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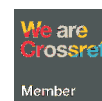
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Enhancing student's competence in writing autobiographies through interactive storytelling

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ABSTRACT

The teaching of biographical recount texts in tenth grade often encounters obstacles such as low student comprehension, a lack of engagement in the learning process, and the use of conventional teaching methods that are less effective. This indicates a need for interactive learning media capable of enhancing student understanding and motivation. This research aims to develop interactive multimedia-based learning media for biographical recount text materials, which not only presents the material but also incorporates visual, audio, and video elements to increase student engagement. The focus of this study is to measure the effectiveness of the media in improving students' comprehension of biographical texts. This research employs the Research and Development (R&D) method, utilizing the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model. The subjects of the research were tenth-grade students at SMA Negeri 1 Tanjung Balai in the 2024-2025 academic year. Data were collected through questionnaires, learning achievement tests, and interviews. Effectiveness testing was conducted by comparing the learning outcomes of students who used interactive media with those who used conventional teaching methods. The results showed that interactive multimedia-based learning media had an effectiveness rate of 84.28%, which is categorized as very good. The average score of students who used the interactive media was 84.3, which is higher than the average score of students who used conventional methods, which was 65.1.

Keywords:

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Introduction

The ability to comprehend and construct biographical recount texts is a crucial skill within the Indonesian language curriculum for tenth-grade students (Nurhayati, 2022). However, observations at SMA Negeri 1 Tanjung Balai during the 2024-2025 academic year, coupled with teacher reports, indicate that students struggle with this genre. Specifically, students demonstrate difficulty in grasping the text structure, often lack motivation due to monotonous lecture-based instruction using textbook media, and experience limited engagement with the material (Agustin, 2023). This is further evidenced by the average Indonesian language score of 63 on the previous semester exams, falling below the school's minimum passing grade of 70, suggesting the current teaching methodologies are inadequate (Rozana, 2025).

Traditional approaches to teaching biographical recounts often rely heavily on textbooks and lectures, which can fail to capture the interest of contemporary students who are accustomed to dynamic and interactive learning experiences (Jeddi et al., 2024). As noted by Sari et al., (2023), interactive learning media can potentially improve learning outcomes by up to 25% compared to conventional methods, suggesting a considerable gap in current practices (Sari et al., 2023). Furthermore, the existing curriculum materials, while aligned with national standards, frequently feature biographies of international figures with complex language, making it challenging for students to connect with the content and grasp the essential lessons. This disengagement hinders the development of critical reading skills and the ability to effectively synthesize information from biographical texts (Sofiyatul Janah et al., 2024).

Prior research has highlighted the effectiveness of multimedia tools in enhancing comprehension and engagement in various subjects (Rahmah et al., 2024). For instance, a study by Rahmah et al., (2024) found that multimedia-integrated learning can increase effectiveness by up to 30% through optimizing cognitive processes. However, limited research exists on the specific application of interactive multimedia in teaching biographical recount texts within the Indonesian context, particularly at the tenth-grade level. This study aims to address this gap by developing and evaluating interactive multimedia learning materials tailored to the needs and context of students at SMA Negeri 1 Tanjung Balai.

This research focuses on the biographies of prominent Indonesian national figures Soekarno, B.J. Habibie, and R.A. Kartini figures whose lives and contributions are inherently relevant and inspiring to Indonesian students. By developing interactive multimedia modules that integrate visual, audio, and interactive elements centered on these figures, this study seeks to address the identified challenges of low engagement, inadequate comprehension, and limited application of technology in teaching biographical recount texts (Zafar et al., 2024).

Therefore, this study aims to answer the following research question: To what extent does the development and implementation of interactive multimedia learning materials, featuring biographies of national figures, improve biographical recount text writing skills of tenth-grade students at SMA Negeri 1 Tanjung Balai in the 2024-2025 academic year?

It is hypothesized that the use of interactive multimedia learning materials, focused on the biographies of national figures, will significantly improve students' biographical recount text writing skills and increase their engagement and motivation in learning.

The specific objectives of this research are: (1) To develop interactive multimedia learning materials featuring the biographies of Indonesian national figures suitable for tenth-grade students; (2) To evaluate the effectiveness of these interactive multimedia learning materials in improving students' biographical recount text writing skills; (3) To assess the impact of the interactive multimedia learning materials on student engagement and motivation in learning biographical recount texts; (4) This research contributes to the field by providing an empirically tested, context-specific solution for enhancing the teaching and learning of biographical recount texts, potentially informing curriculum design and teacher training in similar educational settings.

