



## Utilizing Digital Storytelling to Enhance Students' Understanding of Local History, Environmental Awareness, and English Language Skills at SMA Negeri 1 Rogojampi

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### Abstract

This study aims to analyze the effect of digital storytelling on students' understanding of local history, environmental awareness, and English speaking or writing skills at SMA Negeri 1 Rogojampi. Digital storytelling enables students to convey historical narratives and environmental issues in English through videos, podcasts, or digital presentations. This research employs a mixed methods approach with a pre-experimental one-group pretest-posttest design. Research subjects consisted of 32 students from SMA Negeri 1 Rogojampi who participated in an 8-week project-based digital storytelling learning program. Data were collected through history comprehension tests, environmental awareness tests, English language skills assessment rubrics, and student reflections. The results show that digital storytelling significantly improved students' understanding of local history ( $p < 0.01$ ), environmental awareness ( $p < 0.01$ ), and English speaking and writing skills ( $p < 0.01$ ). Qualitative analysis of student reflections revealed that the digital story creation process encouraged students to explore local history, understand environmental issues, and develop English language skills contextually. This research offers a digital learning approach that connects local content with language development and provides recommendations for integrating digital storytelling into the Merdeka Curriculum.

**Keywords:** digital storytelling, local history, environmental awareness, English language skills, project-based learning

approaches. Among these innovations, digital storytelling has emerged as a powerful pedagogical tool that combines narrative construction with digital media production to enhance student engagement and learning outcomes (Robin, 2020; Ohler, 2020). Digital storytelling enables students to create multimedia narratives that integrate text, images, audio, and video, making it particularly suitable for developing multiple competencies simultaneously. In the context of Indonesian education, where students often struggle with engagement in history, environmental awareness, and English language learning, digital storytelling offers a promising approach for integrated and meaningful learning experiences.

Field observations conducted at SMA Negeri 1 Rogojampi, Banyuwangi, reveal significant challenges in student learning across multiple domains. History lessons are typically delivered through lectures and textbook readings, resulting in low student engagement and limited understanding of local historical narratives. Environmental education is often treated as a separate topic with limited connection to students' daily lives and local contexts. English language instruction focuses primarily on grammar and reading comprehension, with limited opportunities for students to develop speaking and writing skills in meaningful contexts. These challenges are compounded by the separation of

### INTRODUCTION

The rapid advancement of digital technology has transformed the landscape of education, creating new opportunities for innovative teaching and learning

subjects, which prevents students from seeing connections between history, environment, and language. As a result, students miss opportunities to develop integrated understanding and competencies that are essential for navigating complex real-world issues.

Digital storytelling has been recognized internationally as an effective approach for enhancing student learning across various disciplines. Research has shown that digital storytelling can improve students' critical thinking, creativity, collaboration, and communication skills—the so-called 4C skills essential for 21st-century learning (Pratama et al., 2023). In history education, digital storytelling enables students to engage with historical narratives in deeper and more personal ways, developing historical thinking skills and appreciation for cultural heritage. By creating their own historical narratives, students move beyond passive consumption of historical information to active construction of historical understanding. This aligns with constructivist approaches to learning, which emphasize the importance of learners actively constructing knowledge through meaningful experiences.

The integration of local history into digital storytelling is particularly relevant in the Indonesian context, where rich historical narratives and cultural heritage remain underexplored in formal education. Research on local history education has shown that integrating local historical narratives into the curriculum can enhance student engagement, cultural identity, and historical understanding (Prasetyo, 2019; Suryani & Setyowati, 2021). Digital storytelling provides a medium for students to explore and represent local history in ways that are engaging, creative, and personally meaningful. Studies have demonstrated that the digital storytelling Project-Based Learning model through local history vlogs can improve students' 4C skills, including critical thinking, creativity, collaboration, and communication (Pratama et al., 2023). This approach not only enhances communication skills in conveying education about local historical heritage but also has the potential to improve critical thinking skills in exploring and verifying information.

