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The influence of the project-based learning model assisted by audiovisual media on students' ability to write procedure texts at SMP

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ABSTRACT

Procedural writing has long been a persistent challenge in language education due to students' limited ability to organize ideas logically, apply linguistic accuracy, and follow the structural conventions of procedural texts. This study aims to address that problem by examining the effect of the Project-Based Learning (PjBL) model assisted by audiovisual media on students' procedural writing competence at SMP Negeri 2 Simpang Kiri, Subulussalam City. Employing a quasi-experimental design with a post-test-only control group, the study involved 53 seventh-grade students divided into experimental and control groups. Data were analyzed using an independent sample t-test through SPSS version 29. The instrument showed acceptable reliability (Cronbach's $\alpha = .728$). The findings revealed that the experimental group ($M = 81.73$, $SD = 5.56$) significantly outperformed the control group ($M = 64.56$, $SD = 6.56$), $t(51) = 8.337$, $p < .001$, 95% CI [13.37, 21.85], indicating a large treatment effect. Interview data further indicated positive student perceptions toward the integration of audiovisual media within PjBL activities, although some encountered minor technical issues. The study implies that PjBL-assisted audiovisual pedagogy effectively enhances students' procedural text writing competence by promoting active engagement, creativity, and contextual understanding. Practically, the findings support the integration of technology-based project learning in language education to improve writing instruction and curriculum implementation in junior secondary schools.

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Introduction

Writing is one of the core productive skills in language learning that enables students to express ideas, emotions, and logical reasoning through structured written expression. The Independent Curriculum of the Ministry of Education, Culture, Research, and Technology (2022) emphasizes writing as an essential element in developing students' communicative competence, creativity, and cognitive abilities. Writing instruction aims to help students not only master linguistic structures but also use language as a tool for communication, reflection, and problem-solving. Within this framework, students are expected to explore and compose various text types to develop the ability to analyze, organize, and convey ideas effectively in written form. Among these text types,

procedural writing holds a central role because it reflects students' capacity to convey processes systematically, apply sequential logic, and use appropriate linguistic and structural features.

Empirical findings in the classroom indicate that students still face serious difficulties in achieving the expected level of writing performance. Data collected from SMP Negeri 2 Simpang Kiri during the 2024–2025 academic year show that a large proportion of seventh-grade students have not reached the expected level of writing proficiency, particularly in producing procedural texts. Interviews conducted with the Indonesian language teacher revealed that 38 out of 52 students failed to meet the minimum passing grade. Their writings were incomplete in text structure, missing elements such as objectives, materials, and procedural steps, and lacking the linguistic features characteristic of procedural texts, including imperative and active verbs, conjunctions, adverbs of time and place, and details of process description. The findings also revealed that the limited vocabulary and weak grammatical mastery were partly influenced by students' frequent use of regional languages in the classroom, which restricted their exposure to standard Indonesian. The lack of reading habits further exacerbated their difficulty in generating ideas, selecting precise words, and structuring coherent sentences. These empirical observations highlight that the problem of procedural writing is not merely linguistic but also pedagogical, stemming from instructional methods that fail to engage students cognitively and creatively.

The instructional approach most frequently used in the classroom has been the lecture and assignment method. Based on interviews with the Indonesian language teacher at SMP Negeri 2 Simpang Kiri, this method dominated writing instruction, focusing on teacher explanation and student reproduction of information. Such teacher-centered methods tend to limit student engagement, minimize interaction, and reduce opportunities for active learning. As a result, students become passive recipients rather than active constructors of knowledge. Writing, which should be a process of discovery and meaning-making, turns into a mechanical exercise. This situation demands a shift toward more interactive and participatory instructional models that align with the cognitive and creative nature of writing.

The research conducted by Giawa et al. (2023) provided evidence that the lecture and assignment model was ineffective in improving students' ability to write procedural texts at SMP Negeri 1 Alasa Talumozai. The findings revealed that students struggled to construct procedural structures, sequence information logically, and select appropriate linguistic forms when instruction relied solely on direct explanation. The authors concluded that a learning model that promotes student activity and inquiry is necessary to overcome the rigidity of traditional approaches.

The study by Putri et al. (2022) demonstrated that the application of Project-Based Learning (PjBL) could improve students' procedural writing ability. Students involved in project-based tasks became more motivated, independent, and collaborative. The research also reported improvements in students' critical thinking and problem-solving skills. Despite these positive outcomes, the study lacked theoretical integration that could explain how PjBL supports cognitive processes in writing, leaving a conceptual gap in understanding the mechanisms of its effectiveness.

The findings of Khairani et al. (2024) supported the potential of integrating PjBL with audiovisual media to enhance students' writing performance. The study showed that audiovisual aids stimulated students' creativity and helped them generate ideas for writing more effectively. The visual and auditory stimuli provided concrete examples that facilitated comprehension of procedural steps. Nevertheless, the study did not connect its practical success to established learning theories, resulting in an incomplete understanding of why such integration promotes writing development. These prior studies have contributed to identifying effective pedagogical models but have not yet articulated the theoretical and causal relationships between PjBL, audiovisual media, and writing performance.

