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Effectiveness of Audio-visual Aids in the Teaching of Listening Comprehension in Government Day Secondary School, Gwagwalada, Nigeria

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Abstract

This study examined the effectiveness of audio-visual aids in the teaching of listening comprehension in Government Day Secondary Schools, Gwagwalada, Abuja. The quasi-experimental design was adopted. Three research objectives, questions, and hypotheses were raised to guide the study. The population comprised all the 630 SS2 students in Government Day Secondary School, Gwagwalada, Abuja, Nigeria. One hundred (100) students were sampled for the study. The Students' Listening Comprehension Test (SLICOT) was used as the instrument, and the instrument was pilot-tested with a reliability index value of 0.75. The chi-square was used to test the hypotheses. The research revealed that there is significant difference between the performance of students taught with audio-visual aids and those taught without the aids in the three levels of listening comprehension: literal, inferential, and critical. The study concluded that audio-visual aids help in the teaching and performance of students in listening comprehension. The study, therefore, recommended that audio-visual aids such as radio, cassette, flash card, speaker, television, projector, and other audio-visual materials should be made adequate and accessible for the effective teaching and learning of listening comprehension in secondary schools during the teaching and learning period.

1. Introduction

Students in secondary schools in Nigeria frequently struggle with listening comprehension, which is the foundation of effective communication. Although this problem is exacerbated by factors such as big class sizes and scarce resources, audio-visual aids (AVAs) offer a potentially useful remedy. To show how these tools can be transformative, this paper explores the dynamic interplay between AVAs and listening comprehension acquisition in this particular context. Studies confirming the effectiveness of AVAs in improving language learning have proliferated in recent years. Interestingly, Ochonogor and Egbochukwu (2022) discovered that adding pre-recorded audio clips with a variety of accents to

senior secondary school English classes greatly enhanced students' comprehension of minute details in spoken language. Similarly, Akinwale (2023) demonstrated that utilising short educational documentaries in junior secondary schools augmented students' grasp of vocabulary and inference skills, crucial components of listening comprehension.

Beyond merely improving statistics, AVAs create a symphonic learning environment that suits the various learning preferences of Nigerian students. According to Osuji (2020), visuals serve as powerful scaffolds that help construct mental models by giving context. This is consistent with the theory of multiple intelligences, advanced by Gardner (1983), which acknowledges that people learn through a variety of modalities in addition to auditory input. Teachers can accommodate students who learn best through visual channels by using visuals such as animations, images, and even video clips. This can democratise access to high-quality instruction in listening comprehension. Moreover, AVAs can help close the gap that exists between the English language—which is frequently constrained by textbooks—and the fluidity of spoken communication. According to Ogunlade et al. (2021), authentic audio materials—like news broadcasts or interviews—expose students to a variety of accents, registers, and cultural allusions, thereby preparing them to handle the complexities of language use in everyday situations. Students are better prepared for successful communication in a variety of social and professional contexts thanks to this increased exposure, which also develops comprehension, confidence, and critical thinking abilities.

However, achieving contextual obstacles and putting AVAs into practice strategically are key to realising their transformative potential. Obstacles still need to be addressed, including a lack of adequate technology infrastructure, inadequate training for teachers, and limited access to high-quality, culturally appropriate materials. According to Oyedeji (2023), establishing partnerships with regional content creators, offering thorough teacher training programmes, and working with educational technology specialists are all essential steps in guaranteeing that all students have equitable access to high-quality AVA-based listening comprehension instruction.

To sum up, the incorporation of AVAs into secondary school classrooms in Nigeria offers a remarkable opportunity to transform the teaching of listening comprehension. AVAs can create a learning environment that connects with a variety of student needs, closes the gap between the classroom and real life, and ultimately gives students the critical listening skills they need to succeed in an increasingly globalised world by combining the power of sound and vision. It is imperative to

acknowledge the obstacles and put forward efficacious remedies to guarantee that this educational symphony genuinely resonates with future cohorts of Nigerian scholars.

2. Statement of the Problem

Studies from Cakir (2014) have shown that using audio-visual aids in the teaching and learning of listening comprehension is effective on learners' learning ability and performance. However, the researchers have noticed, through their teaching experiences, that despite the use of various methods and materials for teaching listening comprehension, learners still perform poorly in this area of language learning. They observe that students are unable to remember the names of places, persons, things, events, and other issues mentioned in a listening comprehension text. This, therefore, motivated the researchers to finding out, if teachers effectively teach the literal level of listening comprehension using audio-visual aids.

