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The Effect of Audio Media on Short Story Listening Comprehension Among Third-Grade Elementary Students

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ABSTRACT

This research was prompted by the less than optimal short story listening comprehension skills of third-grade students at SD Negeri 105 Adian Jior, Mandailing Natal Regency. Based on this problem, the study aimed to analyze the effect of using audio media in Indonesian language learning on students' short story listening comprehension. This research employed a quantitative approach with a quasi-experimental design, specifically the Pretest-Posttest Control Group Design. The study sample consisted of two groups: an experimental class (Class III B) and a control class (Class III A), each comprising 25 students. Data collection was conducted through written tests (pre-test and post-test) consisting of 5 multiple-choice questions designed to measure short story listening comprehension. The test instrument was piloted and met validity criteria (all items rcount > rtable = 0.396) and reliability (Cronbach's Alpha = 0.720 > 0.600), and demonstrated good difficulty levels, discriminative power, and effective distractor functions. Data analysis used the Independent Samples T-Test after fulfilling the normality and homogeneity assumptions. The results showed a significant improvement in short story listening comprehension in the experimental class compared to the control class. In the experimental class, which used audio media, the average post-test score for short story listening comprehension reached 80.8 (pre-test score 62.4), with a highest score of 96 and a lowest score of 64. Meanwhile, in the control class, which used conventional methods, the average post-test score was 65.6 (pre-test score 60.8), with a highest score of 76 and a lowest score of 48. The Independent Samples T-Test results showed a significance value (2-tailed) of 0.000. Since the Sig. (2-tailed) value was < 0.05, the Null Hypothesis (H0) was rejected and the Alternative Hypothesis (H1) was accepted, indicating a positive and significant effect of using audio media. The average increase of 15.2 points in the experimental class strengthened the effectiveness of audio media in focusing student attention, aiding in understanding intonation and expression, and building short story imagination. This research concludes that the use of audio media has a significant effect on improving short story listening comprehension in third-grade students of SD Negeri 105 Adian Jior, Mandailing Natal Regency, during the 2025-2026 Academic Year.

Keywords: Audio Media, Short Story Listening Comprehension, Indonesian Language Learning, Elementary School Students

I. INTRODUCTION

Indonesian language proficiency constitutes a foundational pillar in elementary education, serving not only as a communication tool but also as an essential vehicle for cognitive, social, and emotional development among young learners. Within the Indonesian educational context, language instruction at the elementary level aims to cultivate comprehensive linguistic competencies while simultaneously fostering an appreciation for the nation's rich literary and cultural heritage. Among the four fundamental language skills—listening, speaking, reading, and writing—listening comprehension occupies a particularly critical position as the gateway through which students access information and develop subsequent linguistic capabilities (Kaya & Aydeniz, 2025).

The significance of listening comprehension in language acquisition has been extensively documented in the educational literature. Listening serves as the primary channel through which young learners absorb linguistic patterns, vocabulary, and narrative structures, which subsequently inform their speaking, reading, and writing abilities. Kudinova and Sholudchenko (2025) emphasized that listening comprehension represents an active cognitive process requiring concentrated attention, mental engagement, and sophisticated information processing rather than passive sound reception. This theoretical understanding underscores the necessity of implementing pedagogical approaches that actively cultivate listening skills through purposeful instructional design (Kudinova & Sholudchenko, 2025).

Within the listening comprehension pedagogy, narrative texts—particularly short stories (cerpen)—present exceptional educational potential for elementary students. Short stories offer age-appropriate narrative complexity and manageable length suitable for young learners' attention spans, and provide rich opportunities for identifying literary elements such as characterization, setting, plot development, and moral messaging. When students engage with short stories through listening, they simultaneously exercise multiple cognitive processes: following sequential events, recognizing character motivations, inferring implicit meanings, and constructing mental representations of narrative worlds. These multifaceted cognitive engagements position short story listening as a pedagogically valuable activity for developing higher-order thinking skills (Azahra & Kusumawati, 2025).

However, empirical observations in Indonesian elementary schools have revealed persistent challenges in listening comprehension instruction. Conventional teaching methods frequently rely on teacher-directed oral reading or text-based approaches that fail to fully engage students' auditory processing capacities. Preliminary observations conducted at SD Negeri 105 Adian Jior, Mandailing Natal Regency, indicated that third-grade students demonstrated suboptimal short story listening comprehension, as evidenced by difficulties in recalling plot sequences, identifying character traits, and articulating moral lessons embedded within narratives. These comprehension deficits appeared to be correlated with instructional approaches characterized by monotonous delivery, minimal variation in presentation modality, and insufficient attention to the unique affordances of auditory learning channels (Nursidah & Ilyas, 2024).

The pedagogical challenges observed in listening comprehension instruction suggest the need for innovative instructional media that can engage students' auditory processing systems more effectively while maintaining their attention and facilitating deeper narrative understanding. Educational technology research has consistently demonstrated that appropriate media selection significantly influences learning outcomes by aligning instructional delivery with students' cognitive processing preferences and developmental characteristics (Takrimah et al., 2025). Among the available media options, audio recordings present distinctive advantages for listening comprehension development by eliminating visual distractions, focusing attention exclusively on auditory information, and enabling the controlled presentation of prosodic features such as intonation, pacing, and expressive variation.

Audio media, defined as instructional materials that convey information primarily through auditory channels, have garnered increasing recognition as effective pedagogical tools in language education (Rohmat & Qosim, 2025). The theoretical foundations supporting the effectiveness of audio media derive from multiple disciplinary perspectives, including cognitive psychology, educational technology, and language acquisition theory. From a cognitive psychology perspective, the information processing theory suggests that learners possess limited attentional resources that must be strategically allocated across competing sensory inputs. Audio media facilitate focused auditory attention by eliminating extraneous visual stimuli, thereby enabling learners to dedicate cognitive resources more fully to linguistic comprehension and meaning-making.

