = 1.68), followed by organization and structure (d = 1.54). These findings suggest that digital storytelling interventions significantly improved academic writing skills that extend beyond statistical significance. The sustained nature of these improvements was confirmed through follow-up assessments conducted four weeks after the intervention concluded.

Table 3. Analysis of Writing Skill Components per Dimension

Skill Dimension	Eksperiment Group	Control Group	Effect Size (d)
	Pre-Test	Post-Test	Gain
Content	2.76	4.21	1.45
Organization	2.85	4.17	1.32
Use of Language and Vocabulary	2.91	4.19	1.28
Grammar and Mechanics	2.78	4.02	1.24
Overall Coherence	2.89	4.08	1.19

4. Effect of Size

Table 4 shows the inter-rater reliability analysis across skill dimensions. Cohen's Kappa values ranged from 0.79 to 0.85, indicating high consistency. Most dimensions, including content, organization, grammar, and coherence, reached a "very good" agreement, while language and vocabulary achieved a "good" level. The overall agreement was 0.82, confirming strong inter-rater reliability.

Table 4. Inter-Rater Reliability

Skill Dimension	Cohen's Kappa (κ)	Level of Agreement
Content	0.85	Very Good
Organization	0.82	Very Good
Use of Language and Vocabulary	0.79	Good
Grammar and Mechanics	0.83	Very Good
Overall Coherence	0.81	Very Good
Overall Agreement	0.82	Very Good

B. Qualitative Findings

Participants consistently reported heightened motivation and engagement when working on digital storytelling projects compared to traditional academic writing assignments. Many students expressed that multimedia made the writing process more creative and enjoyable. One participant remarked,

> "Creating digital stories made writing feel more creative and personal. I was excited to work on my project and share it with others."

Incorporating visual and audio elements alongside text was perceived as empowering and made the writing task more meaningful and authentic. Furthermore, sharing digital stories with peers fostered a sense of community and collaborative learning, which further stimulated student motivation.

Students demonstrated increased awareness and comprehension of key narrative elements such as plot development, character creation, and setting description. Storyboarding and integrating multimedia elements enabled them to organize ideas more systematically before writing. One participant noted,

> "Planning my digital story with images and scenes helped me see how to structure my writing better. I understood how to build tension and create interesting characters."

This multimodal approach enhanced students' narrative competence and heightened their metacognitive understanding of writing as an interconnected and purposeful activity. Students also reported more thoughtfully applying literary techniques like foreshadowing and symbolism in subsequent academic writing tasks.

The intervention significantly contributed to students' technological competencies beyond traditional writing skills. Participants reported greater confidence in using digital tools for educational purposes. They acquired practical skills in video editing, audio production, and digital publishing, which were seen as valuable for both academic and professional contexts. Many students appreciated the relevance of these digital competencies to 21st-century academic communication, with some noting that they continued to use the tools for other coursework or personal projects.

Despite the overall positive experiences, students faced several challenges related to technology use. Initial technical difficulties with software and hardware were common, especially among those less familiar with multimedia tools. Time management was also a recurring concern, as digital story creation was perceived as more time-consuming than traditional writing tasks. Additionally, some participants experienced a steep learning curve with new technologies, occasionally disrupting their creative flow. However, peer collaboration and instructor support were instrumental in overcoming these challenges. Students recommended more extensive technical training and resource availability in future implementations of digital storytelling.

Discussion

A. Enhanced Engagement and Motivation

Participants consistently reported increased motivation and engagement when creating digital stories compared to traditional writing assignments. [18]. The use of digital storytelling was found to make writing feel more creative and personal, fostering a stronger sense of engagement among students. This increased interest stemmed from the multimedia nature of the activity, which enabled them to express ideas through multiple modalities. By incorporating visual and auditory elements alongside their written narratives, students experienced a richer and more motivating learning process that encouraged both creativity and active participation.

The authentic nature of digital storytelling tasks also contributed to increased motivation. Students reported feeling more connected to their writing when they could choose personally meaningful topics and present them in engaging digital formats. This finding aligns with research on authentic assessment and student-centered learning approaches. The social aspect of sharing digital stories with peers further enhanced motivation and created a sense of community within the classroom.

B. Improved Understanding of Narrative Structure

The findings indicate that digital storytelling supported students' understanding of key narrative elements such as plot, character, and setting. The use of visual storyboarding helped them organize ideas more effectively, enabling clearer structuring of their writing. Through this process, students gained insight into how to build tension, develop characters, and design coherent narratives. The multimodal approach encouraged them to integrate different elements, reinforcing both creativity and narrative coherence.This process enhanced their metacognitive awareness of writing strategies and narrative techniques. Students reported improved ability to identify and utilize literary devices such as foreshadowing, symbolism, and character development in their subsequent academic writing. The immediate feedback

provided through multimedia creation tools also helped students recognize and address structural weaknesses in their narratives [19].

