

Utilization of Multimedia Instructional Materials and Its Influence on Secondary School Students' Academic Performance and Learning Interest in Benue South, Nigeria

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Abstract

This research examined the utilization of multimedia instructional materials and its influence on secondary school students' academic performance and learning interest in Benue South, Nigeria. The research was conducted to determine the extent of utilization of multimedia instructional materials and their influence on students' academic performance and learning interest, as well as gender differences in these areas. A descriptive survey research design was adopted. The population comprised 43,018 secondary school students in Benue South Senatorial District, from which 396 students were selected using a multistage sampling technique. Data were collected with a structured questionnaire and analysed using frequency counts, percentages, mean and independent-samples t-test. The findings showed that multimedia instructional materials were utilized by teachers to a high extent, with a grand mean of 2.75. The materials also had a high influence on students' academic performance with a grand mean of 3.01 and on learning interest, with a grand mean of 3.03. A significant gender difference was found in academic performance, with female students recording a higher mean score of 3.31 than male students of 3.22, $t = 2.14$, $p = .033$. A significant gender difference was also found in learning interest with female students recording a higher mean score of 3.36 than male students of 3.24, $t = 2.56$, $p = .011$. The research recommended regular and appropriate use of multimedia materials, provision and maintenance of facilities, practical teacher training, improved electricity supply and inclusive use of multimedia resources for both male and female students.

Introduction

Multimedia learning is based on the presentation of words and pictures in ways that support learners as they process new information. When carefully selected and properly used, these materials can help students understand difficult ideas, remember important information and connect new knowledge with what they already know (Mayer, 2024). This makes multimedia relevant to classroom teaching because some concepts that may be difficult to explain with words alone can be made clearer through appropriate visual or audio presentation.

Furthermore, another issue associated with multimedia instruction is students' academic performance. When instructional materials help learners to follow explanations, observe examples and participate in classroom activities, they may contribute to better understanding of lesson content. Multimedia may also support students in paying attention to important information and recalling what they have learnt. In the same way, lessons that are presented in an interesting and varied manner may encourage students to participate more actively in classroom activities (Area-Moreira *et al.*, 2023). Learning interest is also an important part of the learning process. Zhang (2022) and Renninger and Hidi (2022) describe interest as involving learners' attention, curiosity and willingness to engage with learning activities. A student who is interested in a lesson is more likely to listen carefully, participate, ask questions and make an effort to complete learning tasks. On the other hand, a lack of interest may be reflected in poor concentration, limited participation and reduced commitment to schoolwork (Wu, 2022). The level of students' interest in learning can influence the way they approach their academic work. Students who are interested in what they are learning are more likely to give time and effort to their tasks, participate in discussions and continue working when they encounter difficulties. Students with little interest may, in contrast, be less willing to take part in classroom activities or persist with demanding tasks (Harackiewicz *et al.*, 2022; Renninger & Hidi, 2022).

Statement of the Problem

Multimedia instructional materials are increasingly recognised as useful resources for classroom teaching, yet their use in many secondary schools does not appear to match their potential. Resources such as computers, projectors, educational videos, animations, interactive software and internet-based materials can provide teachers with additional ways of presenting lessons and can make classroom activities more engaging. However, teaching in many public secondary schools still depends largely on conventional methods with multimedia resources not being used regularly or effectively. This situation is of concern because students' academic performance and interest in classroom learning remain important issues in secondary education. In Benue South, concerns about students' performance in internal and external examinations together with reduced enthusiasm for learning among some students, suggest the need to examine factors that may contribute to these experiences. Inadequate use of multimedia instructional materials may be one of the factors limiting opportunities for more engaging and varied classroom instruction.

The limited use of multimedia may link to several practical difficulties. Some schools may not have adequate equipment, while available facilities may not be sufficient for the number of students. Teachers may also need further training to use digital resources confidently and appropriately. Problems such as irregular electricity supply, weak internet connectivity and limited institutional support can create additional barriers. These challenges raise the question of whether multimedia instructional materials are being sufficiently utilized in secondary schools in Benue South and whether their use is associated with students' academic performance and learning interest. It is this gap that the present study seeks to address.