Furthermore, the dual coding theory proposed by Paivio posits that information processed through verbal-auditory channels creates distinct memory representations that complement visual-spatial processing. When students listen to narratives through audio media, they engage verbal processing systems while simultaneously constructing visual-spatial mental models based on linguistic descriptions, —a process that strengthens both immediate comprehension and long-term retention. This theoretical mechanism explains why audio-based story presentations may facilitate deeper narrative comprehension than purely visual text reading, particularly for young learners still developing reading fluency (Maezawa & Kawahara, 2023).

Language acquisition research provides additional theoretical support for the use of audio media in developing listening skills. Krashen's Input Hypothesis emphasizes the importance of comprehensible input slightly above learners' current proficiency levels to facilitate language development. Audio recordings of well-articulated stories provide consistent and repeatable linguistic input that students can access multiple times, enabling them to progressively refine their comprehension through repeated exposure. Moreover, audio presentations preserve authentic prosodic features—stress patterns, intonation contours, and rhythmic structures—that convey semantic and pragmatic information often lost in written text. These prosodic elements assist young learners in parsing linguistic streams, identifying syntactic boundaries, and inferring emotional states and character intentions.

Fitriani et al. (2025) specifically highlighted the capacity of audio media to enhance student attention focus, reduce visual distractions prevalent in multimedia environments, and enable imaginative engagement with narrative content. When listening to audio-recorded stories, students must construct mental representations of characters, settings, and events based only on linguistic descriptions and vocal performances. This imaginative requirement actively engages creative cognitive processes and deepens narrative comprehension by compelling learners to visualize story elements rather than passively receiving pre-constructed images. The

imaginative demands of audio listening cultivate important cognitive skills, including mental visualization, inferential reasoning, and interpretive flexibility (Nurdin et al., 2025).

Previous research examining the effects of audio media on listening comprehension has yielded encouraging results across various educational contexts. The students receiving instruction through audio media demonstrated comprehension improvements 25% greater than those taught through conventional methods. Similarly, Firda (2025) found that audio-based presentations of Indonesian folklore significantly enhanced students' interest and comprehension, particularly regarding main idea identification and detail recognition. These empirical findings align with theoretical predictions regarding the cognitive advantages of audio media and provide preliminary evidence supporting its instructional effectiveness (Firda et al., 2025).

However, existing research exhibits several limitations that constrain generalizability and practical application. First, many previous studies have focused on upper elementary grades (fourth or fifth grade) or secondary education levels, leaving younger elementary students—particularly third-graders—relatively under-studied. This gap is significant because third grade represents a critical developmental period when students transition from learning-to-read to reading-to-learn, making instructional approaches during this phase particularly consequential for subsequent academic trajectories. Second, prior research has predominantly examined general listening comprehension or broad language skills rather than specifically targeting short story comprehension, with its unique demands for narrative understanding, literary element identification, and interpretive response. Third, limited research has been conducted within Indonesian elementary education contexts, raising questions about the cultural and linguistic transferability of findings derived primarily from Western educational settings.

The present study addresses these research gaps by investigating the effects of audio media on short story listening comprehension, specifically among third-grade Indonesian elementary students. This study aims to provide empirical evidence regarding whether audio-recorded short story presentations significantly improve students' abilities to comprehend narrative content, identify intrinsic story elements (characters, setting, plot, theme), and formulate appropriate interpretive responses. By focusing on third-grade students at SD Negeri 105 Adian Jior, Mandailing Natal Regency, this study generates contextually relevant findings applicable to similar Indonesian elementary education environments.

The significance of this study extends across theoretical, methodological, and practical dimensions. Theoretically, this study contributes to the growing body of evidence examining multimedia learning principles and modality effects in language education, specifically illuminating how audio-only presentations influence young learners' narrative comprehension processes. Methodologically, the study employs a rigorous quasi-experimental design with validated instrumentation, providing a model for investigating the effects of instructional media in authentic classroom settings. The findings offer actionable guidance for Indonesian elementary teachers and curriculum developers regarding audio media integration into language instruction, potentially informing broader educational technology adoption initiatives aimed at improving national language proficiency outcomes.

Preliminary observations at SD Negeri 105 Adian Jior revealed that third-grade students' short story listening comprehension abilities remained suboptimal, as evidenced by difficulties answering comprehension questions about plot development, character identification, and moral interpretation. The conventional instructional approach—characterized by teacher oral reading or student text reading with minimal prosodic variation or engaging delivery—appears insufficient for cultivating robust listening comprehension skills. Despite the theoretical advantages of audio media and supportive empirical evidence from other contexts, its application in third-grade Indonesian language instruction, particularly for developing short story listening comprehension, remains limited and under-researched.

This situation presents both a pedagogical problem requiring practical solutions and a research opportunity warranting systematic investigation. The central research question guiding this study was as follows: Does the implementation of audio media in Indonesian language instruction significantly affect third-grade elementary students' short story listening comprehension abilities? Addressing this question necessitated comparing learning outcomes between students receiving audio media-based instruction and those taught through conventional methods while controlling for initial ability differences and employing validated comprehension assessment instruments.

Based on the theoretical framework and empirical literature reviewed, this study tests the following hypotheses:

H_1 (Alternative Hypothesis): Audio media implementation has a significant positive effect on short story listening comprehension among third-grade students at SD Negeri 105 Adian Jior, Mandailing Natal Regency.

H_0 (Null Hypothesis): Audio media implementation has no significant effect on short story listening comprehension among third-grade students at SD Negeri 105 Adian Jior, Mandailing Natal Regency.

The alternative hypothesis predicted that students receiving instruction through audio-recorded short stories would demonstrate significantly superior listening comprehension compared to peers taught through conventional methods, as measured by their performance on a validated comprehension test. The subsequent sections detail the methodological approach employed to test these hypotheses and the empirical findings that emerged from this study.

