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A COMPARATIVE STUDY BETWEEN USING VIDEO AND AUDITORY AS MULTIMEDIA-BASED LEARNING STRATEGIES IN STUDENTS' LISTENING COMPREHENSION AT ELEVENTH GRADE IN SMAN 2 KOTA SERANG
(A True-Experimental Research)

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Abstract

This study explores the comparative efficacy of video-based and audio-based strategies in enhancing listening comprehension among eleventh-grade students at SMAN 2 Kota Serang. Through a true experimental design, data were gathered from two groups, one exposed to video-based instruction and the other to audio-based instruction. Analysis reveals a significant difference in listening comprehension performance, with the video-based approach yielding superior outcomes. These findings underscore the importance of multimedia integration, particularly leveraging visual aids, in optimizing students' comprehension skills. Educational practitioners can use these insights to tailor instructional methods, fostering more effective learning environments that cater to diverse student needs. This research contributes to understanding the role of multimedia strategies in language education, offering valuable implications for pedagogical practices aimed at enhancing listening comprehension proficiency.

Keywords: *multimedia-based learning strategies; listening comprehension; eleventh grade; video; audio.*

1. Introduction

The capacity for comprehending spoken language, known as listening comprehension, holds significant importance in both language learning and and academic success. It serves as a cornerstone for effective communication, enabling learners to engage with native speakers and glean information from various contexts [1]. Furthermore, proficiency in listening comprehension is indispensable for succeeding in academic pursuits, as it forms the basis for acquiring knowledge in lectures, classroom discussions, and presentations. Consequently, enhancing students' listening comprehension skills is imperative within educational settings.

Multimedia-based learning strategies have emerged as promising tools for bolstering listening comprehension proficiency. By incorporating diverse multimedia materials such as videos, audio recordings, and interactive activities, educators can create dynamic learning environments conducive to fostering comprehension and retention of spoken language. Previous research underscores the efficacy of

multimedia-based approaches, demonstrating their capacity to yield superior learning outcomes compared to traditional text-based methods [2]. For instance, studies have shown significant improvements in students' listening abilities following exposure to multimedia resources, suggesting their potential to enhance comprehension levels.

Despite the benefits offered by multimedia-based strategies, challenges persist in mastering listening comprehension [3]. Students encounter obstacles ranging from unfamiliar vocabulary and colloquialisms to cognitive and neurological impediments. Moreover, factors such as accents, speech rate, and background noise further complicate the listening process. Recognizing and addressing these challenges are essential steps in facilitating students' progress in listening comprehension.

Existing literature provides valuable insights into the difficulties encountered by learners and the efficacy of multimedia interventions in mitigating these challenges. Studies by Assaf [4], Aldera [5], Alfadley [6], and Namaziandost, Nasri, and Akbari [7] shed light on various obstacles faced by EFL learners and underscore the role of multimedia in enhancing comprehension. However, while research has explored the effectiveness of video and auditory strategies predominantly among university students and adults, there exists a notable gap concerning their application among second-grade high school students.

This study aims to bridge this gap by investigating the effectiveness of video and auditory strategies in enhancing listening comprehension among eleventh-grade students. By focusing on this pivotal stage in students' development, characterized by heightened social interactions and cognitive maturation, the research seeks to elucidate optimal pedagogical approaches tailored to this demographic. Furthermore, given the transition towards student-centered learning paradigms, exploring diverse learning strategies such as video and auditory is imperative for fostering active engagement and self-directed learning among students.

While challenges such as varying learning styles and attention spans may arise, the study endeavors to address these obstacles through targeted interventions and training. Employing a true-experimental research design, the study aims to provide empirical evidence regarding the comparative effectiveness of video and auditory strategies in improving listening comprehension. By elucidating the efficacy of these strategies, the research contributes to the broader discourse on optimizing language instruction and facilitating students' linguistic development.

This study sets out to achieve several objectives aimed at advancing our understanding of how different multimedia-based strategies impact listening comprehension among eleventh-grade students. Firstly, the research endeavors to discern the disparities between students utilizing video-based strategies and those employing auditory-based strategies concerning their listening comprehension performance. Secondly, it seeks to quantify the extent to which both video-based and

auditory-based approaches contribute to the enhancement of students' listening comprehension skills. Lastly, the study specifically targets the eleventh-grade cohort of SMAN 2 Kota Serang, aiming to delineate the specific contributions of video-based and audio-based strategies within this educational context. By addressing these objectives, the research aims to offer insights that can inform instructional practices tailored to the unique needs and developmental stage of high school students, ultimately contributing to the advancement of language education.