Research Objectives

The research is guided by the following objectives:

1. To examine the extent of utilization of multimedia instructional materials by teachers in secondary schools in Benue South, Nigeria.
2. To determine the influence of multimedia instructional materials on secondary school students' academic performance in Benue South, Nigeria.
3. To assess the influence of multimedia instructional materials on secondary school students' learning interest in Benue South, Nigeria.

Research Questions

1. To what extent are multimedia instructional materials utilized by teachers in secondary schools in Benue South, Nigeria?
2. To what extent does the use of multimedia instructional materials influence secondary school students' academic performance in Benue South, Nigeria?
3. To what extent does the use of multimedia instructional materials influence secondary school students' learning interest in Benue South, Nigeria?

Theoretical Framework

The theoretical framework provides the foundation upon which this research is anchored. It presents the theories that explain the relationship between the utilization of multimedia instructional materials and secondary school students' academic performance and learning interest. The framework serves as a guide for understanding how multimedia instructional materials influence students' learning processes and educational outcomes. The research is anchored on the Cognitive Theory of Multimedia Learning developed by Richard E. Mayer (2001) and the Constructivist Learning Theory propounded by Lev Vygotsky (1978). These theories are considered appropriate because they explain how learners process multimedia information, construct knowledge and develop interest in learning through active engagement with instructional materials.

Empirical Review

Research on multimedia instructional materials has increased as digital technologies have become more common in classroom teaching. Previous studies have considered their effects on academic performance, engagement, motivation and learning interest in different educational settings. The studies reviewed below provide evidence that is relevant to the present research.

Kumar and Sharma (2024) studied multimedia-assisted instruction and academic achievement among 240 secondary school students in six public schools in India. Using a quasi-experimental design, the researchers taught the experimental group with multimedia presentations, animations and educational videos, while the control group received conventional instruction. The multimedia group recorded significantly higher achievement scores, leading the researchers to conclude that multimedia-assisted instruction can support conceptual understanding and academic performance. Rahman and Islam (2023) examined multimedia learning resources and students' engagement and academic performance among secondary school students in Bangladesh. The mixed-methods study involved 320 students and 40 teachers and used questionnaires and classroom observations. The findings showed that regular use of multimedia resources was associated with better classroom participation, comprehension and examination performance. The researchers recommended greater investment in multimedia facilities and

teacher training. Mendoza *et al.* (2025) investigated digital multimedia instruction and learning interest among students in public secondary schools in the Philippines. Their descriptive survey involved 510 students. Students who reported frequent exposure to multimedia instructional materials also reported higher levels of learning interest, curiosity and classroom engagement than those with limited exposure. The study concluded that multimedia-supported instruction can contribute to a more stimulating and learner-centred classroom environment.