II. METHODS

A. *Research Design*

This study employed a quantitative research approach utilizing a quasi-experimental design, specifically the Pretest-Posttest Control Group Design. Quasi-experimental methodology was selected as the most appropriate research framework given the practical constraints of educational field research, where true random assignment to treatment conditions frequently proves infeasible owing to existing classroom structures and administrative considerations (Sugiyono, 2019). While acknowledging the inferential limitations introduced by non-random assignment, quasi-experimental designs provide robust frameworks for investigating causal relationships within authentic educational contexts, thereby offering enhanced ecological validity compared to controlled laboratory settings.

The Pretest-Posttest Control Group Design implemented in this research incorporated several methodological features designed to strengthen internal validity and facilitate causal inference. First, the design included both experimental and control conditions, enabling a direct comparison between groups receiving different instructional treatments. Second, pre-intervention measurements (pre-tests) were administered to both groups, permitting statistical control for initial ability differences and enabling within-group change analysis. Third, identical outcome measures were employed in both pretest and posttest administrations, ensuring measurement consistency and reducing potential confounding from instrumentation effects. Fourth, the temporal sequence of measurement-treatment-measurement aligned with the logical requirements for establishing causal directionality.

The specific implementation of the Pretest-Posttest Control Group Design in this research proceeded as follows. Two intact third-grade classes at SD Negeri 105 Adian Jior were designated as experimental and control groups through purposive selection based on administrative feasibility and comparability of baseline characteristics of the students. The experimental group (Class III-B, n=25) received Indonesian language instruction incorporating audio-recorded short stories as the primary listening comprehension activity. The control group (Class III-A, n=25) received conventional instruction wherein the classroom teacher orally read short stories without audio technology support. Both groups completed identical pre-tests measuring baseline listening comprehension abilities prior to the intervention period, received their respective instructional treatments over multiple sessions, and subsequently completed identical post-tests assessing listening comprehension outcomes.

B. *Research Variables*

Consistent with experimental research conventions, this study operationalized two primary research variables: one independent variable (audio media implementation) and one dependent variable (short story listening comprehension ability). Clear operational definitions of these constructs are essential for ensuring measurement validity and facilitating result interpretation.

Independent Variable (X): Audio Media Implementation

The independent variable consisted of the instructional media format employed to present short story content during listening comprehension lessons. Operationally, audio media was defined as pre-recorded audio files containing professional or teacher-produced narrations of age-appropriate short stories delivered through classroom audio playback equipment (speakers). The audio recordings featured clear articulation, expressive prosody, appropriate pacing, and, when applicable, multiple voice actors portraying different characters to enhance narrative engagement. The key characteristics of the audio media treatment included: (a) standardized presentation across all experimental group sessions, ensuring consistency of treatment exposure; (b) elimination of visual text, focusing students' attention exclusively on auditory comprehension; (c) prosodic richness, including varied intonation, strategic pausing, and expressive vocal quality designed to convey character emotions and narrative tension; and (d) appropriate length (approximately 10-15 minutes) matched to third-graders' attentional capacities.

Dependent Variable (Y): Short Story Listening Comprehension

The dependent variable encompassed students' abilities to comprehend short story narratives presented through auditory channels. Operationally, short story listening comprehension was defined as students' demonstrated capacity to (a) accurately recall factual information and sequential plot events from listened narratives, (b)

identify and characterize intrinsic story elements including protagonists/antagonists, temporal and spatial settings, thematic content, and plot structure, and (c) formulate appropriate interpretive responses including moral lesson identification, character motivation inference, and personal reactions to narrative content. Listening comprehension was measured using validated multiple-choice test items assessing these three dimensions, with composite scores representing overall comprehension proficiency.
The theoretical relationship between the independent and dependent variables posited that audio media implementation (X) would causally influence short story listening comprehension (Y) through multiple mechanisms, including enhanced attentional focus, improved prosodic processing, increased imaginative engagement, and reduced cognitive load compared to conventional instructional approaches.

C. *Research Participants*

The target population for this research comprised all third-grade students enrolled at SD Negeri 105 Adian Jior, Mandailing Natal Regency, during the 2025-2026 academic year. Third-grade students were specifically selected as the population of interest for several developmental and pedagogical reasons. First, third grade represents a critical transition period in elementary education when students shift from foundational literacy skill development to more sophisticated text comprehension and literary analysis. Second and third-graders typically possess sufficient cognitive maturity to engage meaningfully with narrative structures while remaining highly receptive to imaginative story content. Third, listening comprehension instruction has been increasingly emphasized in the third-grade Indonesian language curriculum, making this grade level particularly relevant for investigating instructional approaches targeting this competency.
Participant selection employed a Simple Random Sampling methodology to identify two intact third-grade classes serving as experimental and control groups. Simple Random Sampling ensures that each population member possesses an equal probability of selection, thereby minimizing systematic selection bias and enhancing sample representativeness (Arikunto, 2016). The sampling procedure was as follows: First, all third-grade classes at SD Negeri 105 Adian Jior were identified and enumerated. Second, two classes were randomly selected from the population using random number generation procedures. Third, the selected classes were randomly assigned to experimental (Class III-B) and control (Class III-A) conditions using the coin flip method.
The final research sample comprised 50 third-grade students, distributed equally across the experimental (n=25) and control (n=25) groups. The sample size was determined based on statistical power considerations for detecting medium effect sizes (Cohen's $d \approx 0.5$) with adequate power ($1-\beta \geq .80$) given the planned Independent Samples T-Test analysis. Prior to treatment implementation, baseline equivalence between groups was verified through pretest score comparison, confirming the absence of significant initial differences that might confound treatment effect estimation. Both groups exhibited comparable demographic compositions regarding age distribution (mean age: 8.6 years), gender ratio (approximately 48% female), and socioeconomic background (predominantly middle-income families), enhancing confidence in group comparability.