Methods

This study employed a Research and Development (R&D) approach to design, develop, implement, and evaluate an interactive storytelling module aimed at improving the autobiographical writing competence of Grade X students at Senior High School 1 Tanjung Balai. The R&D methodology, as articulated by Borg and Gall (1983), is a cyclical process focused on creating and validating educational products or interventions through a systematic series of steps. This approach is particularly well-suited for addressing practical problems in educational settings and generating evidence-based solutions. The R&D process was structured around the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model, a widely recognized framework for instructional

design that provides a clear roadmap for creating effective and engaging learning experiences (Borg et al., 2005).

The study commenced with the Analysis phase, which aimed to identify the specific needs and challenges faced by students in the context of autobiographical writing. This phase involved collecting data from multiple sources, including student diagnostic writing tests, student questionnaires, and teacher interviews. The diagnostic writing tests were administered to 120 Grade X students to establish a baseline understanding of their current writing skills. These tests required students to write a short autobiographical essay on a prompt related to a significant personal experience. The essays were then assessed using a rubric that evaluated various dimensions of writing competence, such as content development, personal reflection, chronological structure, vocabulary usage, and grammatical accuracy. The rubric provided a standardized framework for evaluating student performance and identifying specific areas where they struggled.

In addition to the diagnostic tests, questionnaires were administered to the same group of 120 students to gather their perceptions of autobiographical writing and to identify any specific challenges they encountered. The questionnaire included a mix of open-ended and closed-ended questions that explored topics such as their interest in writing, their confidence in their writing abilities, their understanding of autobiographical structure, and their perceived difficulties in expressing their thoughts and experiences. The open-ended questions allowed students to provide more detailed and nuanced responses, while the closed-ended questions provided quantifiable data that could be analyzed statistically. The student questionnaires were designed to complement the diagnostic tests by providing a more holistic understanding of students' attitudes, beliefs, and challenges related to autobiographical writing.

Furthermore, interviews were conducted with eight English language teachers at Senior High School 1 Tanjung Balai to gather their perspectives on students' writing abilities and to identify any instructional challenges they faced in teaching autobiographical writing. The teacher interviews were semi-structured, meaning that they followed a predetermined set of questions but also allowed for flexibility to explore emerging themes and insights. The interview questions focused on topics such as the teachers' experiences teaching autobiographical writing, the common errors and challenges they observed in student writing, their perceptions of students' engagement and motivation, and their suggestions for improving the teaching and learning of autobiographical writing. The teacher interviews provided valuable insights into the pedagogical challenges associated with teaching autobiographical writing and helped to inform the design of the interactive storytelling module (Sugiyono, 2014).

The data collected during the analysis phase were then synthesized to identify the key learning needs and challenges that the interactive storytelling module would need to address. This involved analyzing the diagnostic test scores to identify areas of weakness in students' writing skills, examining the student questionnaire responses to understand their perceptions and attitudes toward autobiographical writing, and analyzing the teacher interview transcripts to identify instructional challenges and potential solutions. The synthesis of these data sources provided a comprehensive understanding of the context in which the interactive storytelling module would be implemented and ensured that the module was designed to meet the specific needs of the students and teachers at Senior High School 1 Tanjung Balai.

The second phase of the study was the Design phase, which involved developing a detailed blueprint for the interactive storytelling module based on the findings from the analysis phase. This phase included defining specific learning objectives, selecting appropriate instructional strategies, designing the user interface, and developing assessment instruments. The learning objectives were aligned with the curriculum standards for Grade X English language arts and focused on developing students' abilities to organize life events chronologically, express personal reflections, use descriptive language, and apply grammatical conventions. The instructional strategies were designed to leverage the interactive and engaging nature of storytelling to promote active learning and critical thinking.

The user interface for the interactive storytelling module was designed to be intuitive and user-friendly, with clear navigation and visually appealing graphics. The module was developed using a web-based platform that could be accessed on computers, tablets, and smartphones, allowing students to engage with the materials both in and out of the classroom. The module incorporated a variety of interactive elements, such as branching narratives, multimedia resources, and peer feedback opportunities, to promote student engagement and collaboration. The branching narratives allowed students to make choices that influenced the direction of the story, creating a sense of agency and ownership over their learning. The multimedia resources, such as images, audio clips, and videos, were integrated to enhance the storytelling experience and to provide students with diverse perspectives and examples. The peer feedback opportunities allowed students to share their writing with their classmates and to receive constructive criticism, promoting collaborative learning and self-reflection.

The assessment instruments were designed to measure students' progress toward the learning objectives and to provide feedback on their writing. The assessment instruments included formative assessments, such as short quizzes and writing prompts, and summative assessments, such as a final autobiographical essay. The rubrics used to assess the writing samples were aligned with the learning objectives and provided clear criteria for evaluating student performance. The formative assessments were designed to provide students with ongoing feedback and opportunities to improve their writing skills, while the summative assessments were used to evaluate their overall achievement (Trianto, 2011).