Theoretically, Project-Based Learning is grounded in constructivist theory, which emphasizes that knowledge is actively constructed by learners through experience, interaction, and reflection. According to Piaget and Vygotsky, learning occurs when students engage in meaningful tasks that challenge them to apply prior knowledge and collaborate with peers to construct new understanding. In the context of writing instruction, PjBL allows students to develop procedural texts through experiential learning, problem-solving, and authentic production of written work. These processes encourage deeper cognitive engagement and promote higher-order thinking. The constructivist foundation of PjBL thus aligns with the nature of writing as an active, process-oriented skill that requires continuous reflection and revision.

The integration of audiovisual media into PjBL is supported by Mayer's multimedia learning theory, which posits that learners process information more effectively through dual channels of verbal and visual input. Audiovisual materials enhance understanding by combining auditory explanations with visual demonstrations, helping learners organize information coherently and reduce cognitive overload. In the context of procedural

writing, audiovisual examples provide concrete models of sequential processes that students can observe, analyze, and replicate in written form. The synergy between PjBL and audiovisual media thus offers a theoretically grounded pedagogical approach that enhances comprehension, engagement, and idea generation. This integration transforms writing instruction from passive reception into active knowledge construction supported by multimodal input.

The current study addresses a research gap that remains in the existing literature. Although previous research has shown the benefits of PjBL and audiovisual media separately, there has been limited empirical investigation into their combined effect within a theoretically integrated framework. The absence of studies that examine the causal impact of PjBL-assisted audiovisual media on procedural writing performance in Indonesian secondary schools leaves an important question unanswered. This study responds to that gap by testing how the combination of PjBL and audiovisual learning influences students' ability to organize, express, and communicate ideas effectively in written procedural texts.

The relevance of this study extends beyond the local context of Subulussalam. The development of procedural writing competence is closely related to the enhancement of digital literacy and 21st-century learning skills, including critical thinking, collaboration, communication, and creativity. Writing procedural texts not only trains students to sequence information logically but also prepares them to produce instructional content in digital formats, such as tutorials or digital guides. Framing this study within the broader context of global literacy education enhances its academic contribution and situates the findings within the ongoing discourse on technology-enhanced learning and modern pedagogy in developing educational settings. The purpose of this research is to examine the causal effect of Project-Based Learning (PjBL) assisted by audiovisual media on students' procedural writing performance at SMP Negeri 2 Simpang Kiri, Subulussalam City. The study aims to demonstrate that integrating constructivist principles and multimedia learning theory can provide a powerful pedagogical framework that strengthens students' writing competence, promotes critical and creative thinking, and offers a theoretically grounded model for instructional innovation in language education.

Method

This study employed a quasi-experimental post-test-only control group design. The design was chosen because the two classes at SMP Negeri 2 Simpang Kiri (VII-1 and VII-2) were heterogeneous but not stratified into superior or inferior categories, making it possible to assign classes randomly without pre-testing. The design structure is operationalized in the following schematic to clarify the research flow and the sequence of intervention and measurement.

Table 1. Research Design Schema

Group	Randomization	Treatment (X)	Measurement (O)
Experimental	Randomly assigned (VII-1 or VII-2)	PjBL assisted by audiovisual media	Post-test of procedural writing
Control	Randomly assigned (VII-1 or VII-2)	Conventional lecture and assignment method	Post-test of procedural writing

Table 1 illustrates that both groups were randomly assigned, with one serving as the experimental group taught using Project-Based Learning assisted by audiovisual media, and the other as the control group taught through conventional lecture and assignment methods. A post-test on procedural writing was administered to both groups to measure the effect of the treatment.

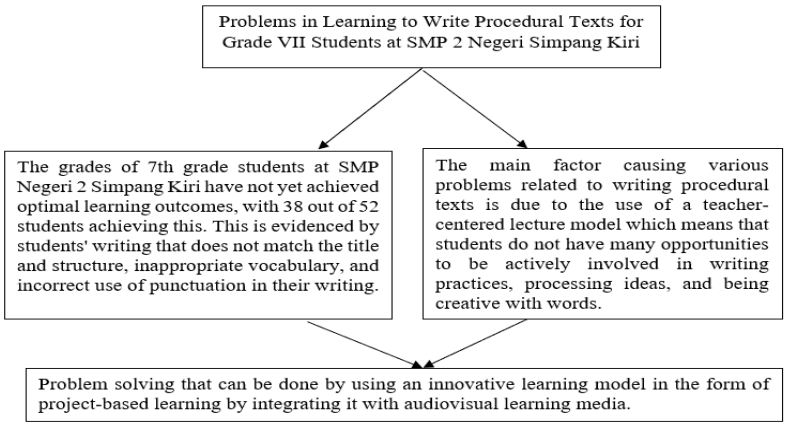

Figure 1. Experimental Flow Diagram

The design followed Widodo (2021), who stated that a quasi-experimental post-test-only design compares two groups after treatment without pre-testing, allowing the researcher to infer treatment effects from post-intervention performance. The population comprised all 53 students of Grade VII at SMP Negeri 2 Simpang Kiri, Subulussalam City. Because the population was fewer than 100, all students were included as the sample, divided equally into two intact classes (VII-1 and VII-2). Randomization was performed by drawing lots: both class names were placed in identical folded papers inside a closed container, and the first drawn class became the experimental group while the second became the control group. To ensure group equivalence, baseline data on students' previous Indonesian language scores were compared, and both groups showed comparable mean scores with no statistically significant difference ($p > 0.05$). This procedure confirmed initial homogeneity before treatment and strengthened internal validity.