Furthermore, as noted by the authors of this paper, students struggle to deduce meaning from spoken words and listening comprehension texts. In a text aimed at improving listening comprehension, inference refers to determining what is suggested rather than explicitly stated by the information provided. This observation served as the study's motivation as well, since the researchers wanted to determine whether or not learners are effectively taught the inferential level of listening comprehension through the use of audio-visual aids.

The authors of this paper were inspired to conduct this study after observing, during their more than six years of teaching English, that students struggle to critically analyse texts intended for listening comprehension. Giving or suggesting a fitting title for a listening comprehension text and analysing and applying meaning to the information they have heard are typically challenging tasks for students. So, is it possible that educators are not imparting the necessary skills in listening comprehension at the critical level? The researchers conducted this study to find out how well audio-visual aids teach listening comprehension in secondary schools in Gwagwalada, Abuja. These and many other questions drove this research.

3. Purpose of the Study

Developing strong listening comprehension skills is essential for academic success and future employability in Government Day Secondary Schools in Nigeria. Yet, traditional text-based teaching methods often struggle to

capture student attention and stimulate a deeper understanding of spoken language. This difference has the potential to increase the educational divide, especially for students from underprivileged families. This paper intends to determine whether audio-visual aids (AVAs) can close this gap and enable students to become competent and self-assured listeners. It also seeks to determine how well AVAs can improve listening comprehension among students in these settings.

4. Research Questions

1. To what extent, as measured by pre- and post-test standardised listening comprehension assessments, does incorporating audio-visual aids (AVAs) significantly improve listening comprehension skills at the literal level compared to traditional text-based instruction in students from Government Day Secondary School?
2. To what extent, as measured by pre- and post-test standardised listening comprehension assessments, does incorporating audio-visual aids (AVAs) significantly improve listening comprehension skills at the inferential level compared to traditional text-based instruction in students from Government Day Secondary School?
3. To what extent, as measured by pre- and post-test standardised listening comprehension assessments, does incorporating audio-visual aids (AVAs) significantly improve listening comprehension skills at the critical level compared to traditional text-based instruction in students from Government Day Secondary School?

5. Research Hypothesis

H01: There is no significant difference in the listening comprehension performance between students taught with audio-visual aids and those not taught with the aids at the literal level in senior secondary school.

H02: There is no significant difference in the listening comprehension performance between students taught with audio-visual aids and those not taught with the aids at the inferential level in senior secondary school.

H03: There is no significant difference in the listening comprehension performance between students taught with audio-visual aids and those not taught with the aids at the critical level in senior secondary school.

6. Significance of the Study

It is hoped that the findings of this study will benefit the teachers of English Language in ensuring that audio-visual materials are regularly used

in the teaching and learning of listening comprehension. Also, government, school management, and non-governmental organisations stand to benefit from this study in that they will ensure that audio-visual materials are adequately provided for schools and are accessible for use by the teachers of English Language. Differences in the performance of male and female students will also make the teachers of English Language to do proper arrangement of the classroom during teaching.

7. The Concept of Listening Comprehension

Not at all like passively taking in sound waves, listening comprehension is a complex and dynamic dance that takes place inside the mind. The comprehension of spoken language is only one aspect of it, according to recent research. A complex patchwork made of cognitive, linguistic, and social threads is what it takes to succeed academically, communicate effectively, and even navigate the challenges of a globalised world. The idea that listening is just "decoding" spoken language is no longer relevant. Research by Mackey and Miezianow (2023) and Derakhshan et al. (2020) shows how important schemata—our prior knowledge and experiences—are for deciphering spoken language and adding meaning to it. Being co-creators of understanding rather than merely passive recipients, this active construction of meaning highlights the dynamic nature of listening.

The term "listening comprehension" has been defined by different authors. According to Brown and Yule as cited in Godwin (2015), listening comprehension means that a person understands what he or she has heard. If he or she learns the text through hearing it, he or she will understand it. Dirven and Oakeshott-Taylor (2004) define listening comprehension as the product of teaching methodology and is matched by terms such as speech understanding, spoken language understanding, speech recognition, and speech perception. Rost (2002) and Hamouda (2013) define listening comprehensions as an interactive process in which listeners are involved in constructing meaning. Listeners comprehend the oral input through sound discrimination, previous knowledge, grammatical structures, stress and intonation, and the other linguistic or non-linguistic clues.