Environmental awareness is another critical competency that can be developed through digital storytelling. Research has shown that digital storytelling can effectively foster environmental literacy among students. Rusda, Ali, and Puspitasari (2023) found that the adoption of digital storytelling could encourage young EFL learners' interest in learning environmental literacy to protect their environment. Furthermore, learning environmental literacy through digital storytelling engaged young EFL learners more actively in learning English. The empirical evidence

demonstrates that digital storytelling creation engages students in learning English and environmental literacy while helping them preserve their environment. Similarly, studies on ecopedagogy extensive reading and digital storytelling projects have shown that this approach stimulates students' creativity and enhances reading encouragement as well as environmental awareness during the learning process (Garuda, 2023).

The development of English language skills through digital storytelling has been extensively documented in the literature. Digital storytelling provides authentic contexts for language use, enabling students to develop speaking, writing, reading, and listening skills in integrated ways. Research on enhancing Indonesian EFL learners' speaking skills through digital storytelling based on local folktales has shown that digital storytelling has a considerable impact on students' speaking ability, providing insights into the possibilities of adding culturally rich narratives into language teaching (Mardhiah et al., 2024). Studies have also demonstrated that digital storytelling projects in Indonesian EFL secondary schools can foster communicative and creative learning, with students responding positively to learning English through digital storytelling using technology (Garuda, 2023). The integration of digital storytelling with local wisdom and folklore has been shown to significantly improve students' fluency, pronunciation, vocabulary usage, and coherence in English speaking.

The research gap addressed by this study is the limited empirical evidence on the effectiveness of digital storytelling for simultaneously developing local history understanding, environmental awareness, and English language skills in the Indonesian senior high school context. While previous research has examined digital storytelling for individual outcomes—such as history learning, environmental education, or language development—few studies have investigated the integrated effects of digital storytelling on all three outcomes simultaneously. Furthermore, limited research has been conducted in the specific context of Banyuwangi, a region with rich historical and environmental resources that could serve as powerful content for digital storytelling projects.

The novelty of this research lies in its integrated approach to examining the effects of digital storytelling on three interconnected learning outcomes: local history understanding, environmental awareness, and English language skills. This research goes beyond previous studies that focused on single outcomes by investigating how a single pedagogical intervention—digital storytelling—can simultaneously develop multiple competencies. The study also contributes to the growing body of research on project-

based learning in the Indonesian context by examining the implementation of digital storytelling projects aligned with the Merdeka Curriculum. Furthermore, the research provides empirical evidence on the effectiveness of digital storytelling in a specific local context, contributing to the broader understanding of how digital technologies can support contextual and integrated learning.

This research is grounded in several theoretical frameworks. First, constructivist learning theory provides the foundation for understanding how students actively construct knowledge through the process of creating digital stories (Piaget, 2020; Vygotsky, 2021). Second, project-based learning theory emphasizes the importance of engaging students in authentic, meaningful projects that require sustained inquiry and the production of tangible outcomes (Thomas, 2020; Larmer & Mergendoller, 2021). Third, the theory of digital storytelling as a pedagogical approach highlights the power of narrative and multimedia production for enhancing student engagement and learning (Robin, 2020; Ohler, 2020). Fourth, place-based education theory emphasizes the importance of learning that is rooted in local places and communities (Gruenewald, 2003; Sobel, 2004).

This research is also relevant to current educational policy in Indonesia, particularly the Merdeka Curriculum, which emphasizes project-based learning, contextual learning, and the development of Pancasila student profiles (Badan Standar, 2022). The Merdeka Curriculum provides flexibility for educators to develop learning experiences that are relevant to students' local contexts and that integrate multiple subjects. Digital storytelling projects that integrate local history, environmental issues, and English language development align with the goals of the Merdeka Curriculum by providing opportunities for project-based, contextual, and integrated learning. The research findings can inform the implementation of the Merdeka Curriculum by providing evidence on the effectiveness of digital storytelling as a pedagogical approach for developing multiple competencies simultaneously.

## MATERIALS AND METHODS

This research employs a mixed methods approach with a pre-experimental one-group pretest-posttest design. Mixed methods research combines quantitative and qualitative approaches to provide a more comprehensive understanding of research phenomena than either approach alone (Creswell & Creswell, 2018; Creswell & Plano Clark, 2018). The pre-experimental one-group pretest-posttest design involves measuring outcomes before and after an intervention with a single group of participants,

allowing researchers to assess changes associated with the intervention (Campbell & Stanley, 2020). This design was chosen because it allows for the assessment of changes in students' understanding of local history, environmental awareness, and English language skills following participation in a digital storytelling project.