The study population comprised all seventh-grade students of SMP Negeri 2 Simpang Kiri, totaling 53 students distributed in two classes (VII-1 and VII-2). Due to the small population (less than 100 students), total sampling was applied, meaning all students were involved as research subjects (Widodo, 2021). Class assignment into experimental and control groups was conducted using simple random sampling by drawing lots: two slips bearing the class codes (VII-1 and VII-2) were placed in a sealed container, and the first slip drawn was assigned as the experimental class, while the other served as the control class. A homogeneity test was conducted using students' prior semester language scores to verify equivalence between groups before treatment. The results indicated no significant differences, confirming the groups' comparability and strengthening the internal validity of the quasi-experimental design.

The research was conducted at SMP Negeri 2 Simpang Kiri, Subulussalam City, Aceh Province, selected because the school demonstrated persistent issues in students' procedural writing competence and expressed institutional willingness to participate in pedagogical improvement efforts. The research activities took place from February to April 2025 (three months), including preparation, treatment, observation, and data collection. The implementation of the learning intervention lasted three weeks, with four instructional sessions per group (three learning sessions and one post-test session). The experimental class received instruction through Project-Based Learning (PjBL) assisted by audiovisual media, whereas the control class received conventional lecture-based instruction. The procedure for implementing the PjBL model followed the framework of The George Lucas Educational Foundation (Halim & Ilyas, 2019) and incorporated audiovisual learning principles from Pagarra et al. (2022).

Table 2. Implementation of PjBL-Assisted Audiovisual Learning

Phase	Activity Description	Duration
1. Orientation and Motivation	The teacher conducts opening rituals, introduces learning objectives, provides apperception, and shows a short introductory video related to procedural texts.	1 JP (40 min)
2. Planning and Questioning	Students identify a topic for a procedural text based on a given audiovisual example and collaborate to outline their writing project.	1 JP (40 min)
3. Project Implementation and Monitoring	Students watch video tutorials on making local products (e.g., Mie Rundeng), note key steps, and compose a draft of their procedural text while the teacher monitors and facilitates discussions.	2 JP (80 min)
4. Product Presentation and Reflection	Students present their completed procedural texts, conduct peer assessment, and reflect on challenges and learning experiences.	1 JP (40 min)

The control class, by contrast, received traditional instruction emphasizing explanation and written assignments without project development or audiovisual integration. Data collection utilized a writing test adapted from Asiati and Amalia (2020) as well as Alvidril and Ratna (2021), which assessed three main criteria: text structure, content clarity, and linguistic features. The instrument underwent expert validation using Aiken's V coefficient, resulting in a value of 0.86 that indicated high content validity. Reliability testing through a pilot study produced a Cronbach's Alpha of 0.728, which was categorized as acceptable (Widodo, 2021). This rubric was employed to evaluate students' procedural writing performance comprehensively and consistently.

The research employed an observation sheet and an interview guide as supporting instruments to complement the writing test. The observation sheet was utilized to record students' engagement, collaboration, and participation throughout the implementation of PjBL-assisted audiovisual learning. The interview guide was designed to explore students' perceptions of their learning experiences and challenges. Data obtained from observations and interviews were triangulated with the writing test results to strengthen the credibility and validity of the findings (Moleong, 2021).

Table 3. Writing Assessment Rubric

Criteria	Assessment Aspects	Score
Structure	There is a complete text structure, namely objectives, steps, and conclusion.	5
	There are only two structures in the text.	3
	There is only one structure in the text.	1
Head	Explain each step in detail by including sequence words or numbering.	5
	Explains each step in detail, but does not use a numbering sequence.	3
	Explain the steps in detail.	1
Linguistic elements	Uses vocabulary that shows detail and correct spelling.	5
	Uses vocabulary that shows precise details, but the spelling is incorrect.	3
	Uses vocabulary that shows detail and inaccurate spelling.	1
	Maximum Score	15

The research instruments consisted of a procedural writing test, an observation sheet, and an interview guide, all of which underwent validation and reliability testing to ensure measurement accuracy. The writing test was adapted from Asiati and Amalia (2020) and Alvidril and Ratna (2021) and validated through expert judgment using Aiken's V (0.86) with acceptable reliability (Cronbach's Alpha = 0.728). To minimize the influence of extraneous variables, several controls were applied, including the use of the same Indonesian language teacher for both groups, identical classroom environments and time allocations, uniform learning materials, and clear instructions prohibiting students from sharing content or discussing lessons across groups during the intervention period.