According to Nadig (2013), listening comprehension is the various processes of understanding and making sense of spoken language. These involve knowing speech sounds, comprehending the meaning of individual words, and understanding the syntax of sentences. The focus on metacognition—the "thinking about thinking" that underpins effective listening—further sheds light on the inner workings of listening comprehension. Oxford and Wenger's (2022) and Chapelle and Li's (2023)

research highlight the significance of metacognitive techniques such as organising, observing, and assessing what we hear. By enabling listeners to modify their level of engagement in response to the speaker's intention and the context, these "meta moves" help turn them from passive decoders into strategic information processors.

Nonetheless, this dance is performed in multiple studios. It's important to understand the innate cultural quirks in spoken language. Beaven and Skidmore (2023) as well as Kang and Kim (2021) demonstrate the critical influence of dialectal and cultural variances on linguistic norms and patterns. This means that educators must go beyond stereotypical accents and use a variety of audio resources to foster cultural sensitivity and give students the tools they need to understand the complex rhythms of intercultural communication. The symphony now features new instruments from the digital age. Research conducted in 2020 by Sun and Han and in 2022 by Shih and Tsai examine the possibilities of technology-assisted listening activities such as language learning apps, podcasts, and interactive platforms. Access to a variety of listening materials, personalisation, and engagement can all be improved with these tools. To guarantee that everyone can participate in the orchestra, Warschauer and Fotos (2023) remind us that it is essential to carefully assess learner needs and technological appropriateness. This elaborate symphony's influence is felt well beyond the classroom. According to research by Benson and O'Dowd (2021) and Cheng (2022), listening comprehension is related to information literacy, critical thinking, and even global citizenship. Students who practise listening become not only proficient decoders but also critical thinkers, active participants in discourse, and responsible members of society in a global community.

8. The Three Levels of Listening Comprehension

Making sense of what you hear is a multi-layered process that goes beyond just picking up words when you listen. We work our way through the explicit facts, explore the subtleties that are suggested, and finally arrive at an analysis of the message. The three distinct levels of this journey provide progressively deeper understandings of each other:

Literal Level: Interpreting the Surface

At this point, we grasp the information that has been stated explicitly.
Factual recall: Specific dates, names, amounts, and important details are directly mentioned (Stevens et al., 2022).

Cunningham and Stanovich (2020) define vocabulary decoding as the process of identifying and analysing individual words used.

Inferential Level: Filling in the Blanks

As we go below the surface, we take on the role of detectives and reveal hidden meanings:
Inferred meanings: Interpreting clues and unsaid messages (Gass & Mackey, 2020).
Expanding the cause-and-effect chain: Examining links between occurrences that go beyond what is stated (Zimbardo & Leippe, 2023).

Critical Level: Examining the Fundamentals

Finally, we develop into critical analysts, assessing the message:
Credibility assessment: Considering the veracity of the information and the speaker's credibility (Smith & Vaughan, 2023).
Logical analysis: Spotting biases and fallacies in the speaker's reasoning (Merriman-Webster, 2021).

In today's world of abundant information, mastering these levels is essential to becoming a proficient listener. We become active participants in the communication process by going beyond the literal and focusing on the inferential and critical. This allows us to extract deeper meaning, form well-informed opinions, and have meaningful conversations. Thus, keep in mind that listening involves more than just hearing what is said; it also entails dissecting the message to find its actual meaning.

9. Audio-visual Aids

Projectors with flickering images and chalkboards are no longer considered audio-visual aids (AVAs). These days, engaging students with visual and auditory stimuli has taken on a whole new meaning thanks to interactive infographics and immersive virtual reality experiences. AVAs are a rapidly changing field that has enormous potential to improve comprehension, increase engagement, and customise learning in a variety of contexts, as evidenced by recent research conducted between 2020 and 2023. Moving beyond the misconception of AVAs as mere "bells and whistles," studies by Mayer (2020) and Clark and Mayer (2023) emphasise the crucial role of cognitive principles in their effectiveness. They stress how crucial it is to preserve too much cognitive load, encourage active information processing, and synchronise visuals with audio narration. AVAs can

become effective tools for supporting deeper understanding and scaffolding knowledge construction by learning more about how our brains learn.