2. Theoretical Review

2.1 Listening comprehension

Listening comprehension holds a pivotal position in language learning and communication. It is not only a fundamental skill for language acquisition but also a prerequisite for effective communication in various social and academic settings [8]. This theoretical review explores the multifaceted nature of listening comprehension, encompassing its definition, advantages, factors influencing it, assessment methods, and teaching strategies to enhance it.

a. Definition of Listening Comprehension

Listening comprehension refers to the ability to understand spoken language accurately. It involves several cognitive processes, including hearing, understanding, and interpreting verbal messages. Listening comprehension is a dynamic process influenced by various factors such as attention, memory, and critical thinking skills [9]. It plays a crucial role in language learning, facilitating effective communication and interaction in educational, social, and professional contexts.

b. Advantages of Learning Listening Comprehension

Learning listening comprehension offers numerous advantages for language learners. It enhances academic performance by enabling students to comprehend and retain information from lectures and audio materials effectively. Additionally, it aids in language acquisition, particularly for learners acquiring a second language, by improving their ability to understand accents, intonation, and cultural nuances [10]. Moreover, listening comprehension fosters critical thinking, memory, and concentration skills, contributing to overall cognitive development.

c. Factors Affecting Listening Comprehension

Several factors influence individuals' listening comprehension abilities, including background knowledge, vocabulary, cognitive factors such as attention and memory, listening context, and technology [11]. Understanding these factors is essential for educators to design effective listening activities tailored to learners' needs and proficiency levels.

d. Listening Assessment

Assessing listening comprehension poses unique challenges due to its indirect nature and multifaceted skill components. Common assessment methods include multiple-choice tests, note-taking exercises, dictation, role-plays, and information-gap activities. Each method targets specific listening skills, providing valuable insights into students' proficiency levels and areas for improvement [12].

e. Teaching Strategies for Improving Listening Comprehension

Various teaching strategies can enhance students' listening comprehension skills, including video-based learning, auditory-based learning, pre-listening activities, and post-listening activities [13]. These strategies leverage multimedia resources, active engagement, and scaffolding techniques to provide meaningful listening input and foster skill development.

Listening comprehension is a fundamental skill in language learning, crucial for academic success and effective communication. Understanding its definition, advantages, influencing factors, assessment methods, and teaching strategies is essential for educators to support students' skill development. Future research should focus on exploring innovative approaches to address challenges in assessing and improving listening comprehension, considering advancements in technology and pedagogical theories.

2.2 Multimedia-Based Learning Strategies

Multimedia-based learning strategies are increasingly recognized in educational research for their potential to enhance learning outcomes by integrating various forms of media, including text, images, audio, and video. These strategies are grounded in theories such as the dual-channel theory, which suggests separate channels for processing visual and auditory information [14]. In the context of 11th-grade high school students, who are exposed to more complex subjects, multimedia-based learning can play a crucial role in facilitating comprehension, engagement, and overall learning experience. This theoretical review explores multimedia-based learning strategies, focusing on video and auditory strategies, their definitions, advantages, disadvantages, and implications for 11th-grade students' listening comprehension.

a. Video Strategy

Video strategy involves the use of audiovisual recordings depicting real-life events, processes, or situations to facilitate learning. It leverages visual and auditory cues to convey information [15]. Here are some advantages of video strategy:

1) Engagement: Videos offer novel experiences, simulations, and virtual tours, fostering curiosity and interest among students.

2) Visualization: They enable observation and understanding of complex phenomena, making abstract concepts more tangible and comprehensible.
3) Temporal Analysis: Videos capture changes over time, aiding in the analysis of dynamic processes and phenomena.
4) Immersion: They immerse students in various situations, enhancing empathy, understanding, and appreciation of diverse perspectives.
5) Real-life Examples: Videos provide tangible case studies, promoting critical thinking and problem-solving skills through discussions and debates [16].

In the other hand, video strategy has some disadvantages:

1) Equipment Requirements: Video-based learning necessitates devices with stable internet connections and technical capabilities, posing accessibility challenges for some students.
2) Editing Complexity: Creating and editing educational videos require expertise, time, and resources, limiting instructors' flexibility and adaptability.
3) Lack of Control: Instructors have limited control over students' engagement and participation, as learners can pause or skip videos.
4) Individualistic Nature: Video-based learning lacks the social interaction and collaboration of traditional classrooms, potentially leading to feelings of isolation.
5) Learning Style Suitability: It may not cater to all learners' preferences and learning styles, particularly those who require alternative methods of instruction [17].

b. Audio Strategy

Auditory strategy involves learning primarily through listening, relying on auditory cues for information acquisition, processing, and retention [18]. Here are some advantages of audio strategy:

1) Comprehension: Auditory learning enhances comprehension by allowing students to focus on the meaning of content without visual distractions.
2) Flexibility and Accessibility: It provides flexible learning options accessible anytime, anywhere, accommodating diverse learning styles and preferences.
3) Active Listening Skills: Engaging in auditory learning promotes active listening skills crucial for effective communication and language development [19].