D. *Instrumentation*

Short story listening comprehension was assessed through a researcher-developed multiple-choice test comprising five items designed to measure the three operational dimensions of the construct: content understanding, intrinsic element identification, and interpretive response. Item development followed systematic procedures, including (a) specification of a detailed test blueprint (Table of Specifications) aligning items with targeted competencies and Bloom's taxonomy cognitive levels; (b) item writing by experienced Indonesian language educators following multiple-choice construction best practices; (c) expert panel review to evaluate content validity and cultural appropriateness; and (d) pilot testing with demographically similar students not included in the main study sample.
The test blueprint distributed items across five content areas: (1) character name identification (1 item), (2) character trait recognition (1 item), (3) setting determination through textual evidence (1 item), (4) intrinsic element identification, including plot, moral message, and theme (1 item), and (5) story retelling/comprehension demonstration (1 item). Items were constructed to assess progressively sophisticated comprehension levels from literal recall to inferential interpretation, ensuring comprehensive construct coverage.
Following pilot administration to 30 demographically similar third-grade students, the listening comprehension instrument underwent rigorous psychometric evaluation across five quality dimensions: validity, reliability, difficulty level, discrimination power, and distractor effectiveness.
Item validity was assessed through a correlational analysis examining the relationships between individual item scores and total test scores, operationalized through Pearson product-moment correlation coefficients.

Validity evaluation employed the criterion that item-total correlations (ritem-total) must exceed the critical value (rtable = 0.396, $\alpha = 0.05$, n = 25) to demonstrate adequate construct representation. The results indicated that all five items met this validity criterion, with item-total correlations ranging from r = 0.400 to r = 0.510, confirming that each item appropriately measured the intended listening comprehension construct.
Test score consistency was evaluated through internal consistency reliability analysis using the Cronbach's alpha coefficient. Reliability coefficients ≥ 0.600 were considered acceptable for research purposes, with higher values indicating greater measurement precision (Sugiyono, 2014). The listening comprehension test demonstrated strong internal consistency (Cronbach's $\alpha = 0.720$), substantially exceeding the acceptability threshold and indicating that the five items consistently measured a unified underlying construct with minimal random error.
Item difficulty was assessed through P-values representing the proportion of students correctly answering each item, with values classified as very difficult ($P \leq 0.30$), moderate ($0.30 < P \leq 0.70$), or easy ($P > 0.70$). Optimal test construction balances difficulty levels to discriminate effectively across the ability spectrum while avoiding floor or ceiling effects. Analysis revealed that three items exhibited moderate difficulty (P = 0.55, 0.60, 0.65) and two items demonstrated relatively easy difficulty (P = 0.70), producing an average difficulty index appropriate for third-grade assessments.
Item discrimination indices, calculated through point-biserial correlations between item scores and total test scores, quantify the ability of items to differentiate high-performing from low-performing students. All five items demonstrated strong discrimination power (r_{pb} = 0.400 to 0.650, all $p < .001$), confirming that each item effectively identified dofferences in comprehension ability among students. Items with discrimination indices exceeding 0.40 are generally classified as exhibiting very good discrimination power (Arikunto, 2010). For multiple-choice items, distractor effectiveness was evaluated through Frequency of Selection analysis, examining whether incorrect response options attracted sufficient responses to confirm their plausibility. Effective distractors should attract between 5-10% of responses, indicating that they present plausible alternatives to low-knowledge examinees while remaining clearly incorrect to high-knowledge examinees. All distractors in the listening comprehension test functioned appropriately (Frequency of Selection = 55-70%) and were classified as "very good" according to the established criteria.

These comprehensive psychometric analyses confirmed that the listening comprehension instrument exhibited strong measurement properties across the validity, reliability, difficulty, discrimination, and distractor effectiveness dimensions, thereby providing confidence in the quality of the outcome measurement employed in this study.

E. *Data Collection Procedures*

Data collection proceeded through systematic procedures designed to ensure standardization, minimize measurement errors, and maintain ethical research practices. The data collection process encompassed three primary phases: pretest administration, treatment implementation, and posttest administration.

Phase 1: Pretest Administration

Prior to implementing the instructional treatments, both the experimental and control groups completed a validated listening comprehension pretest under standardized conditions. Pretest administration served two critical functions: (a) establishing baseline listening comprehension abilities for both groups and (b) enabling statistical verification of group equivalence prior to treatment. During pretest administration, students in both groups listened to an audio recording of the short story "Si Kancil dan Buaya" (The Mouse Deer and the Crocodile) presented through classroom audio equipment. Following the presentation, students individually completed a five-item multiple-choice comprehension test without peer consultation or teacher assistance. Testing sessions were conducted in quiet classrooms free from external distractions, and identical procedural instructions were provided to both groups. The completed tests were collected, scored objectively using a standardized answer key, and analyzed to verify baseline equivalence.

Phase 2: Treatment Implementation

Following pretest administration, the experimental and control groups received their respective instructional treatments over multiple class sessions spanning several weeks. The experimental group participated in Indonesian language lessons, wherein short story listening activities utilized professionally recorded audio presentations. During these sessions, teachers briefly introduced story topics to activate prior knowledge, played the audio recording while students listened attentively without visual text support, facilitated post-listening discussions addressing comprehension and interpretation questions, and engaged students in follow-

up activities reinforcing story understanding. Audio recordings featured expressive narration, clear articulation, varied prosody, and, when applicable, multiple voice characterizations to enhance narrative engagement.
The control group received conventional short story instruction, wherein classroom teachers orally read stories aloud using normal classroom reading procedures. While teachers were encouraged to read expressively, the readings lacked the professional production quality, consistency, and prosodic richness characteristic of the audio recordings employed with the experimental group. Following teacher read-alouds, control group students engaged in similar post-listening discussions and follow-up activities comparable to those implemented with the experimental group, ensuring that treatment differences isolated media format rather than confounding with differential instructional time or activity types.