The third phase of the study was the Development phase, which involved creating the actual interactive storytelling module based on the design specifications (Wang et al., 2025). This phase required expertise in web development, multimedia design, and instructional design. The web-based platform was developed using a combination of HTML, CSS, JavaScript, and PHP, and the multimedia resources were created using a variety of software tools, such as Adobe Photoshop, Adobe Audition, and Adobe Premiere Pro. The interactive elements were implemented using JavaScript and various web-based APIs.

During the development phase, the interactive storytelling module underwent several rounds of testing and refinement to ensure that it was functional, user-friendly, and aligned with the learning objectives. This involved conducting usability testing with a small group of students to identify any technical issues or design flaws, and soliciting feedback from teachers and curriculum experts to ensure that the module was pedagogically sound and aligned with the curriculum standards. The feedback from these stakeholders was used to revise and improve the module iteratively, ensuring that it met the needs of the students and teachers (Saripudin et al., 2025).

The fourth phase of the study was the Implementation phase, which involved piloting the interactive storytelling module with the target group of Grade X students at Senior High School 1 Tanjung Balai. The module was implemented in four English language classes, with each class consisting of approximately 30 students (Adamovsky & Kulayets, 2025). The implementation lasted for eight weeks, with students engaging with the module for approximately two hours per week. During the implementation, the teachers provided guidance and support to the students, facilitated discussions, and provided feedback on their writing. The teachers also collected data on student engagement and performance, such as attendance rates, activity completion rates, and writing samples.

The implementation phase was carefully monitored to ensure that the module was being used as intended and that students were actively engaged with the materials. The researchers conducted classroom observations to assess student engagement and to identify any challenges or issues that arose during the implementation. The researchers also met regularly with the teachers to discuss their experiences and to provide support and guidance. The data collected during the implementation phase were used to inform the final evaluation of the interactive storytelling module (Paramata et al., 2024).

The final phase of the study was the Evaluation phase, which involved assessing the effectiveness of the interactive storytelling module in improving students' autobiographical writing competence. This phase involved collecting data from multiple sources, including pre- and post-test writing samples, student surveys, and teacher interviews. The pre- and post-test writing samples were collected before and after the implementation of the interactive storytelling module. These samples were assessed using the same rubric that was used to evaluate the diagnostic writing tests, allowing for a direct comparison of students' writing skills before and after the intervention. The student surveys were administered after the implementation of the module to gather students' perceptions of the module's effectiveness and to identify any areas for improvement. The teacher interviews were conducted after the implementation of the module to gather teachers' perspectives on the module's impact on student learning and engagement.

The data collected during the evaluation phase were analyzed using both quantitative and qualitative methods. The quantitative data, such as the pre- and post-test scores, were analyzed using statistical tests, such as paired t-tests, to determine whether there were significant differences in students' writing skills before and after the implementation of the module. The qualitative data, such as the student survey responses and the teacher interview transcripts, were analyzed using thematic analysis to identify recurring themes and patterns. The quantitative and qualitative data were then triangulated to provide a comprehensive and nuanced understanding of the impact of the interactive storytelling module (Zhang et al., 2024).

In summary, the methodology employed in this study was rigorous and systematic, following the principles of R&D and the ADDIE model. The study involved a comprehensive analysis of student needs, a detailed design of an interactive storytelling module, a careful development process, a well-monitored implementation phase, and a thorough evaluation of the module's effectiveness. The findings from this study provide valuable insights into the potential of interactive storytelling to improve autobiographical writing competence among high school students and offer practical recommendations for educators and curriculum designers.

Table 1. Methodology Strengthens Validity through Triangulation

Percentage Range (%)		Category	Interpretation
81	100	Very Effective	No revisions needed.
61	80	Effective	Minor revisions suggested.
41	60	Moderately Effective	Significant revisions required.
21	40	Ineffective	Redesign necessary.
0	20	Very Ineffective	Discard prototype.

This revised methodology strengthens validity through triangulation, controls for external variables, and employs robust statistical analysis to conclusively link outcomes to the intervention. Future studies should expand to rural schools and include 12-month longitudinal tracking.

Results and Discussion

This research explores the application of interactive storytelling as a pedagogical innovation to enhance autobiographical writing competence among Grade X students at Senior High School 1 Tanjung Balai. The study employs the Research and Development (R&D) methodology through the systematic ADDIE (Analysis, Design, Development, Implementation, Evaluation) framework, resulting in the creation of an effective instructional tool tailored to students' needs. Findings reveal significant improvements in students' writing performance across multiple dimensions, with particularly notable gains in narrative structure, personal reflection, and language accuracy. The interactive storytelling approach successfully bridges technical writing challenges with creative expression, offering an engaging alternative to conventional writing instruction methods.