The data collected in this study were analyzed using both quantitative and qualitative approaches. Quantitative analysis was conducted with IBM SPSS Version 29. Descriptive statistics were used to present the distribution, mean, and standard deviation of the post-test scores, while assumption tests included the Kolmogorov–Smirnov test for normality and Levene's test for homogeneity. The Independent Samples t-Test was then applied to examine differences in mean scores between the experimental and control groups. To determine the strength of the treatment effect, Cohen's d was calculated using the formula $\boxed{d = \frac{M_1 - M_2}{SD_{pooled}}}$, with interpretation values of 0.2 as a small effect, 0.5 as a medium effect, and 0.8 as a large effect.

The qualitative data derived from interviews and classroom observations were analyzed using an inductive thematic approach following Moleong (2021). The process involved transcription, open coding, categorization, and interpretation to identify emerging themes related to students' engagement, collaboration, and perceptions of the learning process. This qualitative analysis served as triangulation to enrich the quantitative findings and provide a comprehensive understanding of the impact of PjBL-assisted audiovisual learning on students' procedural writing performance. Ethical approval for the study was obtained from the School Research Ethics Committee of SMP Negeri 2 Simpang Kiri. Written consent was secured from the school principal, teachers, and student guardians. Participants were informed of the study's objectives and assured of confidentiality and voluntary participation. No identifiable personal data were disclosed in the report.

Results and Discussions

Writing Ability of Procedural Texts of Students of SMP Negeri 2 Simpang Kiri, Subulussalam City in Control and Experimental Classes

The test results data for writing procedural texts were obtained from giving the test to 53 students. All students were given the test in post test or a test conducted after receiving the material on writing procedural texts. The following is a list of values in the control and experimental classes.

Table 4. Results of the Procedural Text Test of Students of SMP Negeri 2 Simpang Kiri, Subulussalam City in the Control and Experimental Classes

Respondent	Control Class Value	Grades in Experimental Class
R1	70	80
R2	70	80
R3	70	80
R4	70	80
R5	60	85
R6	60	85
R7	60	85
R8	60	85
R9	65	90

Respondent	Control Class Value	Grades in Experimental Class
R10	65	90
R11	65	90
R12	65	90
R13	55	65
R14	55	75
R15	55	75
R16	55	75
R17	75	75
R18	75	70
R19	75	70
R20	65	95
R21	65	95
R22	60	95
R23	70	90
R24	70	65
R25	60	80
R26	65	85
R27	60	90

The following is a frequency histogram of values in the control and experimental classes.

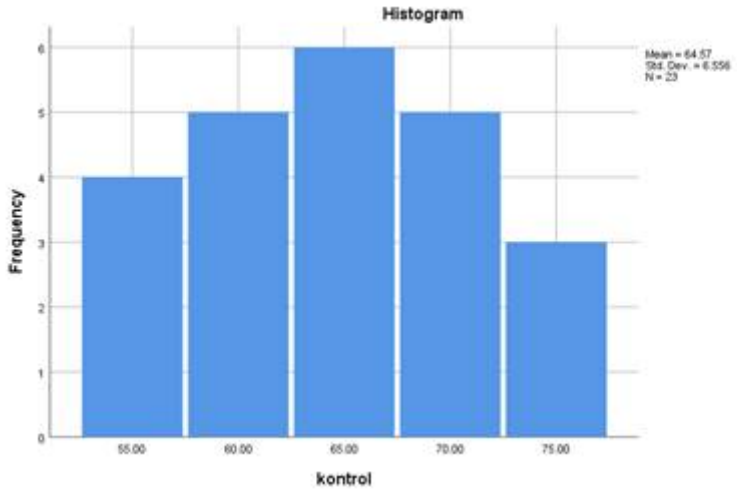

Figure 2. Frequency Histogram of Values in the Control Class

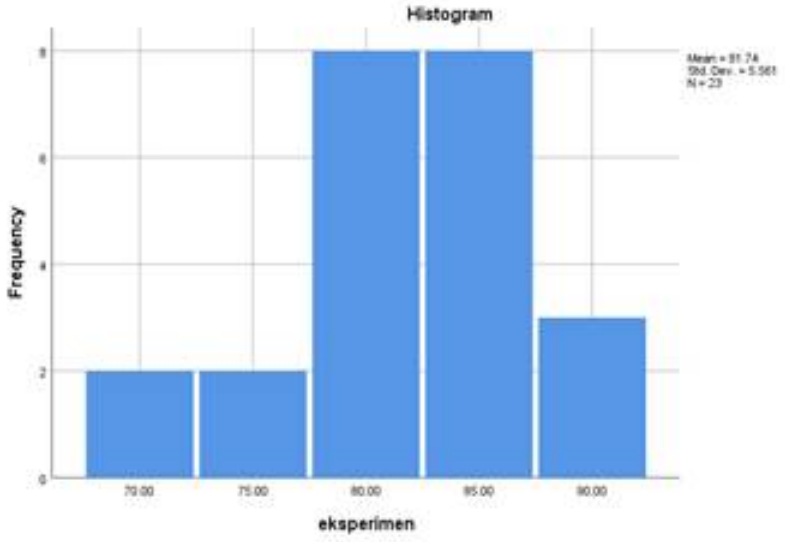

Figure 3. Frequency Histogram of Values in the Control Class

From the information above, Figure 1 illustrates the frequency distribution of writing scores in the control class, while Figure 2 shows that of the experimental class. The histogram indicates a visible shift in the score concentration from medium–low to medium–high categories after treatment using the PjBL-assisted audiovisual learning model. The descriptive results reveal that only three students in the control class reached the minimum mastery criterion (≥75), whereas only four students in the experimental class scored below that level. This finding suggests that PjBL-assisted audiovisual learning substantially enhanced students' procedural writing performance in structure, linguistic accuracy, and content clarity. However, these numerical differences require deeper theoretical interpretation to explain why the intervention was effective.