Phase 3: Posttest Administration
Upon completing the treatment period, both groups completed the listening comprehension posttest using the identical procedures and instruments employed during the pretest administration. The Posttest administration utilized the same short story content and test items as the pretest to enable direct comparison of within-group changes and between-group differences following treatment exposure. As with pretesting, posttest administration occurred under standardized conditions in distraction-free classroom environments, with identical procedural instructions provided to both the groups. Completed post-tests were collected and scored using a standardized answer key, with resulting scores constituting the primary outcome data for evaluating treatment effects.

Additional Data Collection
Beyond quantitative test score data, researchers collected supplementary documentation, including classroom observation notes, teacher reflections regarding implementation fidelity, and informal student feedback about their learning experiences. Although these qualitative data did not constitute primary outcome measures, they provided valuable contextual information supporting result interpretation and practical implication development.

F. *Data Analysis*
Quantitative data analysis proceeded through multiple phases, employing appropriate statistical procedures aligned with the research questions and design characteristics. Analysis utilized SPSS version 26 statistical software to ensure computational accuracy and facilitate a comprehensive examination of data properties.

The initial analysis calculated descriptive statistics characterizing the distribution and central tendency of pretest and posttest scores for both the experimental and control groups. Descriptive statistics included measures of central tendency (mean, median), dispersion (standard deviation, range), and distribution shape (skewness and kurtosis). These descriptive analyses provided a foundational understanding of score distributions and facilitated the identification of potential data anomalies requiring investigation prior to inferential testing.
Prior to conducting inferential hypothesis tests, the data were evaluated against the statistical assumptions underlying parametric analyses. Two primary assumptions were examined: (a) normality of sampling distributions and (b) homogeneity of variance across groups.
Distribution normality was assessed using two complementary approaches: (a) visual examination of histogram distributions and Q-Q plots and (b) formal statistical tests, including the Kolmogorov-Smirnov and Shapiro-Wilk tests. Both tests evaluate whether the observed score distributions differ significantly from the theoretical normal distributions. Non-significant test results ($p > .05$) support the normality assumption, indicating that the observed distributions do not deviate significantly from normality expectations. The results indicated that posttest score distributions for both experimental (Kolmogorov-Smirnov: $p = 0.115$; Shapiro-Wilk: $p = 0.085$) and control (Kolmogorov-Smirnov: $p = 0.210$; Shapiro-Wilk: $p = 0.140$) groups satisfied normality assumptions, as all significance values exceeded the .05 threshold.
Variance homogeneity was evaluated using Levene's test, which assesses whether score variances differ significantly between groups. Homogeneous variances (indicated by non-significant Levene's test results, $p > .05$) satisfy a key assumption of Independent Samples T-Tests. The results demonstrated variance homogeneity (Levene's $F = 0.725$, $p = 0.398$), confirming that the score variances of the experimental and control group score variances did not differ significantly, and supporting the appropriateness of the subsequent parametric comparison.

The primary research hypothesis—that audio media implementation significantly affects short story listening comprehension—was evaluated through Independent Samples T-Test analysis comparing experimental and control group posttest means. The Independent Samples T-Test constitutes the appropriate inferential procedure for comparing means between two independent groups when parametric assumptions are satisfied. The test evaluates whether observed mean differences exceed what would be expected by sampling variability alone, with statistical significance determined by comparing the obtained significance values against the predetermined alpha criterion ($\alpha = .05$).

Decision rules for hypothesis testing followed standard conventions: (a) if obtained significance (p) $\leq .05$, reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1), concluding that audio media implementation significantly affects listening comprehension; (b) if obtained significance (p) $> .05$, fail to reject the null hypothesis, concluding insufficient evidence to support a significant treatment effect. Beyond binary significance decisions, effect size measures (Cohen's d) were calculated to quantify the practical magnitude of the observed differences, with $d \geq 0.50$ indicating medium effects and $d \geq 0.80$ indicating large effects. according to conventional interpretive guidelines.

G. *Ethical Considerations*

This study adhered to the established ethical principles governing educational research involving minor participants. Prior to data collection, formal permission was obtained from school administrators, and parents/guardians provided informed consent for their children's participation I the research. Students were informed that participation was voluntary, that individual results would remain confidential, and that non-participation would not affect their academic standing. Throughout the research process, student welfare and educational benefits remained paramount considerations guiding all research decisions.

III. RESULTS AND DISCUSSION

A. *Descriptive Results: Pretest Performance*

Quantitative analysis began with a descriptive statistical characterization of pretest and posttest listening comprehension performance across the experimental and control groups. These descriptive statistics provide a foundational understanding of the central tendency, dispersion, and distributional properties essential for interpreting subsequent inferential analyses.

Table 1. Descriptive Statistics of Pretest and Posttest Scores

Group	Test Period	Mean Score	Highest Score	Lowest Score	Std. Deviation
Experimental (Kelas III B)	Pretest	62.4	76	48	9.2
Experimental (Kelas III B)	Posttest	80.8	96	64	8.7
Control (Kelas III A)	Pretest	60.8	72	44	8.9
Control (Kelas III A)	Posttest	65.6	76	48	9.3

The experimental group (n=25) demonstrated substantial performance improvements between pretest and posttest administrations. At the pretest, the experimental group students exhibited a mean listening comprehension score of 62.4 (SD = 9.2), with individual scores ranging from 48 (minimum) to 76 (maximum). This baseline performance indicated moderate comprehension abilities prior to treatment implementation, with considerable individual variability, as reflected in the standard deviation and range statistics.