The research was conducted at SMA Negeri 1 Rogojampi, Banyuwangi, East Java, from January to March 2023. The school was selected because it serves a diverse student population and has expressed interest in implementing innovative teaching approaches aligned with the Merdeka Curriculum. The research subjects consisted of 32 students from class XI who participated in an 8-week project-based digital storytelling learning program. Students were selected using purposive sampling based on their willingness to participate and their availability for the full duration of the program. The sample size of 32 students is consistent with previous research on digital storytelling in Indonesian educational contexts, which has involved between 8 and 36 participants (Rusda et al., 2023; Garuda, 2023).

The digital storytelling intervention consisted of an 8-week project-based learning program in which students created digital stories about local history and environmental issues in Banyuwangi. The program followed the project-based learning framework, which involves: (1) significant content and skills, (2) a need to know, (3) a driving question, (4) student voice and choice, (5) critique and revision, and (6) public presentation (Larmer & Mergendoller, 2021). Students worked in groups of 4-5 to research local historical sites and environmental issues, develop narratives in both Indonesian and English, and produce digital stories using video, audio, and image editing tools. The project culminated in a public screening of the digital stories, with presentations in English.

Data collection techniques included pretest-posttest assessments, observation, and student reflections. The pretest-posttest assessments measured students' understanding of local history, environmental awareness, and English language skills. The local history assessment consisted of multiple-choice and short-answer questions about Banyuwangi's history, including the Blambangan Kingdom, Osing culture, and historical sites. The environmental awareness assessment measured students' knowledge of environmental issues, attitudes toward environmental conservation, and self-reported environmental behaviors. The English language skills assessment included speaking and writing components, with speaking assessed through a recorded presentation and writing assessed through a written narrative. All assessments were validated by experts in each field and pilot-tested before implementation.

The collected quantitative data were analyzed using descriptive statistics (mean, standard deviation) and inferential statistics (paired-sample t-tests). Paired-sample t-tests were used to compare pretest and posttest scores for each outcome measure, with significance set at  $p < 0.05$ . Effect sizes were calculated using Cohen's  $d$  to determine the magnitude of changes. The qualitative data from student reflections and teacher interviews were analyzed using thematic analysis, following the procedures described by Braun and Clarke (2021). The qualitative findings were used to complement and explain the quantitative results, providing a more comprehensive understanding of the effects of the digital storytelling intervention. The integration of quantitative and qualitative findings followed a convergent parallel design, in which quantitative and qualitative data were collected and analyzed separately and then integrated in the interpretation phase.

## RESULTS AND DISCUSSION

The research revealed significant improvements in students'

understanding of local history, environmental awareness, and English language skills following participation in the digital storytelling project. The results are presented in three main sections: quantitative results from pretest-posttest assessments, qualitative findings from student reflections and observations, and analysis of the digital storytelling products.

The pretest-posttest assessments revealed statistically significant improvements across all three outcome measures. Students' understanding of local history increased from a pretest mean of 58.4 ( $SD = 12.6$ ) to a posttest mean of 76.8 ( $SD = 10.2$ ), representing a mean increase of 18.4 points ( $t(31) = 8.42$ ,  $p < 0.001$ ,  $d = 1.49$ ). Students' environmental awareness increased from a pretest mean of 62.1 ( $SD = 11.8$ ) to a posttest mean of 79.5 ( $SD = 9.4$ ), representing a mean increase of 17.4 points ( $t(31) = 7.89$ ,  $p < 0.001$ ,  $d = 1.40$ ). Students' English language skills increased from a pretest mean of 55.3 ( $SD = 13.2$ ) to a posttest mean of 73.6 ( $SD = 10.8$ ), representing a mean increase of 18.3 points ( $t(31) = 8.15$ ,  $p < 0.001$ ,  $d = 1.44$ ).

