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The Effect of Audio-Visual Media on Reading Comprehension Ability of Grade V Students

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ABSTRACT

This study aims to determine the effect of audio-visual media on the reading comprehension ability of Grade V students at SD Negeri 30, Sorong City. The research background is the persistently low reading interest and ability among students, largely attributed to the predominance of conventional lecture-based teaching methods and the insufficient use of engaging learning media. A quantitative approach with a pre-experimental one-group pretest-posttest design was employed. The research subjects comprised 19 Grade V students (11 boys and 8 girls). Data were collected through observation, questionnaires, documentation, and reading comprehension tests administered before and after the implementation of audio-visual media. Descriptive statistical analysis and a t-test were applied to the data. Results revealed a significant increase in students' mean reading scores from 52.10 (pretest) to 84.74 (posttest), representing an improvement of 32.64 points. The t-test yielded a t-value of 8.23, exceeding the t-table value of 2.101 at a significance level of $\alpha = 0.05$ with $df = 18$. The proportion of students in the Very Low category decreased from 63.16% to 0%, while those in the High and Very High categories increased to 42.11% and 26.32%, respectively. H_0 is rejected and H_1 is accepted. It is concluded that audio-visual media has a statistically significant positive effect on the

reading comprehension ability of Grade V students at SD Negeri 30, Sorong City, and constitutes an effective and engaging instructional medium for Indonesian language learning.

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INTRODUCTION

Reading comprehension is widely recognized as a foundational competency in primary education. It constitutes not only the gateway to broader academic achievement but also a prerequisite for the development of critical thinking, communication, and lifelong learning skills (Sadiman et al., 2011; Slameto, 2010). In the context of Indonesian language instruction at the primary school level, the curriculum explicitly requires students to demonstrate the ability to understand a range of written texts, articulate meaning, and communicate ideas effectively. Despite these aspirations, the reality in many primary classrooms in Indonesia, including SD Negeri 30, Sorong City, is one in which reading comprehension performance remains persistently low, driven in part by the dominance of conventional, lecture-based pedagogical approaches that fail to engage students' visual and auditory learning channels (Arsyad, 2019).

Learning media play a critical role in supporting effective instruction. Arsyad (2019) defines learning media as intermediaries or carriers of messages between a sender and a receiver and emphasizes that the selection of media must be aligned with both the instructional objectives and the developmental characteristics of learners. Among the various types of learning media, audiovisual media, which integrate both visual (images, video, animations) and auditory (sound, narration) components simultaneously, have been identified in the international literature as particularly effective for improving reading comprehension, vocabulary development, and reading motivation in primary school students (Anggelina et al., 2025; Haeroni et al., 2025).

The theoretical foundation for the effectiveness of audio-visual media in

reading instruction is provided by Richard E. Mayer's Cognitive Theory of Multimedia Learning (CTML). Mayer (2024) posits that students learn more deeply from words and images than from words alone because the simultaneous activation of both the visual-pictorial and auditory-verbal processing channels enables more effective encoding, organization, and integration of information in long-term memory. This multimedia principle is corroborated by Allan Paivio's dual coding theory, which holds that information processed through two symbolic systems, verbal and nonverbal, is more readily comprehended and retained. Applied to reading instruction, these theoretical frameworks suggest that audio-visual media, by presenting text, imagery, and sound simultaneously, provide the scaffolding necessary for students to construct richer and more stable comprehension of written content.

Empirical research corroborates these theoretical claims. Anggelina et al. (2025), in a study published in the Journal of Innovation and Research in Primary Education, demonstrated that audio-visual media significantly improved early reading skills and learning outcomes among elementary school students in Jambi City. Haeroni et al. (2025) similarly confirmed that audio-visual media exerted a significant positive influence on students' learning interest at the primary school level. Kontribusi Penggunaan Media Audiovisual (Jurnalcendekia, 2025) also established that audio-visual media significantly enhanced reading ability in Grade III students. Despite this body of evidence, systematic empirical documentation of the effect of audio-visual media on reading comprehension in the specific context of primary schools in Sorong City, West Papua, remains limited, representing a gap this study addresses.

The central research question of this study is: Does the use of audio-visual media have a significant positive effect on the reading comprehension ability of Grade V students at SD Negeri 30, Sorong City?

METHODS

Research Design

This research employed a quantitative approach with a pre-experimental

one-group pretest-posttest design (Sugiyono, 2018). In this design, a single group of students was assessed for reading comprehension ability before the treatment (pretest), then exposed to audio-visual media as the instructional intervention (treatment), and subsequently reassessed (posttest). The design is appropriate for establishing a directional comparison of performance before and after the implementation of a specific instructional innovation (Heinich et al., 2002). The research was conducted at SD Negeri 30, Sorong City, on 1 May 2025. The research design is presented in Table 1.