Ojo and Afolabi (2024) examined instructional technology utilization and academic performance among teachers and students in twelve senior secondary schools in Ondo State, Nigeria. The correlational study involved 360 participants. The results indicated a significant positive relationship between the use of instructional technologies, including multimedia materials, and students' academic performance. The researchers emphasized the importance of effective technology integration for improved learning outcomes. Nwosu and Chukwu (2023) investigated multimedia instructional resources in the teaching of English Language in public secondary schools in Anambra State, Nigeria. Using a quasi-experimental design with senior secondary school students, the study found that learners taught with multimedia resources performed significantly better in reading comprehension, vocabulary acquisition and overall English Language achievement than those taught conventionally. The researchers concluded that multimedia resources can support language learning and academic performance. Adebayo and Oladipo (2025) assessed computer-based multimedia instruction and students' achievement and retention in Mathematics among 180 secondary school students in Oyo State, Nigeria. The pre-test and post-test experimental study found significant improvement in achievement and retention among students exposed to multimedia-based instruction. The researchers recommended integrating multimedia materials into Mathematics teaching to improve learning outcomes. Mwangi and Wambui (2024) examined multimedia learning environments and motivation among 450 students in urban and rural secondary schools in Kenya. Using a survey design, the researchers found that multimedia learning environments were associated with increased intrinsic motivation, classroom participation and sustained interest. They concluded that interactive multimedia resources can positively affect students' attitudes towards learning and academic engagement. Ezeani and Umeh (2025) studied the utilization of multimedia instructional materials and achievement in Basic Science among junior secondary school students in Enugu State, Nigeria. The quasi-experimental study found that students taught with multimedia materials significantly outperformed those taught through conventional methods. The researchers concluded that multimedia resources can improve understanding of scientific concepts and academic achievement. Okafor and Eze (2024) examined digital instructional media and learning interest among 400 secondary school students in South-East Nigeria. Their descriptive survey showed that multimedia instructional materials were associated with higher attention, enthusiasm, classroom participation and willingness to engage in learning activities. The study therefore identified digital instructional media as useful resources for promoting learning interest among adolescents. Yakubu and Ibrahim (2023) investigated technology-enhanced instructional practices and academic performance in selected public secondary schools in Kaduna State, Nigeria. Using a correlational design involving teachers and students, the study found that schools with greater multimedia technology utilization recorded significantly better student academic performance than schools with lower levels of technology integration. The researchers recommended increased provision of multimedia facilities and continued professional development for teachers.

Methodology

The study adopted a descriptive survey research design. This design was considered appropriate because it allows information to be obtained from a defined group of respondents and used to describe existing conditions as well as examine relationships among the variables of interest. It is particularly suitable for educational studies that seek to obtain respondents' views, experiences, attitudes or practices without manipulating the variables being investigated.

Creswell and Creswell (2023) explained that descriptive survey research involves obtaining information from a sample of a population through instruments such as questionnaires for the purpose of describing characteristics or relationships among variables. Ary *et al.* (2021) similarly noted that survey research provides a systematic means of collecting information from respondents for the purpose of addressing research questions.

Population of the Study

The population of the research consists of secondary school students in Benue South Senatorial District of Benue State. The district comprises nine Local Government Areas, namely Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu and Otukpo.

Sample and Sampling Techniques

A multistage sampling technique was adopted for selecting respondents for the research. The choice of this technique was appropriate because the research population is large and distributed across the nine Local Government Areas that make up Benue South Senatorial District. At the first stage, the nine Local Government Areas constituting Benue South Senatorial District were considered in the sampling process. At the second stage, secondary schools were selected from the Local Government Areas through simple random sampling, thereby giving eligible schools an equal opportunity of selection. At the third stage, proportionate sampling was used to determine the number of students selected from each sampled school in accordance with the population of students in the respective school. At the final stage, simple random sampling was used to select the individual students who participated in the research.

The sample consisted of 396 secondary school students drawn from the total population of 43,018 students in Benue South Senatorial District, Benue State. The sample size was determined using the Taro Yamane formula at a 5% level of precision. The formula is stated as:

$$n = N / 1 + N(e)^2$$

Where:

n = sample size

N = population of the study

e = level of precision

Using the population of 43,018 students:

$$n = 43,018 / 1 + 43,018(0.05)^2$$

$$n = 43,018 / 108.545$$

$$n = 396$$

Therefore, a sample size of 396 secondary school students was used for the research.

Results

Research Question 1

To what extent are multimedia instructional materials utilized by teachers in secondary schools in Benue South, Nigeria?