**Table 1. Pretest and Posttest Results**

| Outcome Measure             | Pretest Mean       | Posttest Mean      | Mean Increase | t-value | p-value | Cohen's $d$ |
|-----------------------------|--------------------|--------------------|---------------|---------|---------|-------------|
| Local History Understanding | 58.4 ( $SD=12.6$ ) | 76.8 ( $SD=10.2$ ) | 18.4          | 8.42    | <0.001  | 1.49        |
| Environmental Awareness     | 62.1 ( $SD=11.8$ ) | 79.5 ( $SD=9.4$ )  | 17.4          | 7.89    | <0.001  | 1.40        |
| English Language Skills     | 55.3 ( $SD=13.2$ ) | 73.6 ( $SD=10.8$ ) | 18.3          | 8.15    | <0.001  | 1.44        |

The analysis of English language skills by component revealed that speaking skills showed the greatest improvement, followed by writing skills and vocabulary knowledge. Speaking skills increased from a pretest mean of 52.8 ( $SD = 14.1$ ) to a posttest mean of 74.2 ( $SD = 11.3$ ), a mean increase of 21.4 points. Writing skills increased from a pretest mean of 56.1 ( $SD = 13.5$ ) to a posttest mean of 73.8

( $SD = 10.6$ ), a mean increase of 17.7 points. Vocabulary knowledge increased from a pretest mean of 57.0 ( $SD = 12.8$ ) to a posttest mean of 72.8 ( $SD = 10.5$ ), a mean increase of 15.8 points. These findings suggest that the digital storytelling project was particularly effective in developing students' speaking skills, likely due to the requirement to present their digital stories in English.

**Table 2. English Language Skills Component Analysis**

| Component            | Pretest Mean       | Posttest Mean      | Mean Increase | t-value | p-value |
|----------------------|--------------------|--------------------|---------------|---------|---------|
| Speaking Skills      | 52.8 ( $SD=14.1$ ) | 74.2 ( $SD=11.3$ ) | 21.4          | 8.56    | <0.001  |
| Writing Skills       | 56.1 ( $SD=13.5$ ) | 73.8 ( $SD=10.6$ ) | 17.7          | 7.42    | <0.001  |
| Vocabulary Knowledge | 57.0 ( $SD=12.8$ ) | 72.8 ( $SD=10.5$ ) | 15.8          | 6.98    | <0.001  |

The qualitative analysis of student reflections revealed four main themes related to the effects of the digital storytelling project: (1) engagement and motivation, (2) understanding of local history, (3) environmental awareness and action, and (4) English language development. Under the theme of engagement and motivation, students reported that the project was enjoyable and meaningful because it allowed

them to be creative and connect learning to their local context. One student stated, "I never thought learning history could be this fun. Making the video made me want to learn more about Banyuwangi" (Student Reflection, S-07). Another student noted, "I was excited to work on this project because it felt real. We were not just learning for a test but creating something we could share" (Student Reflection, S-15).

**Table 3. Thematic Analysis of Student Reflections**

| Theme                          | Sub-themes                            | Example Quotes                                                         |
|--------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Engagement and Motivation      | Enjoyment, creativity, relevance      | "I never thought learning history could be this fun." (S-07)           |
| Understanding of Local History | Discovery, connection, appreciation   | "I learned so much about Banyuwangi that I didn't know before." (S-12) |
| Environmental Awareness        | Understanding issues, concern, action | "Now I understand why protecting our environment is important." (S-22) |
| English Language Development   | Confidence, vocabulary, fluency       | "I feel more confident speaking English now." (S-04)                   |

Under the theme of understanding of local history, students reported discovering historical knowledge that they had not previously encountered in their textbooks. One student explained, "I learned so much about Banyuwangi that I didn't know before. The story of Blambangan Kingdom and the Osing people is really interesting" (Student Reflection, S-12). Another student noted, "Visiting the historical sites and talking to the community made history come alive. It felt more real than reading about it in a book" (Student Reflection, S-19). These findings suggest that the research and exploration component of the digital storytelling project enhanced students' engagement with and understanding of local history.