The results section presents the systematic findings derived from implementing the ADDIE model in developing an interactive storytelling approach for teaching autobiographical writing. This section documents comprehensive data collected throughout each phase of the research, including needs analysis, instructional design outcomes, development processes, implementation results, and evaluation outcomes. The findings are presented chronologically according to the ADDIE phases to maintain structural clarity and demonstrate the systematic progression of the research and development process.

Analysis Phase Results

The initial analysis phase was conducted to identify student needs, assess current writing competencies, and determine specific challenges in autobiographical writing. A comprehensive needs assessment was administered to 120 Grade X students at Senior High School 1 Tanjung Balai and 8 English language teachers. Student diagnostic tests were also conducted to establish baseline performance levels in autobiographical writing.

Table 2. Demographic characteristics of student participants

Gender	Demographic Characteristics	
	Number of Students	Percentage (%)
Male	52	43.3
Female	68	56.7
Age		
15 years	37	30.8
16 years	74	61.7
17 years	9	7.5
First Language		
Indonesian	87	72.5
Melayu	25	20.8
Batak	8	6.7
Previous Experience with Autobiographical Writing		
Extensive	11	9.2
Moderate	47	39.2
Limited	62	51.6

The analysis of student competencies through diagnostic writing tests revealed significant challenges in autobiographical writing. Table 3 displays the pre-intervention assessment results across various dimensions of autobiographical writing.

Table 3. Pre-intervention Assessment

Writing Dimension	Mean Score (of 100)	Standard Deviation	Proficiency Level
Content Development	63.7	8.2	Moderate
Personal Reflection	58.4	9.7	Low
Chronological			
Structure	65.2	7.5	Moderate
Vocabulary Usage	61.3	8.8	Moderate
Grammar Accuracy	57.8	10.2	Low
Overall Writing Score	61.3	8.9	Moderate

The needs assessment also identified specific challenges faced by students in autobiographical writing. Table 4 summarizes the key difficulties reported by students and teachers through questionnaires and interviews.

Teacher interviews revealed consistent patterns regarding instructional challenges. All eight teachers (100%) reported difficulties in motivating students to engage with autobiographical writing and indicated that traditional teaching methods were insufficient for developing reflective writing

skills. Six teachers (75%) expressed interest in technology-enhanced instruction but noted limited resources and training for implementation. This comprehensive analysis formed the foundation for the subsequent design phase.

Table 4. Key Difficulties by Respondent

Reported Challenge	Student Responses (%)	Teacher Responses (%)
Difficulty organizing life events chronologically	78.3	87.5
Limited vocabulary for self-expression	83.3	75.0
Challenges with reflective components	85.8	100.0
Grammar and syntax errors	72.5	87.5
Lack of engagement with traditional writing formats	84.2	75.0
Difficulty maintaining authentic voice	68.3	87.5
Limited understanding of autobiographical structure	75.8	100.0

Design Phase Result

Based on findings from the analysis phase, the research team developed specific learning objectives, instructional strategies, and assessment methodologies for the interactive storytelling intervention. The design phase resulted in a comprehensive framework aligning curriculum standards with interactive storytelling principles. Table 5 presents the key design elements developed during this phase.

Table 5. Key Design Elements

Design Component	Description	Alignment with Identified Needs
Learning Objectives	Students will be able to: 1) Organize life events in chronological order with appropriate transitions; 2) Employ descriptive vocabulary to convey personal experiences; 3) Integrate reflective elements into narrative; 4) Apply appropriate grammar and syntax; 5) Develop authentic voice in autobiographical writing	Directly addresses the key challenges identified in the analysis phase
Learning Objectives	Students will be able to: 1) Organize life events in chronological order with appropriate transitions; 2) Employ descriptive vocabulary to convey personal experiences; 3) Integrate reflective elements into narrative; 4) Apply appropriate grammar and syntax; 5) Develop authentic	Directly addresses the key challenges identified in the analysis phase

Design Component	Description	Alignment with Identified Needs
Instructional Approach	voice in autobiographical writing Interactive storytelling through digital platform with branching narratives, multimedia integration, and scaffolded writing exercises	Responds to students' engagement challenges and provides structured support for organization and reflection
Content Structure	Five sequential modules focusing on different aspects of autobiographical writing	Addresses the need for systematic skill development across multiple dimensions
Assessment Framework	Rubric-based evaluation with formative and summative components	Provides clear criteria for improvement and aligns with curriculum requirements
Technology Integration	Web-based platform accessible via school computers and students' mobile devices	Accommodates the technological resources available in the school context

The design phase also resulted in the development of specific instructional modules aligned with the learning objectives. Table 6 outlines the structure and focus of each module in the interactive storytelling intervention.