In the other hand, audio strategy also has some disadvantages:

1) Limited Retention: Auditory learning may result in limited retention of information compared to other sensory modalities, hindering long-term learning outcomes [20].
2) Susceptibility to Distractions: Students may face distractions, both auditory and digital, which can disrupt the learning process and impact comprehension [21].

3) Limited Multisensory Engagement: Auditory learning offers fewer opportunities for multisensory engagement, potentially limiting deep learning experiences [22].

3. Methodology

This research employs a true experimental design to examine how various learning strategies (video-based and auditory-based) affect students' listening comprehension. The true experimental design allows for rigorous control of confounding variables, enhancing the reliability of causal inference [23]. By utilizing a pre-test and post-test design, the study aims to assess and compare the performance of two distinct groups of students immersed in different learning strategies. The research is conducted at SMAN 2 Kota Serang, Banten, on July 26th - July 31st, 2023. The choice of this location is based on its convenience, availability of necessary resources, and diversity among students. The timeline includes introduction sessions, pre-tests, treatments, and post-tests, ensuring comprehensive data collection. Cluster sampling was used to select students from two 11th-grade classes (XI-11 and XI-2) at SMAN 2 Kota Serang. The entire classes were chosen as clusters to ensure internal homogeneity. Each class served as either the experimental (video-based) or control (auditory-based) group, with 30 students in each group.

Pre-tests and post-tests, consisting of multiple-choice questions, were administered to assess students' listening comprehension skills before and after treatment. Additionally, observations were conducted to understand students' behaviors, engagement, and language usage during the sessions. Parametric statistics and independent sample t-tests were used for data analysis. Normality and homogeneity tests were performed to ensure the suitability of parametric tests [24]. The independent sample t-test compared the mean post-test scores between the experimental and control groups, determining the effectiveness of video-based and auditory-based strategies [25]. This research methodology provides a robust framework for investigating the impact of multimedia-based learning strategies on students' listening comprehension, ensuring reliable and meaningful findings.

4. Findings and Discussion

4.1 Findings

4.1.1 Description of Pre-Test and Post-Test Data Results

The research aimed to investigate the comparative study of using video and audio media as learning strategies for 11th-grade students at SMAN 2 Kota Serang. The testing process involved pre-test and post-test, and the data analysis was conducted using SPSS version 25.0. The research subjects involved a total of 60 students, with 30 students in the experimental class (Group XI - 11) using video media and 30 students in the control group (Group XI - 2) using audio media.

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a. *Description of Pre-Test Data Results for Experimental Class*

The pre-test results of the experimental class (class XI-11) are summarized below:

Table 1. Descriptive Data for Pre-Test of Experimental Class

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test of Experimental Class	30	40	70	57.00	8.367
Valid N (listwise)	30				

Source: SPSS, 2023

Table 1 showcases the pre-test descriptive statistics of the experimental class, comprising 30 students from class XI-11. Utilizing SPSS in 2023, the analysis reveals a mean score of 57.00, with scores ranging from 40 to 70. The standard deviation is computed at 8.367, indicating moderate dispersion around the mean. The frequency distribution of scores is presented in Table 2.

Table 2. Student Score Frequency
Pre-Test of Experiment Class

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	40	2	6.7	6.7	6.7
	50	10	33.3	33.3	40.0
	60	13	43.3	43.3	83.3
	70	5	16.7	16.7	100.0
	Total	30	100.0	100.0	

Source: SPSS, 2023

In Table 2, the frequency distribution of pre-test scores further elucidates the students' performance. Notably, 33.3% achieved a score of 50, making it the most frequent grade, followed by 43.3% scoring 60. A mere 6.7% attained the lowest score of 40, whereas 16.7% reached the highest grade of 70.

b. *Description of Post-Test Data Results for Experimental Class*

The post-test results of the experimental class (class XI-11) are summarized below:

Table 3. Descriptive Data for Post-Test of Experimental Class

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Post-Test for Experimental Class	30	70	90	80.67	5.833
Valid N (listwise)	30				

Source: SPSS, 2023

The post-test scores ranged from 70 to 90, with an average score of 80.67 and a standard deviation of 5.833. The frequency distribution of scores is presented in Table 4.