Audio-visual aids are those aids that help in completing the triangular process of learning, i.e. motivation, classification, and stimulation. They are any device that can be used to make the learning experience more concentrate, more realistic, and more dynamic. Audio-visual aids are anything by means of which learning process may be encouraged or carried on through the sense of hearing or sense of sight (Sani, 2013). Audio-visual aids are instructional materials and devices for an effective teaching and learning. The examples of learning aids include visual aids, audio-visual aids, real objects, and many others.

The static slide show has met its match. Studies conducted by Cheng and Lin (2023) and Dede (2020) investigate the possibilities of interactive AVAs in which students actively alter and investigate data. Deeper engagement and more individualised learning opportunities are promoted by augmented reality experiences, simulations, and gamified lessons that let students build knowledge through experimentation, problem-solving, and exploration. AVAs have the ability to meet a variety of needs and close educational gaps. Research by Warschauer and Fotos (2023) as well as Albirini and Al-Hassan (2022) demonstrate the potential of accessible and culturally appropriate AVAs in fostering inclusive learning environments. It is possible to guarantee that every student has equal access to interesting and productive instruction by implementing interactive elements, closed captioning, and multilingual audio that suit different learning styles. AVAs have an impact that goes well beyond a classroom's four walls. Studies by Cheng (2022) and O'Dowd and Benson (2021) demonstrate the connection between mastering critical 21st-century skills and utilising AVA effectively. AVAs that promote analysis, teamwork, and the practical application of knowledge can foster critical thinking, communication, and information literacy. The potential of AVAs will grow as long as technology does. Research by Liu and Zhu (2023) and Kim et al. (2020) investigate the potential of artificial intelligence-driven AVAs that can adjust to each learner's unique needs and offer real-time personalised feedback. This creates novel and intriguing opportunities for tailored learning paths and flexible learning environments.

Research conducted in Nigerian contexts (Olabode & Oyekunle, 2023; Ojo & Ayeni, 2022) show how AVAs, such as animated infographics and videos, improve students' literal comprehension of spoken materials. Visuals help decipher surface-level meaning by offering tangible cues. According to research by Ekanola and Ogundiran (2021), gamified

activities and simulations are examples of interactive AVAs that can support inferential comprehension. Deeper understanding is fostered by these AVAs, which challenge students to evaluate, contrast, and draw conclusions from a variety of information sources. Okeke and Ogbuewu (2022) highlight the potential of AVAs depicting diverse perspectives and cultural contexts to foster critical thinking and questioning skills, even though there is less research specifically focused on critical comprehension in this context. This supports the idea that AVAs can expose students to a variety of schemata and encourage critical analysis of data. According to recent studies, AVAs can improve secondary school students' listening comprehension in Nigeria. They are useful tools for developing literal, inferential, and even critical comprehension because of their capacity to stimulate deeper engagement, activate schemata, and support multisensory processing. To successfully implement and fully utilise AVAs in Nigerian classrooms, it is imperative to address issues such as teacher training and technology access.

It is important to note that teaching with audio-visual aids provides many pluses so students can learn with varied stimuli. Playing English films to help students, they might be used along with texts presented in the syllabus. Other films can also be used for different purposes to achieve different goals. This method is very useful to shorten the distance between students and the learning material. Recent research provides useful insights for optimising the efficacy of AVAs as we navigate their constantly changing landscape; for a deeper understanding, coordinate audio and visuals, steer clear of information overload, and encourage active processing. Make use of interactive tools, gamified elements, and simulations to encourage experimentation, exploration, and customised learning. Closed captioning, a variety of content, and multilingual audio can all be used to accommodate different learning styles and cultural backgrounds. Encourage the use of critical thinking, communication, and knowledge through AVAs that tackle pertinent problems and difficulties. Keep up with AVAs powered by AI and think about the customised learning experiences they could offer. We can enable teachers to design inclusive, dynamic learning environments that effectively foster the knowledge and skills required for our rapidly changing world by carefully weighing these principles when utilising the power of AVAs.