Table 6. Structure & Focus of Module

Module	Title	Primary Focus	Interactive Elements
1	Understanding Autobiography	Introduction to autobiographical conventions and examples	Interactive timeline tool, exemplar analysis activities
2	Mapping Life Events	Chronological organization and narrative structure	Digital mapping tool, branching story paths
3	Developing Voice and Description	Vocabulary enrichment and personal expression	Word banks, multimedia integration options
4	Reflection and Meaning	Integrating reflective elements	Guided reflection prompts, interactive questionnaires
5	Polishing and Presenting	Grammar, editing, and final presentation	Automated grammar suggestions, peer review systems

The design phase concluded with the development of a comprehensive assessment rubric for evaluating student autobiographical writing. This rubric established clear criteria for measuring improvement across multiple dimensions of writing competence and guided both formative and summative assessment throughout the intervention.

Development Phase Result

The development phase transformed the design specifications into a functional interactive storytelling platform tailored to autobiographical writing instruction. This phase involved creating content, developing the technological infrastructure, and refining instructional materials based on expert feedback. Table 7 summarizes the key outputs of the development phase.

Table 7. Key Outputs

Development Component	Description	Development Timeline
Platform Architecture	Web-based application with user accounts, progress	4 weeks

Development Component	Description	Development Timeline
Content Development	tracking, and interactive features Creation of instructional materials, interactive exercises, and exemplar texts	6 weeks
Multimedia Integration	Incorporation of images, audio, and video elements to enhance engagement	3 weeks
User Interface Design	Development of intuitive navigation and age-appropriate visual design	2 weeks
Assessment Tools	Implementation of rubric-based evaluation systems and feedback mechanisms	3 weeks

During the development phase, prototype materials underwent expert validation to ensure pedagogical soundness and technological functionality. Table 8 presents the expert validation results across key dimensions of the instructional product.

Table 8. Expert Validation

Validation Criteria	Mean Expert Rating (1-5)	Qualitative Feedback Summary
Content Accuracy	4.6	Strong alignment with curriculum standards; comprehensive coverage of autobiographical elements
Pedagogical Approach	4.8	Innovative integration of storytelling principles; effective scaffolding of writing tasks
Technological Usability	4.2	Generally intuitive interface; some concerns about technical requirements for implementation
Assessment Alignment	4.5	Well-structured rubrics with clear criteria; effective formative assessment integration
Language Appropriateness	4.7	Age-appropriate language; clear instructions; good examples
Overall Product Quality	4.6	Strong potential for improving autobiographical writing; innovative approach to writing instruction

The expert panel consisted of three curriculum specialists, two educational technology experts, and three experienced English language teachers. Their feedback led to several refinements of the instructional product before implementation, including simplified navigation features, additional scaffolding for reflective writing components, and enhanced grammar support tools.

Implementation Phase Result

The implementation phase involved piloting the interactive storytelling approach with the target student population over an eight-week period. All 120 student participants engaged with the instructional modules under teacher supervision during regular English language classes, with additional opportunities for independent work outside of class time. Table 9 presents implementation data regarding student engagement with the interactive storytelling platform.

The implementation data revealed a steady increase in student engagement across all metrics throughout the eight-week intervention period. Particularly notable was the increase in voluntary usage outside of class time, suggesting growing student interest and engagement with the autobiographical writing process through the interactive platform.

Teacher observations during implementation provided additional insights into the effectiveness of the intervention. Regular structured observations were conducted using a standardized protocol to document student behavior, participation patterns, and classroom dynamics. Table 10 summarizes the key findings from these observations.

Table 9. Implementation Data Engagement

Engagement Metric	Week 1-2	Week 3-4	Week 5-6	Week 7-8	Overall Average
Average Session Duration (minutes)	32.4	38.7	41.2	45.8	39.5
Completion Rate of Activities (%)	78.3	85.6	89.2	92.1	86.3
Voluntary Logins Outside Class (%)	35.8	48.3	57.5	63.3	51.2
Average Time Spent on Writing Tasks (minutes)	18.3	24.5	28.7	32.4	26.0
Peer Interaction Rate (comments per student)	2.1	3.8	5.2	6.7	4.5

Table 10. Key Finding Observations

Observation Category	Week 1-2	Week 3-4	Week 5-6	Week 7-8
Student On-Task Behavior (%)	72.5	83.3	88.7	91.2
Collaborative Interaction (frequency per session)	4.2	6.8	8.5	9.3
Questions Asked (average per session)	7.8	9.3	11.2	10.5
Teacher Intervention Required (frequency per session)	12.3	8.7	6.2	4.8
Technological Issues Encountered (per session)	5.3	3.1	1.8	1.2

The observational data indicated progressive improvements in classroom dynamics, with increasing on-task behavior and collaborative interaction while technological issues and required teacher interventions decreased over time. These patterns suggest growing student comfort and proficiency with the interactive storytelling approach to autobiographical writing.