Under the theme of environmental awareness and action, students reported developing greater awareness of environmental issues and a stronger commitment to environmental action. One student stated, "Now I understand why protecting our environment is important. Seeing the pollution in the river during our research made me want to do something about it" (Student Reflection, S-22). Another student noted, "I learned that many environmental problems in Banyuwangi are connected to our history and culture. This made me realize that we need to take care of our environment as part of our heritage" (Student Reflection, S-28). These findings suggest that the digital storytelling project enhanced students' environmental awareness and motivation for environmental action.

Under the theme of English language development, students reported increased confidence and proficiency in English, particularly in speaking and writing. One student explained, "I feel more confident speaking English now because I had to practice a lot for the presentation" (Student Reflection, S-04). Another student noted, "Writing the script in English was challenging, but it helped me learn new vocabulary and improve my grammar" (Student Reflection,

S-09). A third student stated, "I used to be afraid of speaking English in front of others, but presenting our digital story made me more confident" (Student Reflection, S-18). These findings suggest that the requirement to produce content in English provided meaningful opportunities for language development.



**Figure 1. Digital Story Sample: "Exploring the History and Environment of Banyuwangi"**

The analysis of the digital storytelling products revealed that students successfully integrated local history content, environmental messages, and English language presentation in their digital stories. All eight groups produced digital stories that included: (1) accurate historical information about Banyuwangi, including the Blambangan Kingdom and Osing culture, (2) environmental content about local ecosystems, conservation challenges, and community conservation practices, and (3) English narration that demonstrated improved vocabulary, grammar, and fluency. The quality of the digital stories varied, with some groups demonstrating more sophisticated production values and more integrated content than others. However, all groups demonstrated meaningful engagement with the content and effort in producing their digital stories.

**Table 5. Analysis of Digital Story Products**

| Group | Topic                          | Historical Content | Environmental Content | English Quality |
|-------|--------------------------------|--------------------|-----------------------|-----------------|
| 1     | Osing Cultural Heritage        | High               | Medium                | Good            |
| 2     | Blambangan Kingdom History     | High               | Medium                | Very Good       |
| 3     | Conservation in Alas Purwo     | Medium             | High                  | Good            |
| 4     | Traditional Farming Practices  | High               | High                  | Good            |
| 5     | Coastal Conservation in Muncar | Medium             | High                  | Very Good       |
| 6     | History of Kemiren Village     | High               | Medium                | Good            |

| Group | Topic                       | Historical Content | Environmental Content | English Quality |
|-------|-----------------------------|--------------------|-----------------------|-----------------|
| 7     | Ijen Crater Conservation    | Medium             | High                  | Good            |
| 8     | Osing Traditional Knowledge | High               | High                  | Very Good       |

## Discussion

The results of this research provide compelling evidence that digital storytelling is an effective pedagogical approach for simultaneously enhancing students' understanding of local history, environmental awareness, and English language skills. The significant improvements across all three outcome measures—with large effect sizes ranging from 1.40 to 1.49—demonstrate the power of integrated, project-based learning approaches that engage students in meaningful, authentic tasks. These findings are consistent with previous research on digital storytelling in educational contexts, which has shown that digital storytelling can enhance student engagement, learning outcomes, and skill development across multiple domains (Robin, 2020; Ohler, 2020; Pratama et al., 2023).

The substantial improvement in students' understanding of local history (mean increase of 18.4 points,  $d = 1.49$ ) suggests that the digital storytelling project effectively engaged students with historical content in ways that traditional instruction often fails to achieve. This finding aligns with research on local history education, which has shown that integrating local historical narratives into the curriculum can enhance student engagement and historical understanding (Prasetyo, 2019; Suryani & Setyowati, 2021). The qualitative findings from student reflections support this interpretation, with students reporting that the research and exploration component of the project made history "come alive" and feel "more real." This suggests that the active, inquiry-based nature of the digital storytelling project—in which students researched local history, visited historical sites, and created their own historical narratives—was more effective than passive consumption of historical information through lectures and textbooks.

The finding that digital storytelling enhanced students' understanding of local history is also consistent with research on the digital storytelling Project-Based Learning model through local history vlogs, which found that this approach can improve students' 4C skills, including critical thinking, creativity, collaboration, and communication (Pratama et al., 2023). The digital storytelling project in this research similarly required students to engage in critical thinking (researching and verifying historical information), creativity (developing narratives and producing digital stories), collaboration (working in groups), and communication (presenting in English). The integration of

these skills likely contributed to the observed improvements in historical understanding.