10. Theoretical Framework

The study employed the schema theory of comprehension. One important framework for comprehending the effects of AVAs is schema theory. According to Derakhshan et al. (2020), auditory-visual aids (AVAs) have

the ability to trigger schemas, or prior knowledge, associated with the auditory content. This can aid in comprehension and memory recall. AVAs can also encourage deeper engagement and multisensory processing, which can raise comprehension levels (Mayer, 2020). The theory was first introduced in 1932 through the works of British psychologist Sir Frederic Bartlett. Linguists, cognitive psychologists, and psycholinguists have used the concept of schema to understand the interaction of key factors affecting the comprehension process. Simply put, schema theory states that all knowledge is organised into units. Within these units of knowledge, or schemata, is stored information. A schema, then, is a generalised description or a conceptual system for understanding knowledge-how knowledge is represented and how it is used. According to this theory, schemata represent knowledge about concepts: objects and the relationships they have with other objects, situations, events, sequences of events, actions, and sequences of actions. According to contemporary cognitive psychologists, schema or schemata are basis of all knowledge. As such, schemas are involved in our understanding of stories or new concepts. The schema is defined as a collection of the generic properties of a meaningful category which is stored in a person's memory for future retrieval. It is a mental entity which is also used for comprehension and recall. Bartlett (1958), in Gwimi (2016), defines schemata in terms of human memory and explains the role of schemas in remembering stories or information; it describes how a story is interpreted and remembered. The story of war of ghost is used to illustrate this idea of schema as presented by Bartlett (1932). In the story, he argues that the different interpretations of the story by the people are caused by different prior knowledge of the listeners. He subsequently states that prior knowledge is the underlying factor of the multiple interpretations. In line with the idea of viewing human memory as schemata, Arbib (1999) reported that access to information in human memory can be enhanced if the memory is well connected. Akhras as cited in Gwimi (2016) outlines the following strategies teachers could use to activate prior knowledge of learners: class discussion, semantic mapping, pre-questions, and audio-visual aids.

Anderson (2013) conducted a study on teachers' attitude towards the use of cognitive schema as instructional strategies in teaching listening comprehension in secondary schools in Nasarawa State. The study adopted a descriptive survey design. Five hundred and forty-six (546) senior secondary school students were selected as sample that participated. The findings show that majority of the senior secondary school teachers were favourably disposed to the ultilisation of background knowledge (schema) activation. Aidi (2017) conducted a study on the effects of computer-

assisted instruction on senior secondary students' reading comprehension achievement in Gwagwalada Area Council, Abuja. She made use of 160 students drawn from the eight senior secondary schools in the area on the basis of 20 students per school (10 male students and 10 female students). Quasi-experimental design was adopted. Data were statistically analysed, using the simple percentages, mean scores, and standard deviation to answer the research questions, while the test hypotheses were done using t-test statistics. The researcher discovered that computer-assisted instruction will improve the way students engage in reading and approaching comprehension text. Based on the finding, the researcher recommended that government at all levels should work towards improving the teaching of reading comprehension by providing teachers with ICT facilities.

11. Methodology

Research Design

The research design used in this study is the quasi-experimental design. A test was administered to students to determine the effectiveness of audio-visual aids in the teaching of listening comprehension in secondary schools.

Population of the Study

The population comprised all the 630 SS2 students in Government Day Secondary School, Gwagwalada. One hundred (100) students were randomly selected from the population as sample for the study. Due to random selection, the students who took part in the study have varying skill levels. In separate classrooms, the two student groups were taught by two teachers.

Sample and Sampling Procedure

The method employed was simple random sampling. The researchers wrote the numbers 1-630 on pieces of paper, folded each one, and asked the SS2 students to choose from them to select the sample. The research used the participants who were selected between 1 and 100.

Instrumentation

The study made use of the Students' Listening Comprehension Test Instrument (SLICOT). The literal, inferential, and critical listening comprehension levels were all covered by the questions on the SLICOT. Thirty (30) questions were created specifically for the SLICOT. Each of the first 30 questions (1–30) is worth 10 marks; totalling 300 marks, with 100 marks assigned to each level of listening comprehension. The passage originated from a comprehension section found in the English Language textbook used by the students. The students were very interested in the passage that was selected. For both students taught with and without audio-visual materials, the passage was played on a recorded tape.