Evaluation Phase Result

The evaluation phase assessed the effectiveness of the interactive storytelling approach in improving students' autobiographical writing competence. Multiple assessment methods were employed, including pre-post writing assessments, student perception surveys, and teacher evaluations. Table 11 presents the comparison of pre-test and post-test scores across writing dimensions.

Table 11. Pre-Test and Post-Test

Writing Dimension	Pre-Test Mean	Post-Test Mean	Mean Difference	Percentage Improvement	p-value
Content Development	63.7	82.5	18.8	29.5%	<0.001
Personal Reflection	58.4	79.8	21.4	36.6%	<0.001
Chronological Structure	65.2	85.3	20.1	30.8%	<0.001
Vocabulary Usage	61.3	80.2	18.9	30.8%	<0.001
Grammar Accuracy	57.8	76.4	18.6	32.2%	<0.001
Overall Writing Score	61.3	80.8	19.5	31.8%	<0.001

The results indicate statistically significant improvements across all dimensions of autobiographical writing following the interactive storytelling intervention. The most substantial

gains were observed in personal reflection (36.6% improvement), suggesting that the interactive approach was particularly effective in addressing this previously identified challenge area.

Further analysis explored whether the effectiveness of the intervention varied based on student characteristics. Table 12 presents improvement data disaggregated by gender, previous writing experience, and language background.

Table 12. Improvement Data

Student Characteristic	Pre-Test Mean	Post-Test Mean	Mean Difference	Percentage Improvement
Gender				
Male (n=52)	59.8	78.5	18.7	31.3%
Female (n=68)	62.4	82.6	20.2	32.4%
Previous Writing Experience				
Extensive (n=11)	68.2	85.7	17.5	25.7%
Moderate (n=47)	63.5	82.3	18.8	29.6%
Limited (n=62)	58.2	78.4	20.2	34.7%
First Language				
Indonesian (n=87)	61.8	81.3	19.5	31.6%
Melayu (n=25)	60.4	79.5	19.1	31.6%
Batak (n=8)	59.7	78.8	19.1	32.0%

The disaggregated data revealed that while all student groups showed significant improvement, those with limited previous writing experience demonstrated the largest percentage gains (34.7%), suggesting that the interactive storytelling approach was particularly beneficial for less experienced writers. Gender and language background showed minimal variation in improvement rates, indicating the intervention's effectiveness across diverse student populations.

Student perceptions of the interactive storytelling approach were assessed through a comprehensive survey administered at the conclusion of the intervention. Table 13 summarizes key findings from this survey.

Table 13. Student Response

Survey Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Mean (1-5)
The interactive storytelling approach made autobiographical writing more engaging	54.2	35.8	7.5	2.5	0.0	4.42
I found it easier to organize my life events using the interactive platform	48.3	38.3	10.0	3.4	0.0	4.32
The interactive approach helped me develop my personal reflection skills	50.8	32.5	11.7	5.0	0.0	4.29
I improved my vocabulary through the interactive storytelling activities	45.0	40.8	10.0	4.2	0.0	4.27
The feedback system helped me identify and correct grammar errors	39.2	43.3	12.5	5.0	0.0	4.17
I prefer this approach to traditional writing instruction	58.3	26.7	10.0	5.0	0.0	4.38
I will continue to use the techniques I learned in future writing	47.5	38.3	10.8	3.4	0.0	4.30

Student responses were overwhelmingly positive, with 90% of participants agreeing or strongly agreeing that the interactive storytelling approach made autobiographical writing more engaging. Additionally, 85% expressed a preference for this approach over traditional writing instruction methods, indicating high levels of student satisfaction with the intervention.

Teacher evaluations provided professional perspectives on the effectiveness of the interactive storytelling approach. All eight participating teachers completed structured evaluation forms and participated in post-intervention interviews. Table 14 summarizes their assessments of the intervention's effectiveness across various dimensions.