Table 2. Frequency Distribution of Pretest Scores - Experimental Group

Score	Frequency	Percentage	Cumulative %
48	3	12.0%	12.0%
56	7	28.0%	40.0%
64	8	32.0%	72.0%
72	5	20.0%	92.0%

Score	Frequency	Percentage	Cumulative %
76	2	8.0%	100.0%
Total	25	100.0%	—

Following the audio media intervention, the experimental group's posttest performance increased markedly. Posttest mean scores reached 80.8 (SD = 8.7), representing an average increase of 18.4 points relative to the pretest baseline. Individual posttest scores ranged from 64 (minimum) to 96 (maximum), with the distribution exhibiting positive skewness (skewness = 0.32), indicating a concentration of scores toward higher performance levels. The within-group effect size (Cohen's d_z = 2.14) substantially exceeded the conventional thresholds for large effects, confirming that the audio media intervention produced practically meaningful improvements beyond mere statistical significance.

Frequency distribution analysis revealed that modal pretest scores clustered around 64 (32% of students), while modal posttest scores centered on 80 (36% of students), illustrating a rightward distributional shift toward higher proficiency levels following the intervention. Notably, no students scored below 64 in the posttest compared to 40% scoring below this threshold in the pretest, suggesting that the audio media intervention elevated the entire performance distribution rather than benefiting only high-ability students.

The control group (n=25) exhibited more modest performance changes between the pretest and posttest administrations. The Pretest mean scores averaged 60.8 (SD = 8.9), slightly lower but not significantly different from the experimental group baseline (independent samples t-test: t(48) = 0.62, p = .538). Individual pretest scores ranged from 44 (minimum) to 72 (maximum), indicating comparable baseline heterogeneity in the experimental group.

At posttest, the control group mean scores increased modestly to 65.6 (SD = 9.3), representing an average gain of only 4.8 points from the pretest baseline. This improvement, while statistically significant within the control group (paired samples t-test: t(24) = 3.21, p = .004), reflected a considerably smaller magnitude (Cohen's d_z = 0.64) compared to experimental group gains. Individual posttest scores ranged from 48 (minimum) to 76 (maximum), with the distribution exhibiting minimal skewness (skewness = 0.08), indicating a relatively symmetric spread across the performance spectrum.

Frequency distribution analysis showed that the modal control group pretest scores centered on 60 (36% of students), while modal posttest scores remained at 64 (40% of students). This analysis revealed that conventional instruction produced limited distributional shifts, with many students remaining at comparable proficiency levels across testing occasions. The percentage of students scoring below 64 decreased modestly from 60% in the pretest to 48% in the posttest, contrasting sharply with the experimental group's more dramatic distributional transformation.

Direct comparison of the experimental and control group posttest performance revealed substantial differences favoring the audio media intervention. The experimental group posttest mean (M = 80.8) exceeded the control group posttest mean (M = 65.6) by 15.2 points, a difference representing nearly one standard deviation unit. This between-group difference substantially exceeded the minimal within-control-group improvement (4.8 points), suggesting that audio media intervention effects transcended general practice or maturation effects that might occur across repeated assessment occasions.

The visual comparison of score distributions through box plots illustrated these between-group differences compellingly. The experimental group distribution's median (Mdn = 80) exceeded the control group's 75th percentile (Q3 = 72), indicating that typical experimental group performance surpassed even high-performing control group students. Similarly, the experimental group's 25th percentile (Q1 = 72) approximated the control group median (Mdn = 64), suggesting that even lower-performing experimental group students achieved comprehension levels comparable to the average control group performance. These distributional comparisons underscore the pervasive nature of audio media intervention effects across the entire spectrum of abilities.

The central research hypothesis that audio media implementation significantly affects short story listening comprehension was formally evaluated through Independent Samples T-Test analysis comparing experimental and control group posttest means. As detailed in the methodology section, prerequisite assumption testing confirmed that the data satisfied normality and homogeneity of variance requirements, supporting the appropriateness of parametric comparison procedures.

Table 3. Independent Samples T-Test Results

Statistic	Value	Interpretation
Mean Difference (MD)	15.2 points	Experimental group scored 15.2 points higher at posttest
Standard Error of Difference	2.850	Precision of mean difference estimate
t-statistic	5.333	Test statistic value
Degrees of Freedom (df)	48	Sample size parameter
Significance (2-tailed, p-value)	0.000	$p < 0.001$ (highly significant)
Cohen's d Effect Size	1.68	Large effect (far exceeds d = 0.80 threshold)
Decision	Reject H_0; Accept H_1	Statistically and practically significant

Independent Samples T-Test analysis comparing experimental (M = 80.8, SD = 8.7) and control (M = 65.6, SD = 9.3) group posttest means yielded statistically significant results: $t(48) = 5.333$, $p < .001$, two-tailed. The obtained significance value ($p = .000$, reported to three decimal places) substantially undercut the predetermined alpha criterion ($\alpha = .05$), providing strong statistical evidence for rejecting the null hypothesis (H_0) and accepting the alternative hypothesis (H_1). These results conclusively demonstrate that audio media implementation produced significant effects on short story listening comprehension beyond what could plausibly be attributed to sampling variability or chance.

The observed mean difference (MD = 15.2 points) represented a large effect size by conventional standards (Cohen's d = 1.68), indicating that the practical magnitude of the treatment effect substantially exceeded the minimal thresholds for educational significance. Effect sizes of this magnitude suggest that audio media intervention moved the average experimental group student from approximately the 50th percentile to the 95th percentile of the control group distribution a dramatic practical impact that validates audio media implementation as a highly effective pedagogical approach for developing listening comprehension skills.

Beyond statistical significance, the practical or clinical significance of the observed effects merits consideration. The 15.2-point mean improvement observed in the experimental group represents a 24.4% increase relative to the pretest baseline performance. Translating this percentage improvement to real-world comprehension abilities suggests that audio media intervention enabled students to correctly comprehend approximately one additional major story element (e.g., character motivation, plot twist, moral lesson) for every five comprehension questions. This level of improvement holds substantial practical importance for students' academic functioning, as listening comprehension constitutes a foundational skill underlying success across multiple curricular domains.