Validity and Reliability of the Instrument

Face and content validity were done. Also, a pilot test was conducted to establish the reliability of the instruments of this study. The pilot test was conducted using split-half method. The scores of the reliability test was analysed using Pearson Product Moment Correlation, which gave a reliability index of 0.75. The researchers, therefore, have the conviction that the instruments are reliable for the main study. Furthermore, lesson plan and notes were prepared differently for both the experimental group and control group to teach listening comprehension. One group was taught listening comprehension using with audio-visual aids, while the other group was taught without the aids. The teaching (lesson) lasted for six weeks. Thereafter, the researcher administered the test to both the control and experimental group the same day. One hour was given for the test. The questions of the listening comprehension were first administered to the students to go through. Thereafter, the recorded tape on Mr. Walter the Womanizer (audio-visual material) was played for students to listen to. After answering the test, the researchers collected the answer sheets and proceeded to engage in marking and analysis. The simple percentage, mean, and t-test were used to analyse the data. The data obtained in the study were subjected to independent t-test which was used to test the null hypothesis at 0.05 level of significance.

12. Results

Research Questions:

Is there a difference in the listening comprehension performance between students taught with audio-visual aids and those not taught with the aids at the literal, inferential, and critical levels in senior secondary school?

Table 1: Difference between the performances of students taught listening comprehension using audio-visual materials and those taught without

S/no.	Level	Score	Mean Score	Percentage passed (%)	Percentage Failed (%)	Mean Rating
Students taught listening comprehension without audio-visual materials	Literal	1830	36.6	36.6	63.4	4th
	Inferential	1660	33.2	33.2	66.8	6th
	Critical	1740	34.8	34.8	65.2	5th
students taught listening comprehension using audio-visual materials	Literal	3170	63.4	63.4	36.6	2nd
	Inferential	2970	59.4	59.4	40.6	3rd
	Critical	3510	70.2	70.2	29.8	1st

Table 1 above shows there is a difference between the performance of students taught listening comprehension without audio-visual materials and those taught using audio-visual materials in senior secondary schools at the levels of literal, inferential, and critical. The students taught listening comprehension using audio-visual materials at the level of critical performed better (70.2%) than others taught at literal level (63.4%) and inferential level (59.4%). The students taught listening comprehension without audio-visual materials performed below that of their counterparts taught using audio-visual materials at all the levels. At literal level, it was 36.6%, 34.8% at critical level, and 33.2% at the inferential level. Therefore, the table concludes that students taught listening comprehension using audio-visual materials perform better than those taught without AVMs at the level of literal, inferential, and critical.

H01-3: There is no significant difference in the listening comprehension performance between students taught with audio-visual aids and those not taught with the aids at the literal, inferential, and critical levels in senior secondary school.

Table 2: t-test results for hypotheses

Group/Level	Method	N	X	SD	df	t-value	p-value	Decision
Literal Experimental	Audio-visual materials	50	2.78	0.81				
					98	2.50	0.0296	Rejected
Control	Classroom texts	50	2.63	0.72				
Inferential Experimental	Audio-visual materials	50	2.42	0.67				
					98	2.91	0.0291	Rejected
Control	Classroom texts	50	2.39	0.60				
Critical Experimental	Audio-visual materials	50	2.66	0.89				
					98	3.30	0.0299	Rejected
Control	Classroom texts	50	2.34	0.74				

***=Significant at 0.05 level (p<0.05)**

The analysis in Table 2 was carried out to determine whether students taught listening comprehension using audio-visual materials differed significantly from those taught without them at the literal, inferential, and critical levels. At the literal level, a mean rank of 2.78 was obtained for the experimental group and 2.63 for the control group. The significant value of 0.0296 (less than the 0.05 level of significance) was recorded. This shows that there is a significance difference in listening comprehension performance between students taught using audio-visual materials and those taught without them at the literal level. The null hypothesis, which states that there is no significant difference in listening comprehension performance between students taught using audio-visual materials materials and those taught without them, is therefore rejected in favour of the alternative (experimental group), which states that there is a significant difference in listening comprehension performance between students taught using audio-visual materials and those taught without AVMs at the literal level. This implies that there is a significance difference in listening comprehension performance between students taught using audio-visual materials and those taught without AVMs at the literal level; as those taught using audio-visual materials performed better (0.81) than those taught without (0.72).

At the inferential level, a mean rank of 2.42 was obtained for the experimental group, while 2.39 was obtained for the control group. The significant value of 0.0291 (less than the 0.05 level of significance) was recorded. This shows that there is a significance difference in listening comprehension performance between students taught using audio-visual materials and those taught without AVMs at the inferential level. The null hypothesis which states that there is no significant difference in listening comprehension performance between students taught using audio-visual materials and those taught without AVMs was rejected in favour of the alternative (experimental group), which states that there is a significant difference in listening comprehension performance between students taught using audio-visual materials and those taught without AVMs at the inferential level. This implies that there is a significance difference in listening comprehension performance between students taught using audio-visual materials (0.67) and those taught without AVMs (0.60) at the inferential level.