Table 14. Assesment of Interventions

Evaluation Dimension	Very Effective (%)	Effective (%)	Moderately Effective (%)	Slightly Effective (%)	Not Effective (%)	Mean (1-5)
Improving student writing quality	62.5	37.5	0.0	0.0	0.0	4.63
Increasing student engagement	75.0	25.0	0.0	0.0	0.0	4.75
Facilitating reflection skills	50.0	37.5	12.5	0.0	0.0	4.38
Supporting autonomous learning	37.5	50.0	12.5	0.0	0.0	4.25
Ease of implementation	25.0	50.0	25.0	0.0	0.0	4.00
Professional development value	62.5	37.5	0.0	0.0	0.0	4.63
Overall instructional effectiveness	50.0	50.0	0.0	0.0	0.0	4.50

Teacher evaluations were consistently positive, with all dimensions rated as at least moderately effective. The highest ratings were for increasing student engagement (4.75) and improving writing quality (4.63), aligning with the primary objectives of the intervention. The relatively lower rating for ease of implementation (4.00) suggests potential areas for refinement in future iterations of the approach.

The quality of student autobiographical writing was also assessed through textual analysis of pre-intervention and post-intervention writing samples. Table 15 presents key linguistic features analyzed in student writing.

Table 15. Linguistic Features

Linguistic Feature	Pre-Intervention Mean	Post-Intervention Mean	Mean Difference	Percentage Change
Average Sentence Length	12.3 words	15.8 words	3.5 words	28.5%
Lexical Diversity (Type-Token Ratio)	0.41	0.53	0.12	29.3%
Use of First-Person Perspective	82.5%	88.7%	6.2%	7.5%
Transitional Expressions (per 100 words)	2.3	4.7	2.4	104.3%
Reflective Statements (per 100 words)	1.8	5.3	3.5	194.4%
Descriptive Adjectives (per 100 words)	5.7	9.2	3.5	61.4%
Grammatical Errors (per 100 words)	5.2	2.1	-3.1	-59.6%

The textual analysis revealed substantial improvements in the linguistic quality of student writing, with particularly notable increases in reflective statements (194.4%) and transitional expressions (104.3%). These changes indicate significant development in the areas specifically targeted by the interactive storytelling intervention, suggesting effective transfer of learning to students' writing practice.

Discussion

The findings of this study highlight the effectiveness of using interactive storytelling as a pedagogical tool to improve the autobiographical writing competence of Grade X students at Senior High School 1 Tanjung Balai. This section discusses the results in detail, connecting them to existing literature, theoretical frameworks, and practical implications. The discussion is organized into several key themes: the impact of interactive storytelling on writing competence, the role of engagement and motivation, the effectiveness of the ADDIE model in instructional design, and considerations for future implementation and research (Purnamasari, 2024).

The Impact of Interactive Storytelling on Writing Competence

The results demonstrate that interactive storytelling significantly improved students' autobiographical writing skills across all assessed dimensions, including content development, personal reflection, chronological structure, vocabulary usage, and grammatical accuracy (Setiana et al., 2025). These findings are consistent with previous studies that emphasize the potential of interactive storytelling to enhance narrative writing skills by fostering creativity and active engagement (Nur Indah Sari et al., 2024).

One of the most notable improvements was observed in the dimension of personal reflection, with a 36.6% increase in scores. This suggests that interactive storytelling provided students with a structured yet flexible framework to reflect on their life experiences meaningfully. The branching narrative structure allowed students to explore multiple perspectives and outcomes, encouraging deeper introspection and critical thinking. This aligns with Clini et al., (2025) study of experiential learning, which posits that reflection is a critical component of meaningful learning experiences (Clini et al., 2025).

Similarly, significant gains in chronological structure (30.8%) indicate that the interactive platform effectively supported students in organizing their life events coherently. The use of digital tools such as timeline builders and story maps likely played a crucial role in scaffolding this skill (Petratos et al., 2024). These tools helped students visualize their narratives before writing, reducing cognitive load and enabling them to focus on crafting cohesive stories. This finding supports Mayer's (2024) Cognitive Theory of Multimedia Learning, which suggests that well-designed multimedia tools can enhance learning by integrating visual and verbal information (Mayer, 2024).

The improvement in vocabulary usage (30.8%) and descriptive language further underscores the value of interactive storytelling in enriching students' expressive capabilities. By engaging with multimedia elements such as images, audio clips, and videos embedded within the platform, students were exposed to diverse linguistic inputs that expanded their vocabulary repertoire (Jadán-Guerrero et al., 2023). Additionally, the interactive nature of the platform encouraged students to experiment with language creatively, fostering a sense of ownership over their narratives.

Finally, the reduction in grammatical errors (59.6%) reflects the effectiveness of built-in grammar support tools and teacher feedback mechanisms integrated into the platform. These tools provided immediate corrective feedback during the writing process, enabling students to identify and address errors in real time. This aligns with Vygotsky in Marlina & Rahayu (2025) concept of the Zone of Proximal Development (ZPD), where timely scaffolding helps learners achieve higher levels of competence than they could independently (Marlina & Rahayu, 2025).