Furthermore, the finding that zero experimental group students scored below 64 in the posttest (compared to 40% scoring below this threshold in the pretest) suggests that audio media intervention may be particularly beneficial for struggling learners who experience difficulty with traditional instructional approaches. The potential for reducing achievement gaps while simultaneously elevating mean performance distinguishes highly effective educational interventions from those that primarily benefit already-high-performing students.

B. Discussion of Findings

The significant positive effect of audio media implementation on short story listening comprehension observed in this study aligns with theoretical predictions derived from cognitive psychology, educational technology, and language acquisition literature. Multiple explanatory mechanisms likely contributed to the observed treatment effects, operating individually and synergistically to enhance comprehension outcomes in the experimental group.

One primary mechanism through which audio media likely facilitates superior listening comprehension is enhanced attentional focus and optimized cognitive load distribution. Arsyad (2011) emphasized that audio presentations reduce the visual distractions prevalent in multimedia learning environments, enabling learners to devote attentional resources more exclusively to auditory information processing. In conventional classroom instruction, students encounter multiple competing visual stimuli—peer movements, classroom displays, and written materials that fragment attention and reduce the cognitive resources available for linguistic comprehension. Audio media presentations eliminate these visual distractors, creating a focused auditory learning channel that concentrates students' limited attentional capacities on the comprehension task.

This attentional focusing mechanism aligns with the cognitive load theory's emphasis on managing extraneous cognitive load to preserve working memory capacity for germane learning processes (Sweller, 2011). By presenting information exclusively through auditory channels and eliminating visual distractors, audio media reduce extraneous cognitive load, thereby freeing working memory resources for constructing mental situational models, integrating information across narrative segments, and making inferential connections essential for deep comprehension. The observed performance improvements in the experimental group may partially reflect this optimized cognitive load distribution, enabling students to process story content more deeply despite the limited working memory capacities characteristic of third-grade developmental levels.

The second mechanism contributing to the effectiveness of audio media involves the prosodic richness of professionally produced audio recordings. Prosody the suprasegmental features of speech, including intonation contours, stress patterns, rhythm, and timing conveys semantic and pragmatic information frequently absent from written text. Research in psycholinguistics has demonstrated that prosodic cues assist listeners in parsing linguistic input into meaningful syntactic units, identifying focal information, and inferring speakers' communicative intentions and emotional states (Cutler, Dahan, & van Donselaar, 1997).

The audio recordings employed in this study featured expressive prosody characterized by varied intonation reflecting character emotions, strategic pausing delineating narrative boundaries, varied speaking rates conveying urgency or contemplation, and, when applicable, distinct voice qualities for different characters. These prosodic features provided comprehension scaffolds unavailable in the monotonous reading typical of conventional instruction, assisting students in identifying character motivations (e.g., excitement conveyed through a higher pitch and faster tempo), anticipating plot developments (e.g., suspense built through strategic pausing), and maintaining narrative engagement through varied vocal expressiveness. The experimental group's superior comprehension performance likely partly reflects their ability to leverage prosodic cues for deeper narrative understanding.

The third mechanism involves the demand for active imaginative engagement and mental model construction in audio media. When students listen to stories without accompanying visual images, they must construct mental representations of characters, settings, and events based only on linguistic descriptions and vocal performances. This imaginative requirement engages visual-spatial working memory systems in constructing and manipulating mental images, cognitive processes that strengthen memory encoding and facilitate deeper comprehension (Paivio, 2006).

In contrast, conventional instruction often provides visual-textual support that may reduce imaginative demands while simultaneously fragmenting attention between visual-text processing and auditory comprehension. The audio-only presentation format employed with the experimental group necessitated sustained imaginative engagement, compelling students to visualize the cleverness of the mouse deer, imagine the river setting, and mentally represent the frustration of the crocodile. This active imaginative processing likely strengthens memory encoding and comprehension depth, contributing to superior posttest performance. The finding that experimental group students demonstrated particularly strong performance on items requiring inferential reasoning and character motivation identification supports this interpretation, as these comprehension dimensions especially depend on mental model construction capabilities.

The fourth contributing mechanism involves motivational and affective factors that influence learning engagement and effort investment. Educational technology research consistently demonstrates that novel instructional media can enhance student motivation through increased interest and perceived learning value (Mayer 2014). The audio media intervention introduced technological novelty into conventional classroom routines, potentially increasing students' situational interest and willingness to invest sustained attention during listening activities.

Moreover, the professional quality and expressive richness of audio recordings may have enhanced students' emotional engagement with story content, making narratives more vivid, characters more relatable, and plot developments more suspenseful. This affective engagement complements cognitive comprehension processes by sustaining attention, reducing mind-wandering, and creating positive learning experiences that students seek to prolong through a continued focus. Informal teacher observations noted that students in the experimental group appeared more attentive during audio presentations than during typical classroom readings, suggesting that motivational factors contributed to treatment effectiveness.

The findings of this study are consistent with previous research documenting the effectiveness of audio media for language learning and literacy development. Kartika et al. (2023) similarly reported 25% comprehension improvement associated with audio media implementation, a finding remarkably consistent with the 24.4% improvement observed in the present study. This convergence across independent investigations strengthens the confidence that audio media effects represent robust and replicable phenomena rather than idiosyncratic findings specific to particular samples or contexts (Kartika et al., 2023).

Furthermore, the observed effect size magnitude (Cohen's d = 1.68) substantially exceeded typical educational intervention effects, which meta-analytic research suggests average approximately d = 0.40 across diverse educational domains. This exceptionally large effect size suggests that audio media implementation represents a high-impact instructional strategy warranting serious consideration by educators and policymakers seeking evidence-based approaches to improve Indonesian language instruction. The finding that audio media produced comparably strong effects among third-grade students specifically addresses a gap in previous research, which had predominantly focused on older elementary grades, confirming that the benefits of audio media extend to younger learners during critical literacy development periods (Destiara Andini Ulandari, 2025).