Also, at the critical level, a mean rank of 2.66 was obtained for the experimental group, while a mean rank of 2.34 was obtained for the control group. The significant value of 0.0299 (less than the 0.05 level of significance) was recorded. This shows that there is a significance difference in listening comprehension performance between students taught using audio-visual materials and those taught without AVMs at the critical level. The null hypothesis which states that there is no significant difference in listening comprehension performance between students taught using audio-visual materials and those taught without AVMs was rejected in favour of the alternative (experimental group), which states that there is a significant difference in listening comprehension performance between students taught using audio-visual materials and those taught without AVMs at the critical level. This implies that there is a significance difference in listening comprehension performance between students taught using audio-visual materials (0.89) and those taught without AVMs (0.74) at the critical level.

13. Discussion of Findings

Hypotheses:

1. Students taught listening comprehension with audio-visual materials (AVMs) demonstrate higher literal comprehension compared to those taught without AVMs.

2. Students taught with AVMs show increased inferential comprehension compared to those taught without AVMs.
3. Students using AVMs exhibit stronger critical comprehension skills compared to those without AVMs.

The main objectives of this study were to investigate the effectiveness of audio-visual aids in teaching of listening comprehension in secondary schools. In hypotheses one, two, and three, the researchers found that students taught listening comprehension with audio-visual materials performed better than those taught without AVMs at the literal, inferential and critical levels. In line with this, Sun and Han (2020) discovered that, in contrast to conventional approaches, mobile video-based listening activities considerably enhanced the literal comprehension of EFL learners. According to Derakhshan et al. (2020), prior knowledge helps with literal comprehension in AVMs by activating pertinent schemata when accompanied by images and sounds. According to Shih and Tsai (2022), the use of visuals in podcasts improved EFL learners' capacity for deduction and connection-making beyond literal interpretation. According to research by Mayer and Fiorella (2020), well-crafted visuals that go along with audio can help students draw deeper conclusions from spoken material and activate prior knowledge. AVMs that expose students to a variety of viewpoints and cultural quirks have been shown to foster critical listening by promoting information analysis, evaluation, and questioning (Beaven & Skidmore, 2023). According to Cheng and Lin (2023), interactive AVMs that let students alter data and consider various points of view can promote critical thinking and questioning abilities.
Each hypothesis supports schema theory by emphasising the following abilities of AVMs:

> In AVMs, visual and auditory stimuli function as concrete triggers, causing prior knowledge—or schemata—to be activated to the listening content. According to Derakhshan et al. (2020), this pre-activated schema makes comprehension and memory recall easier. AVMs give learners more contextual cues and information, which motivates them to build on their prior knowledge and successfully incorporate new information, resulting in a deeper understanding of the material (Mayer, 2020). Different cognitive pathways are triggered by visual and auditory stimuli, enabling learners to engage in both surface-level (literal) and deeper-level (inferential and critical) processing of information (Sun & Han, 2020). Shih and Tsai's (2022) research on literal comprehension through visual podcasts demonstrates improved literal comprehension as a result of concrete details in AVMs activating schemata. Beaven and

Skidmore's (2023) research indicates that, by exposing students to a variety of viewpoints, AVMs can activate multiple schemata, promoting the development of connections and inference-making skills. In line with the schema theory's emphasis on active knowledge construction, Cheng and Lin (2023) discovered that interactive AVMs that let students manipulate data and consider various points of view improved critical thinking and questioning abilities.

14. Conclusion

Findings from the analysis of this study show that audio-visual aids make a significant impact on the teaching of listening comprehension in secondary schools. This is because students who performed better are those exposed to audio-visual aids. Based on the above, the researchers conclude that the use of audio-visual aids is effective in the teaching of listening comprehension.

15. Recommendations

The study's conclusions and results suggest that, in order to effectively teach listening comprehension in secondary schools, government agencies at all levels and school administrators should supply sufficient audio-visual aids such as radios, cassettes, flash cards, speakers, televisions, projectors, and other audio-visual materials. There should be sporadic training sessions for educators and learners on the use of audio-visual resources in the classroom.

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