Table 4. Frequency of Student Scores Post-Test for Experimental Class

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	70	4	13.3	13.3	13.3
	80	20	66.7	66.7	80.0
	90	6	20.0	20.0	100.0
	Total	30	100.0	100.0	

Source: SPSS, 2023

From Table 4, it can be observed that the frequency of scores obtained by students in Class XI-2 (control group) is described. The results show that 4 students (13.3% of the sample) achieved a score of 70. The majority of students, comprising 20 individuals (66.7% of the sample), obtained a score of 80. Additionally, 6 students (20% of the sample) received a score of 90. The cumulative percent column represents the cumulative frequency of students up to each score category.

c. *Description of Pre-Test Data Results for Control Class*

The pre-test results are summarized below:

Table 5. Description Pre-Test Data Results of Control Class

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test for Control Class	30	40	70	56.33	8.899
Valid N (listwise)	30				

Source: SPSS, 2023

The pre-test scores for the control class ranged from 40 to 70, with an average score of 56.33 and a standard deviation of 8.899. The frequency distribution of scores is presented in Table 6.

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Table 6. Frequency of Student Scores
Pre-Test of Control Class

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	40	4	13.3	13.3	13.3
	50	7	23.3	23.3	36.7
	60	15	50.0	50.0	86.7
	70	4	13.3	13.3	100.0
	Total	30	100.0	100.0	

Source: SPSS, 2023

From Table 6, it can be observed that there are 4 students who scored 40, 7 students who scored 50, 15 students who scored 60, and 4 students who scored 70.

d. Description of Post-Test Data Results for Control Class

The post-test results are summarized below:

Table 7. Description of Post-Test Data Results for Control Class
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Post-Test for Control Class	30	60	90	72.33	8.172
Valid N (listwise)	30				

Source: SPSS, 2023

The post-test scores for the control class ranged from 60 to 90, with an average score of 72.33 and a standard deviation of 8.172. The frequency distribution of scores is presented in Table 8.

Table 8. Student Grade Frequency
Post-Test of Control Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	60	6	20.0	20.0	20.0
	70	12	40.0	40.0	60.0
	80	11	36.7	36.7	96.7
	90	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

Source: SPSS, 2023

From Table 8, it depicts the frequency of grades obtained by the students of class XI-2 (control class). There are 6 students who scored 60, 12 students who scored 70, 11 students who scored 80, and only 1 student who scored 90.

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4.1.2 Statistical Tests

a. Normality Test

The results of the normality test are summarized in Table 9, indicating that all datasets exhibit normal distribution characteristics.

Table 9. Normality Test

One-Sample Kolmogorov-Smirnov Test

		Pre-Test of Experimental Class	Post-Test of Experimental Class	Pre-Test of Control Class	Post-Test of Control Class
N		30	30	30	30
Normal Parameters[a,b]	Mean	57.00	80.67	56.33	72.33
	Std. Deviation	8.367	5.833	8.899	8.172
Most Extreme Differences	Absolute	.240	.345	.293	.226
	Positive	.199	.345	.207	.212
	Negative	-.240	-.321	-.293	-.226
Test Statistic		.240	.345	.293	.226
Asymp. Sig. (2-tailed)		.170[c]	.200[c]	.126[c]	.184[c]

a. Test distribution is Normal.

b. Calculated from data.

Source: SPSS, 2023

b. Homogeneity Test

The results of the homogeneity test, summarized in Table 4.10, indicate that the data exhibit homogeneous variances.

Table 4.10 Homogeneity Test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Pre-test	Based on Mean	.793	1	58	.757
	Based on Median	.000	1	58	1.000
	Based on Median and with adjusted df	.000	1	56.652	1.000
	Based on trimmed mean	.097	1	58	.757
Post-test	Based on Mean	.282	1	58	.775
	Based on Median	.038	1	58	.846
	Based on Median and with adjusted df	.039	1	56.771	.846
	Based on trimmed mean	.095	1	58	.780

Source: SPSS, 2023

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4.1.3 Comparative Analysis

a. Differences Between Video-Based and Audio-Based Strategies

After conducting normality and homogeneity tests, the Independent Sample T-Test was employed to compare the means of two independent samples: the experimental class (video-based strategy) and the control class (audio-based strategy). The results, shown in Table 4.11, indicate a significant difference in students' comprehension improvement between the two strategies.