The responses on teachers' use of multimedia instructional materials were examined and the results are presented in Table 1

Table 1: Extent of Utilization of Multimedia Instructional Materials by Teachers

S/N	Items	SA	A	D	SD	Mean	Decision
1	Teachers use computers or laptops during teaching.	128	146	78	44	2.90	High
2	Teachers use projectors to present lesson content.	102	132	96	66	2.68	High
3	Teachers use educational videos during lessons.	116	141	89	50	2.82	High
4	Teachers use audio materials to support teaching.	82	125	108	81	2.53	High
5	Teachers use educational software or digital applications.	96	128	105	67	2.64	High
6	Teachers use internet-based materials during teaching.	108	137	94	57	2.75	High
7	Teachers use multimedia presentations to explain difficult topics.	121	149	82	44	2.88	High
8	Teachers combine pictures, text, audio and video when teaching some topics.	115	143	91	47	2.83	High
	Grand Mean					2.75	High

Interpretation

The results show that teachers use different forms of multimedia instructional materials in their teaching. However, the frequency of use was not the same for all the materials, as some were reported to be used more often than others. The grand mean of 2.75 shows that multimedia instructional materials were utilized by teachers in secondary schools in Benue South, Nigeria, to a high extent. Answer to Research Question One: The overall mean of 2.75 indicates that multimedia instructional materials are utilized by teachers in secondary schools in Benue South, Nigeria, to a high extent.

Research Question Two

To what extent does the use of multimedia instructional materials influence secondary school students' academic performance in Benue South, Nigeria?

Table 2: Influence of Multimedia Instructional Materials on Students' Academic Performance

S/N	Items	SA	A	D	SD	Mean	Decision
1	The use of multimedia instructional materials helps me understand lessons better.	145	156	65	30	3.05	High
2	Multimedia materials help me remember what I have learnt for a longer time.	132	158	72	34	2.98	High
3	The use of videos and pictures makes difficult topics easier to understand.	151	150	65	30	3.07	High
4	Multimedia instructional materials help me perform better in class tests and examinations.	118	155	82	41	2.88	High
5	The use of multimedia materials helps me complete learning activities more effectively.	127	159	76	34	2.96	High
6	Multimedia instruction improves my understanding of practical aspects of lessons.	139	154	70	33	3.01	High
7	I learn better when teachers use multimedia instructional materials during lessons.	146	157	62	31	3.06	High
8	The use of multimedia instructional materials has improved my overall academic performance.	142	163	64	27	3.06	High
	Grand Mean					3.01	High

Interpretation

As shown in Table 2, multimedia instructional materials have a high influence on students' academic performance. The mean scores for the eight items ranged from 2.88 to 3.07, with a grand mean of 3.01. The highest mean score, 3.07, was recorded for the statement that videos and pictures make difficult topics easier to understand. This was followed by the statement on improvement in overall academic performance, which had a mean of 3.06. The lowest mean score was 2.88 for the statement relating to performance in class tests and examinations. With a grand mean of 3.01, the finding indicates that the use of multimedia instructional materials influences the academic performance of secondary school students in Benue South, Nigeria, to a high extent.

Research Question Three

To what extent does the use of multimedia instructional materials influence secondary school students' learning interest in Benue South, Nigeria?

Table 3: Influence of Multimedia Instructional Materials on Students' Learning Interest

S/N	Items	SA	A	D	SD	Mean	Decision
1	The use of multimedia materials makes lessons more interesting to me.	150	158	61	27	3.09	High
2	I pay more attention in class when my teacher uses multimedia materials.	143	161	63	29	3.06	High
3	Multimedia materials make me more willing to participate in classroom activities.	139	157	70	30	3.02	High
4	I enjoy lessons more when videos, pictures or animations are used.	155	151	63	27	3.10	High
5	The use of multimedia materials encourages me to learn more about a topic.	136	164	68	28	3.03	High
6	I am more motivated to study when multimedia materials are used during lessons.	131	159	72	34	2.98	High
7	Multimedia materials make me look forward to attending lessons.	128	153	78	37	2.94	High
8	The use of multimedia instructional materials has increased my interest in learning.	141	162	66	27	3.05	High
	Grand Mean					3.03	High