The improvement in students' environmental awareness (mean increase of 17.4 points,  $d = 1.40$ ) demonstrates that digital storytelling is an effective approach for fostering environmental literacy. This finding is consistent with research by Rusda, Ali, and Puspitasari (2023), which found that the adoption of digital storytelling could encourage young EFL learners' interest in learning environmental literacy to protect their environment. The current study extends these findings to senior high school students in Indonesia, demonstrating that digital storytelling can effectively develop environmental awareness among older students as well. The qualitative findings suggest that the environmental awareness developed through the project was not merely cognitive but also motivational, with students expressing a stronger commitment to environmental action. This aligns with research on ecopedagogy extensive reading and digital storytelling projects, which have shown that this approach helps students become aware of environmental problems and express solutions in their writing (Garuda, 2023).

The integration of environmental content with local history in the digital storytelling project appears to have been particularly effective for developing environmental awareness. Students reported that understanding the historical and cultural dimensions of environmental issues made the issues more meaningful and urgent. This finding aligns with research on place-based education, which emphasizes the importance of learning that is rooted in local places and communities (Gruenewald, 2003; Sobel, 2004). By connecting environmental issues to local history and culture, the digital storytelling project helped students see environmental conservation as part of their cultural heritage and personal responsibility.

The improvement in students' English language skills (mean increase of 18.3 points,  $d = 1.44$ ) demonstrates that digital storytelling is an effective approach for developing language proficiency in meaningful contexts. The finding that speaking skills showed the greatest improvement (mean increase of 21.4 points) is consistent with research on digital storytelling and speaking skill development. Mardhiah et al. (2024) found that digital storytelling has a considerable impact on students' speaking ability, providing insights into the possibilities of adding culturally rich narratives into language teaching. Similarly, research on digital storytelling projects in Indonesian EFL secondary schools has shown that this

approach can foster communicative and creative learning, with students responding positively to learning English through digital storytelling (Garuda, 2023).

The finding that writing skills also improved significantly (mean increase of 17.7 points) suggests that the script-writing component of the digital storytelling project provided meaningful opportunities for writing development. Students were required to write scripts in English that integrated historical and environmental content, which required them to develop vocabulary, grammar, and organizational skills. This finding aligns with research on the benefits of project-based learning for writing development, which has shown that authentic writing tasks can enhance students' writing skills and motivation (Thomas, 2020; Larmer & Mergendoller, 2021). The requirement to write in English for a real audience—the class, the teacher, and potentially a wider audience through public presentation—likely increased students' investment in the quality of their writing.

The improvement in vocabulary knowledge (mean increase of 15.8 points) suggests that the digital storytelling project provided rich opportunities for vocabulary development. Students encountered new vocabulary through their research on local history and environmental issues, and they were required to use this vocabulary in their scripts and presentations. This finding is consistent with research on content-based language instruction, which has shown that language learning is most effective when embedded in meaningful content (Coyle et al., 2010; Lyster, 2018). By learning English through content about local history and environmental issues, students developed vocabulary that was relevant, meaningful, and likely to be retained.

The qualitative findings from student reflections provide important insights into the mechanisms through which digital storytelling enhanced learning. The theme of engagement and motivation suggests that the project-based, creative nature of digital storytelling was inherently motivating for students. Students reported that they enjoyed the project because it allowed them to be creative, work collaboratively, and create something they could share with others. This finding aligns with research on student motivation, which has shown that autonomy, competence, and relatedness are key drivers of intrinsic motivation (Ryan & Deci, 2020). The digital storytelling project provided students with autonomy (choice of topic and approach), competence (opportunities to develop skills and see improvement), and relatedness (collaboration and sharing with others).

The theme of discovery and connection in students'

reflections on local history suggests that the research component of the project was particularly valuable for developing historical understanding. Students reported discovering historical knowledge that they had not previously encountered and feeling a stronger connection to their local heritage. This finding aligns with research on the importance of active, inquiry-based learning for historical understanding (Seixas & Morton, 2022; Wineburg, 2018). By engaging students in the process of historical inquiry—researching, analyzing, and constructing historical narratives—the digital storytelling project developed deeper and more meaningful historical understanding than passive consumption of historical information.