C. Development of Digital Literacy Skills

The digital storytelling intervention significantly enhanced students' technological competencies alongside their writing skills. Participants reported increased confidence in using multimedia software and digital platforms for educational purposes. Students developed video editing, audio production, image manipulation, and digital publishing skills that extended beyond the writing classroom. These digital literacy gains align with 21st-century learning objectives that emphasize technological fluency [20].

Students appreciated the practical relevance of these digital skills for their future academic and professional endeavors. Many participants noted that the technological competencies gained through digital storytelling would be valuable for creating presentations, portfolios, and other academic projects. Integrating technology in writing instruction also prepared students for the increasingly digital nature of academic and professional communication. Some students reported continued use of digital storytelling tools for other courses and personal projects [21].

D. Challenges with Technology Integration

Despite overall positive experiences, participants identified challenges related to technology integration in digital storytelling activities. Technical difficulties with software and equipment posed initial barriers for some students, particularly those with limited prior experience with multimedia tools. Time management emerged as a significant challenge, with students reporting that digital story creation required more time than traditional writing assignments [22].

Some participants expressed concerns about the learning curve of new technology tools and the potential for technical issues to interfere with their creative processes. However, most students indicated that peer support and instructor guidance helped them overcome these challenges. The collaborative nature of troubleshooting technical problems also created opportunities for peer learning and mutual support. Students recommended providing more extensive technical training and support resources for future implementations.

E. Integration of Quantitative and Qualitative Findings

The convergence of quantitative and qualitative findings provides compelling evidence for the effectiveness of digital storytelling in improving academic writing skills. The statistically significant improvements in writing assessment scores are substantiated by students' reported experiences of enhanced engagement, improved narrative understanding, and developed digital competencies [23]. This triangulation of data sources strengthens the

validity of the research findings and provides comprehensive insights into the mechanisms underlying the intervention's success.

The qualitative findings help explain why digital storytelling effectively improved writing skills. Students' increased motivation and engagement likely contributed to their willingness to invest more effort in writing tasks, leading to improved performance. The enhanced understanding of narrative structure facilitated through digital storytelling directly transferred to improved organization and coherence in academic writing. The development of digital literacy skills provided students with additional tools and confidence for expressing their ideas effectively [24].

The challenges identified in the qualitative analysis also provide important insights for future implementations of digital storytelling interventions. While technical difficulties and time management issues posed obstacles, they did not prevent students from achieving significant learning gains. These findings suggest that with appropriate support and preparation, the benefits of digital storytelling outweigh the challenges for most students.

F. Comparison with Previous Research

The findings of this study align with previous research demonstrating the effectiveness of digital storytelling in educational contexts. The effect sizes observed in this study (d = 1.52 for overall writing improvement) exceed those reported in many previous writing intervention studies, suggesting that digital storytelling may be particularly effective for improving academic writing skills. These results are consistent with other research showing significant improvements in student engagement and learning outcomes through digital storytelling activities [21],[23].

The specific improvements in narrative structure and organization observed in this study support previous findings by Malykhin regarding the effectiveness of digital storytelling for developing writing competencies [25]. However, this study extends previous research by examining academic writing skills specifically among English major students in an Indonesian context. This study's cultural and linguistic context provides valuable insights into the transferability of digital storytelling approaches across different educational settings.

The mixed-methods approach employed in this study provides more comprehensive insights than many previous studies that relied solely on quantitative or qualitative methods. Integrating both types of data allows for a deeper understanding of how and why digital storytelling improves writing skills, contributing to the theoretical and practical knowledge base in this area.

Conclusion

This study provides compelling evidence that digital storytelling is an effective and innovative tool for improving academic writing skills among English major students in

Indonesian higher education contexts. The mixed-methods research design revealed statistically significant quantitative improvements and rich qualitative insights into students' learning experiences. The intervention produced large effect sizes across all dimensions of academic writing assessment, with particularly notable improvements in content development, organizational structure, and language use. The qualitative findings illuminate the mechanisms underlying these improvements, revealing how digital storytelling enhances student engagement, develops narrative competence, and builds digital literacy skills that support academic writing development. Students' experiences demonstrate that the multimodal nature of digital storytelling provides authentic, meaningful opportunities for writing skill development while addressing the learning preferences of digital native students.

Limitations and Suggestions

Several limitations should be considered when interpreting these findings. The study was conducted at a single institution with a relatively small sample size, which may limit the generalizability of the results to other contexts. Future research should examine the effectiveness of digital storytelling across multiple institutions and cultural contexts to establish broader validity.

Conflict of Interest

There is no conflict of interest.

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