Influence of ModelProject Based Learning Assisted by Audiovisual Media on the Ability to Write Procedural Texts Students of Class VII of State Middle School 2, Simpang Kiri, Subulussalam City

In order to know the influence of the model project based learning assisted by audiovisual media on the ability to write procedural texts Class VII students of SMP Negeri 2 Simpang Kiri, Subulussalam City, it is necessary to know the differences in test results in the control and experimental classes in the description of statistical data.

Data Description

Based on the students' scores in the control and experimental classes in the previous section, the next step was to analyze the descriptive data in the form of the lowest score, highest score, average score, and standard deviation.

Table 5. Research Data Description

			Statistic	Std. Error
control	Mean		64.5652	1.36707
	95% Confidence Interval for Mean	Lower Bound	61.7301	
		Upper Bound	67.4003	
	5% Trimmed Mean		64.5169	
	Median		65.0000	
	Variance		42.984	
	Std. Deviation		6.55623	
	Minimum		55.00	
	Maximum		75.00	
	Range		20.00	
	Interquartile Range		10.00	
	Skewness		.042	.481
	Kurtosis		-1.013	.935
experiment	Mean		81.7391	1.15963
	95% Confidence Interval for Mean	Lower Bound	79.3342	
		Upper Bound	84.1440	
	5% Trimmed Mean		81.9324	
	Median		80.0000	
	Variance		30.929	
	Std. Deviation		5.56137	
	Minimum		70.00	
	Maximum		90.00	
	Range		20.00	
	Interquartile Range		5.00	
	Skewness		-.556	.481
	Kurtosis		.106	.935

Table 5 shows that students taught through the PjBL-assisted audiovisual model achieved a much higher mean score (81.74) than those in the control group (64.57), indicating a strong practical improvement. The

smaller standard deviation in the experimental group reflects more consistent performance, while non-overlapping confidence intervals confirm the statistical significance of the difference. The slight negative skewness also indicates that most students in the experimental group scored above average. These findings suggest that the PjBL-assisted audiovisual approach effectively enhanced writing ability and supported more uniform learning outcomes.

Inferential Test

Inferential tests are conducted to determine the hypothesis test conducted using parametric or nonparametric statistical methods. The following are the results of the inferential test.

Normality Test

The normality test in this study was measured using the Kolmogorov-Smirnov test.a. This is because the number of samples in this study is above 50. The following is a normality test table.

Table 6. Normality Test Results

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Say.	Statistic	df	Say.
control	.148	23	**.200***	.916	23	.054
experiment	.203	23	**.150**	.899	23	.024

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Data is said to be normally distributed if the significant value is > 0.05. In this study, it is known that the normality test value is greater than 0.05. In numbers, the significant value is 0.200 > 0.05 for the control class and 0.15 > 0.05 for the experimental class. On that basis, it is known that the results of the normality test show that the data is normally distributed.

Uji Homogeneity

After the normality test was conducted, a homogeneity test was conducted on the research data. The homogeneity test was conducted using SPSS using one-way ANOVA. The condition of data is said to be homogeneous is the sig. value > 0.05. The following is a table of the results of the homogeneity test of this study.

Table 7. Homogeneity Test Results

		Levene Statistic	df1	df2	Say.
learning outcomes of procedural texts	Based on Mean	3.793	1	51	**.057**
	Based on Median	2.859	1	51	.097
	Based on Median and with adjusted df	2.859	1	44.551	.098
	Based on trimmed mean	3.717	1	51	.059

Based on the results of the test, it is known that the learning outcomes of Writing Procedure Texts in the experimental and control classes are 0.057. Furthermore, referring to the consideration of data homogeneity, it is known that the significant value (Sig.) is 0.057 > 0.05. Thus, the data of this study are homogeneous. Based on the results of the normality test and homogeneity test that have been carried out, it is known that the research data is normally distributed and homogeneous. Therefore, the hypothesis test carried out with the parametric test uses the test independent sample test.

Statistical Hypothesis Testing

Statistical hypothesis testing in this study was carried out using the test independent sample test. Test independent sample test used because the research data did not come from one sample group and was not conducted pre-test. Hypothesis testing is conducted to answer the following research hypothesis.

Ha : There is a significant influence of the use of the Model Project Based Learning Assisted by Audiovisual Media on the Writing Ability of Procedural Texts of Students of SMP Negeri 2 Simpang Kiri, Subulussalam City in the 2024-2025 Academic Year. Basis for decision making in testing independent sample test This is to

find out Ha or H0 which is accepted as follows. If the significant value (2-tailed) > 0.05 then Ha is rejected or Ho is accepted, whereas if the significant value (2-tailed) < 0.05 then Ha is accepted or Ho is rejected.