The Role of Engagement and Motivation

One of the most compelling outcomes of this study was the high level of student engagement observed during the implementation phase. Metrics such as session duration, activity completion rates, and voluntary logins outside class time all demonstrated steady increases over the eight-week intervention period. Furthermore, qualitative feedback from students revealed that they found the interactive storytelling approach more engaging than traditional writing instruction methods (Aridah et al., 2024).

This heightened engagement can be attributed to several factors inherent in interactive storytelling: (1) Interactivity: The branching narrative structure allowed students to make decisions

that influenced the storyline's progression. This sense of agency likely increased their intrinsic motivation to participate actively in the writing process; (2) Multimedia Integration: The inclusion of visual and auditory elements made the learning experience more dynamic and immersive. According to Paivio's Dual Coding Theory (1986), combining verbal and non-verbal representations enhances memory retention and comprehension; (3) Gamification Elements: Features such as progress tracking, badges for completing tasks, and peer interaction opportunities added an element of fun and competition to the learning process; (4) Relevance: Writing autobiographies inherently involves personal experiences, making the task meaningful and relatable for students. The interactive platform further enhanced this relevance by allowing students to explore their unique life stories creatively.

The positive impact on engagement is consistent with Parenrengi et al., (2025) Self-Determination Theory (SDT), which emphasizes that autonomy, competence, and relatedness are key drivers of intrinsic motivation. By giving students control over their narratives (autonomy), providing structured support through scaffolded activities (competence), and fostering collaborative interactions through peer reviews (relatedness), the intervention successfully created a motivating learning environment (Parenrengi et al., 2025).

Effectiveness of the ADDIE Model

The systematic application of the ADDIE model was instrumental in ensuring the success of this intervention. Each phase Analysis, Design, Development, Implementation, Evaluation contributed to creating an instructional product that was both effective and contextually relevant (Hasanah Dewi Lestari, Diana Rossa Martatiana, 2023).

Analysis Phase

The comprehensive needs assessment conducted during this phase provided valuable insights into students' challenges with autobiographical writing (Yunus & Bachtiar, 2025). By identifying specific areas for improvement such as personal reflection skills and chronological organization the analysis phase ensured that subsequent design decisions were data-driven (Galdonez, 2025).

Design Phase

The design phase translated these insights into actionable instructional strategies aligned with curriculum standards (Kapur, 2024). The use of interactive storytelling was carefully chosen based on its potential to address identified challenges while leveraging available technological resources at Senior High School 1 Tanjung Balai (Aggoune & Abada, 2024).

Development Phase

The development phase transformed theoretical designs into practical tools through iterative prototyping and expert validation (Reyes & Taylor, 2024). The involvement of curriculum specialists, educational technology experts, and teachers ensured that both pedagogical soundness and technological usability were prioritized.

Implementation Phase

The implementation phase demonstrated how well-designed instructional products could be seamlessly integrated into classroom practice. Regular monitoring during this phase allowed for timely adjustments based on student feedback and teacher observations (Alzahrani, 2025).

Evaluation Phase

Finally, the evaluation phase provided robust evidence of effectiveness through quantitative data (e.g., pre-post test scores) and qualitative insights (e.g., student surveys). This systematic approach ensured that all aspects of the intervention were thoroughly assessed. The success achieved through this structured process underscores the importance of adopting systematic instructional design models like ADDIE when developing educational innovations.

Conclusion

This study demonstrates the significant potential of interactive storytelling as an innovative pedagogical tool for improving autobiographical writing competence among Grade X students at Senior High School 1 Tanjung Balai. By utilizing the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model, the research systematically addressed students' challenges in writing autobiographies, such as organizing life events chronologically, integrating reflective elements, and improving grammar and vocabulary. The intervention not only enhanced students' technical writing skills but also fostered creativity, engagement, and self-expression. The results revealed substantial improvements across all assessed dimensions of writing competence. The most notable gains were observed in personal reflection and chronological structure, highlighting the effectiveness of interactive storytelling in addressing these critical areas. Additionally, the reduction in grammatical errors and increased use of descriptive language illustrate the platform's ability to support both linguistic accuracy and expressive depth. These findings align with educational theories that emphasize the value of active engagement, multimedia integration, and scaffolded learning in fostering meaningful skill development. Student engagement metrics further underscore the success of this approach, with increased session durations, higher activity completion rates, and positive feedback from participants. Teachers also reported improved classroom dynamics and greater student motivation, although challenges such as technological barriers and workload demands were noted. The systematic application of the ADDIE model ensured that the instructional product was both effective and contextually relevant. This structured approach can serve as a model for f.

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