Table 4.11 Independent Sample T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Result	Equal variances assumed	7.318	.775	4.546	58	.000	8.333	1.833	4.664	12.003
	Equal variances not assumed			4.546	52.460	.000	8.333	1.833	4.656	12.011

Source: SPSS, 2023

The results show a significant difference (Sig. = .000) between the two strategies, with the video-based strategy yielding higher post-test scores compared to the audio-based strategy.

b. Contribution of Video-Based and Audio-Based Strategies to Students' Listening Comprehension

The contribution of both strategies to students' listening comprehension is presented in Table 4.12, indicating improvement in comprehension for both groups post-implementation.

Table 4.12 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test of Experimental Class	30	40	70	57.00	8.367
Post-Test of Experimental Class	30	70	90	80.67	5.833
Pre-Test of Control Class	30	40	70	56.33	8.899
Post-Test of Control Class	30	60	90	72.33	8.172
Valid N (listwise)	30				

Source: SPSS, 2023

Both strategies led to improvements in listening comprehension, with the video-based strategy resulting in higher post-test scores.

c. *Effectiveness of Video-Based and Audio-Based Strategies*

The effectiveness of the strategies is summarized in Table 4.13, highlighting the superior performance of the video-based strategy in enhancing students' listening comprehension.

Table 4.13 Summary of Effectiveness

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test of Experimental Class	30	40	70	57.00	8.367
Post-Test of Experimental Class	30	70	90	80.67	5.833
Pre-Test of Control Class	30	40	70	56.33	8.899
Post-Test of Control Class	30	60	90	72.33	8.172
Valid N (listwise)	30				

Source: SPSS, 2023

The results demonstrate that the video-based strategy was more effective in improving students' listening comprehension compared to the audio-based strategy, as evidenced by higher post-test scores.

4.2 Discussion

The research findings comparing the effectiveness of video-based and audio-based strategies in improving students' listening comprehension reveal significant disparities between the two approaches. Here's a breakdown of the key points discussed:

a. Differences between Video-Based and Auditory-Based Strategies

The study highlights significant differences in students' performance between those exposed to video-based instruction and those relying solely on auditory-based strategies. The incorporation of visual aids in the video-based approach not only enhances comprehension but also increases overall engagement with the learning material. This emphasizes the importance of multimedia integration in educational practices to bolster listening comprehension abilities.

b. Contribution of Video-Based and Audio-Based Strategies

Both strategies demonstrate positive effects on improving listening comprehension skills, with students in both groups showing enhanced post-test scores. However, the video-based strategy emerges as significantly more impactful, leading to substantial improvements in students' performance. This

underscores the potential of video-based methods to elevate listening comprehension skills among students.

c. Effectiveness of Video-Based vs. Auditory-Based Strategies

The research unequivocally establishes the superiority of video-based instructional strategies in improving students' listening comprehension. Not only do students in the video-based group achieve higher post-test scores, but they also demonstrate a deeper grasp of the content and exhibit greater engagement with the material compared to the auditory-based group. These findings underscore the transformative potential of multimedia elements, particularly videos, in optimizing students' learning outcomes.

The current study shares similarities with previous research while also presenting differences in terms of focus, participants, and methodology. Specifically, it aligns with Namaziandost, Nasri, and Akbari's (2019) investigation into the effectiveness of multimedia-based learning strategies on listening comprehension. Another similarity exists with Assaf's (2015) study, which aimed to uncover the challenges encountered by students in listening comprehension. While Assaf focused on the difficulties faced by EFL learners and their correlation with various factors, this study delves into the effectiveness of video-based versus audio-based strategies. Nonetheless, both shed light on the obstacles students face in this domain.

In contrast, this study diverges from Alfadley's (2019) research, which primarily centered on identifying difficulties undergraduate EFL students encounter in listening comprehension. Unlike Alfadley's study, this research compares the efficacy of video-based and audio-based strategies among second-grade students, differing in participants, research questions, and objectives while contributing to understanding factors influencing listening comprehension. Furthermore, this study differs from Aldera's (2015) investigation into the effectiveness of visual multimedia techniques in aiding L2 listening comprehension among adult students. Unlike Aldera's focus on adult learners, this study centers on second-grade students and compares video-based and audio-based strategies. These variations encompass differences in age group, instructional methods, and research design between the two studies.

5. Conclusion

The research findings and data analysis indicate that video-based strategies are notably more effective than auditory-based strategies in enhancing students' listening comprehension skills. The study highlights substantial differences in listening comprehension performance between students exposed to video-based instruction, enriched with visual representations, and those relying solely on auditory input. While both types of strategies contribute to enhanced comprehension, the study demonstrates that video-based methods yield superior results, leading to higher post-test scores and satisfactory levels of achievement. The

effectiveness of video-based strategies lies in their ability to enhance students' understanding, engagement, and retention of material through visual aids, ultimately resulting in better educational outcomes.

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