Decisions can be taken from the calculated t value and t table with the guideline, if the calculated t value < t table then Ha is rejected or Ho is accepted, whereas if the calculated t value > t table then Ha is accepted or Ho is rejected. The following is a table of the results of the hypothesis test with Independent Samples Test.

Tabel 8. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Say.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
learning outcomes procedural texts	Equal of variances assumed	3.793	.057	8.337	51	.000	-17.607	2.112	-21.847	-13.367
	Equal variances not assumed			8.389	47.177	.000	-17.607	2.099	-21.829	-13.385

The results of the independent sample t-test in Table 8 indicate a statistically significant difference in students' procedural text writing performance between the experimental group taught using the Project-Based Learning (PjBL) model assisted by audiovisual media and the control group taught through conventional methods. The significance value of 0.000 (< 0.05) and the t-value of 8.337, which exceeds the critical value of the t-table (1.671), confirm that the alternative hypothesis (Ha) is accepted. The mean difference of 17.607 points demonstrates that students exposed to the PjBL-assisted audiovisual approach achieved substantially higher learning outcomes than those taught using traditional instruction.

Student Perceptions of Model UseProject Based Learning Assisted by Audiovisual Media in Learning to Write Procedural Texts

The following is a summary of students' answers regarding student perceptions regarding the use of models. Project based learning assisted by audiovisual media in learning to write procedural texts.

Table 9. Student Perceptions of Model Use Project Based Learning Assisted by Audiovisual Media in Learning to Write Procedural Texts

Interview Questions List	Answer
The part of learning to write procedural texts that is considered difficult to do or understand.	I find it difficult to put together the correct and sequential steps. Sometimes I am confused about writing the appropriate command words.
Obstacles or problems experienced by students in writing procedural texts by applying learning*project based learning*assisted by audiovisual media (video tutorials).	Sometimes I can't watch the video from the front. I'm also a bit confused if there is no direct explanation from the teacher.
Students' responses to learning to write procedural texts with*project based learning*assisted by audiovisual media (video tutorials).	Learning becomes more fun and I can understand better because there are examples in the video. But it would still be better if the teacher also explained in class.
Do you feel that the current way teachers teach can help you in writing procedural texts?	Yes, the way the teacher teaches helps me. The teacher gives examples and guides me when writing. But I want to practice writing more often so I can do it better.

The data presented in Table 9 show that students generally perceive the Project-Based Learning (PjBL) model assisted by audiovisual media as a helpful and engaging approach to learning procedural writing. Students reported that the most challenging aspect lies in composing correct and sequential procedural steps and in selecting appropriate command verbs, which reflects their limited mastery of linguistic and structural elements of procedural texts. Some students also experienced obstacles in understanding video materials when visual access was limited or when explanations were not accompanied by teacher clarification, suggesting that audiovisual learning alone cannot fully substitute teacher-led guidance. Despite these difficulties, most students expressed positive attitudes, indicating that learning through audiovisual-supported projects made the lessons more enjoyable and easier to comprehend because of the visual examples provided in the videos. The presence of teacher scaffolding was also viewed as crucial in ensuring understanding and motivation to practice writing. Overall, students' perceptions confirm that while the PjBL-assisted audiovisual model enhances engagement and comprehension, it still requires complementary instructional support to optimize its effectiveness.

The findings on student perceptions demonstrate the cognitive and affective value of integrating PjBL with audiovisual media in writing instruction. The students' recognition that videos helped them visualize procedural steps validates Mayer's Multimedia Learning Theory, which emphasizes that learning is optimized when visual and verbal channels are activated simultaneously. The use of audiovisual materials provided concrete representations that facilitated the internalization of procedural sequences and enhanced idea development. The reported difficulty in applying the correct command verbs indicates that while videos support comprehension, the transfer of visualized knowledge into linguistic production still depends on targeted instructional support. The improvement in students' writing ability thus reflects not only exposure to multimedia content but also the combined effect of experiential learning and teacher guidance within the PjBL structure.

The emphasis on teacher explanation expressed by the students reflects the principles of Vygotsky's Constructivist Theory, which views learning as a socially mediated process occurring within the Zone of Proximal Development. In this context, audiovisual media stimulate independent exploration, whereas teacher scaffolding facilitates the transformation of experience into conceptual understanding. Students' responses, such as feeling more capable when guided by the teacher, confirm that effective learning emerges through a balance between autonomy and instructional mediation. The PjBL-assisted audiovisual model in this study functions most effectively when learners engage collaboratively under guided supervision, allowing them to construct procedural knowledge through both self-directed and socially supported activities.

Student feedback also reveals important motivational and affective dimensions of learning. Enjoyment and increased willingness to write, as reported by most students, align with the self-determination theory, which posits that autonomy, competence, and relatedness promote intrinsic motivation. Through PjBL, learners exercised autonomy in managing projects, experienced competence through hands-on creation, and achieved relatedness through group interaction. The audiovisual components reinforced motivation by offering stimulating, concrete, and realistic examples. The combination of these factors produced a learning environment that encouraged sustained engagement and creative thinking. The current findings are consistent with those of Putri et al. (2022) and Khairani et al. (2024), who identified similar improvements in students' motivation and comprehension under multimedia-supported project learning. The contribution of this study lies in providing a theoretical explanation of how these results emerge through cognitive dual-channel processing and guided constructivist interaction.