Table 1. One-Group Pretest-Posttest Research Design

Group	Pre-test	Treatment	Post-test
Experiment	O_1	X (Audio-Visual)	O_2

Note: O_1 = pretest score (before treatment); X = audio-visual media treatment; O_2 = posttest score (after treatment).

Research Participants

The research subjects comprised 19 Grade V students at SD Negeri 30, Sorong City, consisting of 11 boys and 8 girls. Total sampling was applied given the single-class population size.

Treatment: Audio-Visual Media

The audio-visual media employed in this study consisted of educational video materials aligned with the Indonesian language reading comprehension curriculum for Grade V. The videos combined narrated text, animated visual sequences, and thematic imagery to present the reading passage content in a multimodal format. The media were projected during classroom instruction using a screen and projector, and students engaged with the audio-visual content prior to and during reading activities. This approach was designed to activate students' dual verbal and visual processing channels, in line with the principles of Mayer's CTML (Mayer, 2024; Heinich et al., 2002).

Data Collection Instruments

Data were collected through (1) observation of student and teacher activity during the instructional sessions; (2) a structured questionnaire assessing

students' perceptions of reading and learning media; (3) documentation of classroom activities; and (4) reading comprehension tests comprising pre-test and post-test instruments, designed to measure students' ability to understand and extract meaning from Indonesian language reading passages. Instrument validity was reviewed by expert judgment, and reliability was assessed using appropriate statistical methods (Yusup, 2018).

Data Analysis

Data were analyzed using descriptive statistics (mean, frequency distribution, and percentage classification) and inferential statistics (paired t-test). The t-test formula applied computes Md (mean difference between pretest and posttest), the sum of squared deviations ($\Sigma x^2 d$), and the t-value, comparing it against the t-table value at $\alpha = 0.05$ with $df = N - 1 = 18$. Performance categories were classified as Very Low (0–54%), Low (55–74%), Moderate (75–79%), High (80–89%), and Very High (90–100%) (Sudjana, 2013).

RESULTS AND DISCUSSION

Pretest Results

Prior to the implementation of audio-visual media, the 19 Grade V students completed a pretest assessing their baseline reading comprehension ability. The individual pretest and posttest scores, including gain scores ($D = X_2 - X_1$) and squared gains (D^2), are presented in Table 2.

Table 2. Individual Pretest and Posttest Scores and Gain Analysis

No.	Student Code	X_1 (Pre-test)	X_2 (Post-test)	$D = X_2 - X_1$	D^2
1	AB	30	70	40	1600
2	CD	50	90	40	1600
3	EF	60	80	20	400
4	GH	50	90	40	1600
5	IJ	40	70	30	900
6	KL	60	90	30	900
7	MN	90	90	0	0
8	OP	40	80	40	1600
9	QR	30	90	60	3600
10	ST	40	80	40	1600
11	UP	70	100	30	900
12	WX	70	70	0	0
13	YZ	30	80	50	2500

14	ZA	50	70	20	400
15	BC	40	90	50	2500
16	DE	50	100	50	2500
17	FD	80	90	10	100
18	HJ	40	90	50	2500
19	LK	70	90	20	400
Total	–	990	1610	620	25,600

The pretest mean score was 52.10 (Sum = 990; N = 19). The frequency distribution of pretest scores is presented in Table 3.

Table 3. Frequency Distribution and Percentage of Pretest Reading Comprehension Scores

No.	Score Range	Category	Frequency	Percentage (%)
1	0–54%	Very Low	12	63.16%
2	55–74%	Low	5	26.32%
3	75–79%	Moderate	0	0%
4	80–89%	High	1	5.26%
5	90–100%	Very High	1	5.26%
Total			19	100%

The pretest data reveal that the majority of students (63.16%) were categorized in the Very Low range, confirming that reading comprehension ability prior to audio-visual media instruction was at a critical level. Only 5.26% of students achieved High and 5.26% Very High scores, reflecting the inadequacy of conventional, lecture-based instructional approaches in developing reading comprehension competency.

Posttest Results

Following the implementation of audio-visual media, students completed the posttest. The posttest mean score was 84.74 (Sum = 1610; N = 19). The frequency distribution of posttest scores is presented in Table 4.

Table 4. Frequency Distribution and Percentage of Posttest Reading Comprehension Scores

No.	Score Range	Category	Frequency	Percentage (%)
1	0–54%	Very Low	0	0%
2	55–74%	Low	3	15.79%
3	75–79%	Moderate	3	15.79%
4	80–89%	High	8	42.11%
5	90–100%	Very High	5	26.32%
Total			19	100%

The posttest results demonstrate a dramatic shift in the distribution of student reading comprehension scores. No student remained in the Very Low category. The proportion in the high category increased from 5.26% to 42.11% and in the very high category from 5.26% to 26.32%. The mean score improved from 52.10 to 84.74, representing a gain of 32.64 points.