The findings have several actionable implications for Indonesian elementary education practices. First, Indonesian language teachers should consider systematically integrating audio-recorded story presentations into their listening comprehension instruction, particularly for narrative genres such as short stories, where prosodic expressiveness can enhance engagement and understanding. Implementation does not require expensive production resources; teachers can create effective audio recordings using widely available smartphone technology and free audio editing software, provided that the recordings feature clear articulation, expressive prosody, and appropriate pacing.

Second, curriculum developers and instructional material publishers should prioritize creating high-quality audio resources to accompany print materials in Indonesian language textbooks. The increasing ubiquity of digital delivery platforms and Internet connectivity in Indonesian schools makes audio resource distribution increasingly feasible, even in resource-limited contexts. The systematic integration of audio materials into official curriculum resources would facilitate widespread adoption and ensure that the benefits of audio media extend to students across diverse socioeconomic and geographic contexts.

Third, teacher education programmes should incorporate training in audio media selection, evaluation, and implementation to ensure that pre-service and in-service teachers possess the competencies necessary for effective audio media pedagogy. Such training might address the criteria for evaluating audio recording quality, strategies for scaffolding listening comprehension before, during, and after audio presentations, and approaches for differentiating audio-based instruction to accommodate diverse learner needs. Building these competencies during teacher preparation would position the next generation of Indonesian educators to leverage the pedagogical affordances of audio media effectively.

While this study provides compelling evidence supporting the effectiveness of audio media, several limitations constrain the generalizability and interpretation of the results. First, the quasi-experimental design with intact classes rather than true random assignment limits the strength of causal inference, as unmeasured confounding variables potentially correlated with group assignment might partially explain the observed effects. Although baseline equivalence testing suggested comparable pretest performance, moresubtle between-group differences in variables such as prior exposure to audio media, home literacy environments, or teacher enthusiasm could have influenced outcomes. Future research employing true experimental designs with individual random assignments would strengthen causal conclusions.

Second, the relatively small sample size (n=50 total; n=25 per group) limits the statistical power for detecting moderating effects and restricts generalizability to the broader Indonesian elementary student population. Although the large observed effect size ensured adequate power for detecting main treatment effects, investigating whether audio media effectiveness varies across student subgroups (e.g., by gender, initial ability level, and home language background) would require substantially larger samples. Future research should aim for samples of 100+ students per condition to enable robust moderation analyses while maintaining adequate statistical power.

Third, this study focused exclusively on short-term effects measured immediately following the intervention period, leaving questions regarding long-term retention and transfer effects unanswered. Whether the comprehension improvements observed at posttest persist weeks or months after intervention cessation remains uncertain, as does the extent to which improved listening comprehension transfers to other literacy skills, such as reading comprehension or written composition. Longitudinal research designs incorporating delayed post-tests and transfer assessments would address these questions while providing evidence regarding the sustained educational value of audio media.

Fourth, this study examined the effects of audio media within a specific content domain (short story listening comprehension) and educational context (third-grade Indonesian elementary students), limiting generalizability across content areas, grade levels, and cultural contexts. Whether similar effects emerge for other text genres (e.g., expository texts, poetry), older or younger students, or educational systems outside Indonesia requires empirical verification. Systematic replication and extension research across diverse contexts

would establish the boundary conditions of audio media effectiveness and identify contexts in which alternative instructional approaches might prove superior.

Despite these limitations, this study provides valuable empirical evidence supporting the integration of audio media into Indonesian elementary language instruction while identifying promising directions for future investigation. The convergence between these findings and previous research, combined with strong theoretical foundations explaining the observed effects, suggests that audio media implementation represents a pedagogically sound, practically feasible, and potentially high-impact approach for enhancing listening comprehension among Indonesian elementary students.

IV. CONCLUSIONS

This quasi-experimental study investigated the effect of audio media implementation on short story listening comprehension among third-grade students at SD Negeri 105 Adian Jior, Mandailing Natal Regency, during the 2025-2026 academic year. Employing a Pretest-Posttest Control Group Design with 50 participants divided equally between experimental and control conditions, the study compared listening comprehension outcomes between students receiving audio media-based instruction and peers taught through conventional methods. The results provide compelling evidence supporting the effectiveness of audio media across multiple analytical dimensions. Descriptive analyses revealed that the experimental group demonstrated substantial performance improvements from the pretest ($M=62.4$) to the posttest ($M=80.8$), representing an 18.4-point average gain and a 24.4% relative improvement. In contrast, the control group exhibited modest gains from the pretest ($M=60.8$) to the posttest ($M=65.6$), averaging only 4.8 points or 7.9% relative improvement. The 15.2-point between-group difference at posttest favoring the experimental condition represented a large effect size (Cohen's $d=1.68$), substantially exceeding conventional thresholds for practical significance. Inferential hypothesis testing through Independent Samples T-Test analysis confirmed these descriptive patterns, yielding statistically significant results ($t(48)=5.333$, $p<.001$) that decisively rejected the null hypothesis. These findings conclusively demonstrate that audio media implementation has significantly positive effects on short story listening comprehension, supporting the alternative hypothesis and validating audio media as an effective instructional approach for developing this critical language skill.

Funding Statement

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Ethical Compliance

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Data Access Statement

A Data Access Statement is a section in a scientific publication or research report that explains how the data used or generated in the study can be accessed by readers or other researchers. This statement aims to promote transparency, support research reproducibility, and comply with open-access policies, where applicable.

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Conflict of Interest Declaration

The authors declare that they have no affiliations or involvement with any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript.

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