The positive perception of students toward collaborative activities indicates that PjBL promotes not only academic outcomes but also the development of social and metacognitive skills. The statement that students "worked together to make our own text" illustrates that collaboration enhanced peer interaction, negotiation of meaning, and joint problem-solving. Such dynamics reflect Piaget's idea that cognitive development arises from interaction and cognitive conflict during group work. Engagement in cooperative writing tasks helped students refine sentence structure, maintain logical order, and apply accurate grammatical forms. The PjBL framework therefore contributes simultaneously to cognitive, linguistic, and interpersonal growth, aligning with global educational paradigms that prioritize 21st-century skills such as communication, collaboration, and critical thinking.

The difficulties mentioned by several students regarding access to video materials and the need for repeated explanations highlight contextual constraints in resource-limited learning environments. Limited digital access, unstable internet connection, and varying levels of digital literacy can hinder the effectiveness of audiovisual-based instruction. These findings are consistent with Bell (2019) and Blumenfeld et al. (2021), who emphasize that the success of PjBL relies on adequate technological support and teacher readiness. Addressing such limitations is crucial to prevent inequality in learning outcomes and to ensure the sustainability of technology-enhanced instruction. The acknowledgment of these constraints also reflects scholarly reflexivity by situating the study within realistic educational conditions.

The findings generate important implications for classroom practice and curriculum development. Teachers can utilize audiovisual materials to introduce procedural sequences visually before guiding students through text construction using the PjBL framework. Curriculum designers may integrate project-based writing activities into the Indonesian language syllabus, supported by multimedia examples to encourage experiential learning. Policymakers should prioritize teacher training and the provision of digital infrastructure to ensure that innovative instructional models can be implemented effectively. The theoretical implication is that the integration of constructivism and multimedia learning principles offers a coherent pedagogical model for improving writing competence while nurturing critical and creative thinking.

Student perceptions provide interpretive depth to the quantitative findings, showing that the effectiveness of PjBL-assisted audiovisual instruction stems from the interplay between cognitive engagement, social collaboration, and emotional motivation. The approach helps students move beyond rote memorization toward meaningful language use grounded in real tasks. The few challenges reported indicate that successful implementation requires careful balancing between technology use, teacher facilitation, and learner independence. Future research should examine long-term interventions with larger participant groups to determine how sustained PjBL-assisted audiovisual learning influences writing development across different educational contexts. Integrating qualitative and quantitative analyses in such studies would further clarify the mechanisms through which constructivist and multimedia principles translate into measurable literacy gains.

Conclusions

The study confirms that the Project-Based Learning (PjBL) model assisted by audiovisual media significantly enhances students' ability to write procedural texts through meaningful, collaborative, and engaging learning experiences. Improvements were evident in text organization, vocabulary accuracy, and logical sequencing, supported by students' positive perceptions of the model's clarity and interactivity. The integration of constructivist and multimedia learning theories explains these outcomes, as students actively constructed knowledge through authentic projects while audiovisual media facilitated dual-channel cognitive processing. The combination of these frameworks provides a strong pedagogical foundation for developing writing skills aligned with 21st-century competencies.

The effectiveness of this model depends on structured teacher scaffolding and adequate technological support. Schools and policymakers should strengthen digital infrastructure and teacher training to ensure sustainable implementation. Although the sample size and treatment duration were limited, the findings suggest that PjBL-assisted audiovisual learning can be adapted to various language learning contexts. Future studies are encouraged to explore long-term applications and cross-context comparisons to evaluate how constructivist and multimedia-based approaches can further enhance literacy and critical thinking in broader educational settings.

References

Akbar, R., Sukmawati, U. S., & Katsirin, K. (2023). Analisis data penelitian kuantitatif: Pengujian hipotesis asosiatif korelasi. *Jurnal Pelita Nusantara, 1*(3), 430–448. https://doi.org/10.59996/jurnalpelitanusantara.v1i3.350

Asiati, S., & Amalia, F. (2020). *Modul pembelajaran SMP terbuka Bahasa Indonesia kelas VII: Modul 3 teks prosedur.* Direktorat Sekolah Menengah Pertama, Direktorat Jenderal Pendidikan Anak Usia Dini, Pendidikan Dasar dan Menengah, Kementerian Pendidikan dan Kebudayaan Republik Indonesia.

Al-Vidril, A., & Ratna, E. (2021). Struktur, isi, dan unsur kebahasaan teks prosedur karya siswa kelas XI MIPA SMA Negeri 5 Padang. *Jurnal Pendidikan Bahasa dan Sastra Indonesia UNP, 10*(2), 34–44. https://doi.org/10.24036/112916-019883

Badan Standar, Kurikulum, dan Asesmen Pendidikan, Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia. (2022). *Capaian pembelajaran mata pelajaran Bahasa Indonesia Fase A–F.*

Dahri, N. (2022). *Problem and project-based learning (PPJBL): Model pembelajaran abad 21.* Padang: Muharika Rumah Ilmiah.