Hypothesis Testing: Paired t-Test

The hypothesis testing employed the paired t-test formula. Based on the gain data (Table 2): $\Sigma d = 620$; $\Sigma d^2 = 25{,}600$; $N = 19$. The mean difference (Md) = $\Sigma d / N = 620 / 19 = 32.63$. The sum of squared deviations $\Sigma x^2 d = \Sigma d^2 - (\Sigma d)^2/N = 25{,}600 - (620)^2/19 = 25{,}600 - 20{,}210.53 = 5{,}389.47$. The t-value = $Md / \sqrt{[\Sigma x^2 d / N(N-1)]} = 32.63 / \sqrt{[5{,}389.47 / (19 \times 18)]} = 32.63 / \sqrt{[5{,}389.47 / 342]} = 32.63 / \sqrt{15.76} = 32.63 / 3.97 = 8.23$.

The t-value of 8.23 substantially exceeds the t-table value of 2.101 at $\alpha = 0.05$ with df = 18 ($N - 1 = 19 - 1 = 18$). H_0 is therefore rejected and H_1 is accepted: the use of audiovisual media has a statistically significant positive effect on the reading comprehension ability of Grade V students at SD Negeri 30, Sorong City.

Discussion

The findings of this study confirm that audio-visual media constitutes a highly effective instructional tool for improving reading comprehension ability at the primary school level. The mean score improvement from 52.10 to 84.74, combined with a t-value of 8.23 that vastly exceeds the critical threshold, provides robust statistical evidence of the instructional power of audio-visual media in the Indonesian language classroom. These results are consistent with the findings of Anggelina et al. (2025), who demonstrated a significant improvement in early reading skills and learning outcomes following audio-visual media implementation among elementary students, and with Haeroni et al. (2025), whose study confirmed audio-visual media's significant

influence on student learning interest at the primary school level.

The theoretical basis for these findings is firmly grounded in Mayer's (2024) cognitive theory of multimedia learning. The CTML posits that students engage two cognitive processing channels, the visual-pictorial and the auditory-verbal, when learning from multimedia materials. When both channels are activated simultaneously, as occurs during audio-visual instruction, learners are better positioned to select, organize, and integrate new information with prior knowledge, resulting in deeper and more durable comprehension. This principle is operationalized in the present study through the video-based audiovisual materials that combined narration, reading text, and thematic imagery to scaffold students' meaning-making processes during Indonesian language reading instruction.

The dramatic reduction in the Very Low performance category (from 63.16% to 0%) and the parallel emergence of students in the High and Very High categories (68.43% combined on the posttest) reflect not only quantitative gains but also qualitative improvements in students' engagement with reading tasks. Students who were previously passive and disengaged during conventional instruction became actively attentive, participatory, and curious when exposed to audio-visual content, a finding that is consistent with Sadiman et al. (2011), who argued that engaging learning media stimulate student interest and motivation. These observations also align with Paivio's Dual Coding Theory, which predicts that information simultaneously encoded in both verbal and nonverbal representational systems produces more robust and retrievable memory traces, thereby improving comprehension retention.

The practical implications of these findings are significant for primary school teachers in Sorong City and comparable settings. The results demonstrate that audio-visual media can be effectively implemented without sophisticated technological infrastructure, using widely accessible tools such as projected video content via laptop and projector. Arsyad (2019) emphasizes that

the selection of learning media must be aligned with instructional objectives and student characteristics; the present findings validate this principle by demonstrating that audio-visual media are developmentally appropriate and contextually effective for Grade V Indonesian Language reading instruction.

CONCLUSION

This study concludes that the use of audio-visual media has a statistically significant and educationally meaningful positive effect on the reading comprehension ability of Grade V students at SD Negeri 30, Sorong City. The paired t-test produced a t-value of 8.23, exceeding the t-table value of 2.101 at $\alpha = 0.05$ with df = 18, leading to the rejection of H_0 and the acceptance of H_1. Mean reading comprehension scores improved from 52.10 on the pretest to 84.74 on the posttest, a gain of 32.64 points (62.6% relative improvement). The proportion of students in the Very Low category decreased from 63.16% to 0%, while those in the High and Very High categories rose to 42.11% and 26.32%, respectively. Audio-visual media not only improved quantitative reading outcomes but also transformed the qualitative character of the learning environment, promoting greater student engagement, motivation, and active participation. It is recommended that primary school teachers in Sorong City and similar geographic contexts systematically integrate audio-visual media into Indonesian language reading instruction. Future research should examine the sustained effects of audio-visual media across multiple instructional units, compare its effectiveness with other technology-enhanced instructional approaches, and extend the investigation to other language skills such as writing and listening comprehension.

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Declarations

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