Interpretation

Table 3 shows that multimedia instructional materials have a high influence on students' learning interest. The mean scores for the individual items ranged from 2.94 to 3.10, while the grand mean was 3.03. The highest mean score of 3.10 was recorded for the statement that students enjoy lessons more when videos, pictures or animations are used. The next highest was 3.09 for the statement that multimedia materials make lessons more interesting. The lowest mean score, 2.94, was recorded for the statement that multimedia materials make students look forward to attending lessons. The grand mean of 3.03 indicates that the use of multimedia instructional materials influences secondary school students' learning interest in Benue South, Nigeria, to a high extent.

Discussion of Finding for Research Question One

The first finding showed that teachers in secondary schools in Benue South, Nigeria, used multimedia instructional materials to a high extent. This means that multimedia resources form part of the teaching activities in the schools covered by the research. The materials reported in the research included computers, projectors, educational videos, audio materials, digital applications, internet-based materials and multimedia presentations. The finding agrees with the earlier research discussed in Chapter Two which showed that technology and multimedia resources can assist teachers in presenting lesson content and can make classroom activities more engaging. It also supports the view that presenting information through different forms can give students more than one way of following and understanding a lesson.

Discussion of Finding for Research Question Two

The second finding showed that the use of multimedia instructional materials had a high influence on students' academic performance, with a grand mean of 3.01. The responses suggest that students understood lessons better, remembered what they had learnt and performed better when multimedia materials were used during teaching. This result agrees with the research reviewed in Chapter Two which reported that multimedia-supported teaching can improve students' academic performance. The similarity is because multimedia gives teachers the opportunity to explain lesson content using pictures, videos, demonstrations and other forms of presentation. These materials can make some topics easier for students to follow.

Discussion of Finding for Research Question Three

The third finding showed that multimedia instructional materials had a high influence on students' learning interest, with a grand mean of 3.03. The result suggests that students were more interested in lessons when multimedia resources were included in classroom teaching. The use of videos, pictures, animations, audio materials and other forms of presentation can add variety to normal classroom activities. This finding agrees with Renninger and Hidi (2022), who explained that interest can develop through meaningful involvement in learning and can affect students' attention, effort and persistence. The present result supports this position because materials that attract students' attention and encourage them to take part in lessons can make them more willing to remain involved in learning. It also agrees with the other studies reviewed in the literature which linked appropriate use of multimedia with greater learner engagement.

Conclusion

This research focused on the utilization of multimedia instructional materials and their influence on the academic performance and learning interest of secondary school students in Benue South, Nigeria. It was undertaken to examine the place of multimedia resources in classroom teaching and the way students responded to their use. A descriptive survey design was used for the study. Information was obtained from the students through a structured questionnaire and analyzed with frequency counts, percentages, mean and independent-samples t-test. The research considered teachers' use of multimedia materials, their influence on academic performance and learning interest and the differences between male and female students. The results showed that teachers utilized multimedia instructional materials to a high extent. They also showed that multimedia materials had a high influence on students' academic performance and learning interest. These results shows that when such materials are properly used during lessons, they can support clearer presentation of content and make learning more engaging for students. The research further found significant gender differences in both areas. Female students had higher mean scores than male students for academic performance and learning interest. This result is specific to the respondents in this research and should not be interpreted as showing that one gender is generally more capable of learning than the other.

Recommendations

Based on the findings of the research, the following recommendations are made:

1. Teachers should make regular and appropriate use of available multimedia instructional materials when teaching topics for which such resources can improve understanding.
2. School administrators should provide and maintain relevant multimedia facilities, including computers, projectors and other useful digital resources and ensure that they are available for

classroom use.

3. Teachers should be given practical training to improve their skills in selecting, preparing and using multimedia instructional materials during lessons.

4. Government and other education stakeholders should give attention to electricity supply and other basic facilities needed for the effective use of multimedia resources in schools.

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