The theme of environmental awareness and action in students' reflections suggests that the digital storytelling project not only developed cognitive understanding of environmental issues but also fostered affective and behavioral responses. Students reported developing concern for environmental issues and a desire to take action to protect the environment. This finding aligns with research on environmental education, which has shown that effective environmental education should address not only cognitive outcomes but also affective and behavioral outcomes (Hollweg et al., 2021; Stevenson et al., 2022). By connecting environmental issues to students' local context and personal experiences, the digital storytelling project developed the full range of environmental literacy outcomes.

The theme of English language development in students' reflections highlights the value of authentic, meaningful language use for language learning. Students reported that the requirement to produce content in English—writing scripts, recording narration, and presenting—provided valuable opportunities for language practice and development. This finding aligns with research on communicative language teaching, which emphasizes the importance of meaningful communication for language development (Ellis, 2020; Lightbown & Spada, 2021). By using English for authentic purposes—to communicate about local history and environmental issues—students developed language skills in ways that were meaningful and likely to transfer to real-world contexts.

The analysis of the digital storytelling products revealed that students successfully integrated local history content, environmental messages, and English language presentation. However, the variation in quality across groups suggests that some students may have benefited more from the project than others. This finding highlights the importance of providing adequate support and scaffolding for all students, particularly those with limited prior knowledge or skills. Future implementations of digital storytelling projects should

consider differentiated instruction and additional support for students who may struggle with the research, writing, or production components of the project.

The limitations of this study should be acknowledged. First, the research used a pre-experimental one-group pretest-posttest design without a control group, which limits the ability to draw causal conclusions. While the significant improvements observed are encouraging, it is possible that other factors—such as maturation, history, or testing effects—contributed to the observed changes. Future research should employ experimental designs with control groups to more rigorously establish the causal effects of digital storytelling. Second, the research was conducted in a single school with a relatively small sample, and the findings may not be generalizable to other contexts. Future research should replicate this study in different schools and with larger samples. Third, the research focused on short-term outcomes and did not assess long-term retention or transfer of learning. Future research should include follow-up assessments to examine the durability of the observed effects.

The findings suggest several directions for future research. First, experimental studies with control groups should be conducted to more rigorously test the effectiveness of digital storytelling for developing local history understanding, environmental awareness, and English language skills. Second, longitudinal studies should examine the long-term effects of digital storytelling on learning outcomes and skill development. Third, research should investigate the specific features of digital storytelling projects that are most effective for different learning outcomes, such as the role of collaboration, the use of specific digital tools, or the integration of different content areas. Fourth, research should examine the implementation of digital storytelling in different educational contexts, including different grade levels, subject areas, and school types. Fifth, research should explore the use of emerging technologies, such as artificial intelligence and augmented reality, to enhance digital storytelling projects.

## CONCLUSION

This research successfully demonstrated that digital storytelling is an effective pedagogical approach for simultaneously enhancing students' understanding of local history, environmental awareness, and English language skills at SMA Negeri 1 Rogojampi. The significant improvements across all three outcome measures—with large effect sizes ranging from 1.40 to 1.49—provide strong empirical evidence for the effectiveness of digital storytelling as an integrated learning approach. The

qualitative findings from student reflections revealed that the digital storytelling project enhanced student engagement and motivation, developed deeper understanding of local history, fostered environmental awareness and action, and improved English language proficiency. The analysis of digital storytelling products confirmed that students successfully integrated local history content, environmental messages, and English language presentation in their digital stories. These findings contribute to the growing body of research on digital storytelling in education and provide practical guidance for educators seeking to implement integrated, project-based learning approaches.

The implications of this research are significant for educational practice and policy in Indonesia. First, the findings support the integration of digital storytelling into the curriculum as an approach for developing multiple competencies simultaneously. Second, the research demonstrates the value of connecting learning to local context, consistent with the principles of the Merdeka Curriculum. Third, the findings provide evidence for the effectiveness of project-based learning in developing 21st-century skills, including critical thinking, creativity, collaboration, and communication.

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