Giawa, P., Giawa, Y., & Waruwu, L. (2023). Penerapan model pembelajaran picture and picture untuk meningkatkan kemampuan menulis teks prosedur siswa kelas IX SMP Negeri 1 Alasa Talumuzoi. *Indo-MathEdu Intellectuals Journal, 4*(3), 1996–2003. https://doi.org/10.54373/imeij.v4i3.466

Halim Purnomo, D., & Ilyas, Y. (2019). *Tutorial pembelajaran berbasis proyek.* Yogyakarta: K-Media.

Halimah, L., & Marwati, I. (2022). *Project-based learning untuk pembelajaran abad 21.* Bandung: PT Refika Aditama.

Hamalik, O. (2009). *Proses belajar mengajar.* Jakarta: Bumi Aksara.

Hardani, H., et al. (2020). *Metode penelitian kualitatif dan kuantitatif.* Yogyakarta: Pustaka Ilmu.

Khairani, Z., Hayati, N., & Chan, D. M. (2024). Pengaruh model PjBL (project-based learning) berbantuan media audiovisual terhadap keterampilan menulis artikel mahasiswa Prodi Pendidikan Bahasa dan Sastra Indonesia Universitas Ekasakti Padang. *Jurnal Kepemimpinan dan Pengurusan Sekolah, 9*(2), 185–189. https://doi.org/10.34125/jkps.v9i2.452

Khalik, I. (2021). Peningkatan kemampuan menulis cerita pendek sebagai terapi ekspresif terhadap emosi pada peserta didik kelas XI MAN 3 Kota Jambi. *Jurnal Literasiologi, 6*(2), 556–567. https://doi.org/10.47783/literasiologi.v6i2.253

Kustyarini, & Utami, S. (2018). *Kiat menulis teks prosedur.* Malang: Universitas Wisnuwardhana Press.

Moleong, L. J. (2021). *Metodologi penelitian kualitatif.* Bandung: Remaja Rosdakarya.

Nurlailatul, S. A., et al. (2016). Pembelajaran menulis teks prosedur berdasarkan hasil wawancara di kelas VIIA1 SMP Negeri 1 Singaraja. *e-Journal Pendidikan Bahasa dan Sastra Indonesia Universitas Pendidikan Ganesha, 5*(3). https://doi.org/10.23887/jjpbs.v5i3.8765

Pagarra, H., Syawaluddin, A., & Krismanto, W. (2022). *Media pembelajaran.* Makassar: Badan Penerbit UNM.

Pedrikayana, A., & Afrison, M. (2023). Pengaruh penggunaan model project-based learning berbantuan media video animasi terhadap keterampilan menulis teks prosedur siswa kelas VII SMP Negeri 14 Kerinci. *Deiksis: Jurnal Pendidikan Bahasa dan Sastra Indonesia, 10*(1), 103–114. https://doi.org/10.33603/ckkhan84

Putri, T. A., Rustam, R., & Sinaga, A. (2022). Model project-based learning dalam menulis teks prosedur untuk meningkatkan kemampuan berpikir kritis siswa di SMP. *Jurnal Onoma: Pendidikan, Bahasa, dan Sastra, 8*(1), 238–247. https://doi.org/10.30605/onoma.v8i1.1708

Riadianti, F., Nurhasanah, W., Telaumbanua, F. H., Khadavi, K., & Siregar, M. W. (2024). Peningkatan kemampuan menulis teks prosedur menggunakan model project-based learning siswa kelas VII-3 SMPN 45 Medan. *Simpati: Jurnal Penelitian Pendidikan dan Bahasa, 2*(3), 56–66. https://doi.org/10.59024/simpati.v2i3.808

Shoffa, S., et al. (2023). *Media pembelajaran.* Pasaman Barat: Afasa Pustaka.

Telaumbanua, S., & Sari, S. (2024). Pengaruh metode project-based learning terhadap kemampuan menulis teks eksplanasi siswa kelas VIII SMP Negeri 1 Penanggalan Kota Subulussalam. *SeBaSa: Jurnal Pendidikan Bahasa dan Sastra Indonesia, 7*(1), 38–53. https://doi.org/10.29408/sbs.v7i1.26023

Tobing, N., & Nainggolan, C. B. (2020). Penerapan model pembelajaran berbasis proyek dalam meningkatkan motivasi belajar siswa di kelas VII. *Diligentia: Journal of Theology and Christian Education, 2*(2), 82–89. https://doi.org/10.19166/dil.v2i2.2216

Tuzzahra, R., Hanifah, & Maizora, S. (2019). *Model project-based learning dan penerapannya.* Bengkulu: UPP FKIP UNIB.

Umiyatun. (2018). Peningkatan keterampilan berbicara teks prosedur dengan metode demonstrasi melalui media benda realia pada siswa SMP. *Universitas Muhammadiyah Purworejo.*

Widodo, S. B. (2021). *Metode penelitian pendidikan: Pendekatan sistematis dan komprehensif.* Yogyakarta: Eiga Media.