

**EFFECT OF AUDIO VISUALS IN THE TEACHING AND LEARNING OF
MATHEMATICS IN SELECTED SECONDARY SCHOOLS IN MAKURDI
METROPOLIS, BENUE STATE, NIGERIA.**

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ABSTRACT

This research work examined the Effect of Audio Visual Aids in the teaching and learning of mathematics in selected secondary schools in Makurdi Metropolis, Benue State, Nigeria. The study was anchored on Constructivist Theory. The researcher used both primary and secondary sources from a sample of four hundred and forty three (443) respondents obtained by the use of a well-structured questionnaire. The data collected were analyzed using descriptive statistics such as Mean rating and Paired Sample t-test. The result of the analysis shows The result of the paired sample test showed that there is a difference in the Mean difference in the responses of Male respondents compared to the female respondents and the result is statistically significant ($p < 0.05$). Hence, we reject the null hypothesis; in other words, we accept that the estimate is statistically significant at 5% level of significance. The result of the second hypothesis indicate that there is no significant difference between the mean responses of male and female teachers on the extent of use of audio visual aids in the teaching and learning of mathematics in selected secondary schools in Makurdi Metropolis, Benue State, Nigeria. The result of the paired sample t-test shows that there is a significant difference between the mean responses of male and female teachers on the factors influencing the use of audio visual aids in the teaching and learning of mathematics in selected secondary schools in Makurdi metropolis. The result of hypothesis four showed that there is no significant difference between the mean responses of male and female teachers on the strategies for improving the use of audio visual aids in the teaching and learning of mathematics in selected secondary schools in Makurdi Metropolis, Benue State. It was concluded that today's technology offers many choices to the informed educator who wishes to capitalize on a new generation's appetite for multimedia presentations and as such, audio-visual aids in the classroom have been shown to enhance teaching methods and improve student comprehension. It was recommended among others that the use of audio visual aids should not only be limited to the teaching of practical mathematics in very few schools as shown by the result of our study in table. Its use can be extended to cover other aspects and concepts in mathematics.

Keyword: Audio-visuals, Teaching, Learning, Mathematics, Benue, Nigeria

1.0 INTRODUCTION

Teaching and learning processes are very crucial at all levels of educational development. If well planned and directed, they are the keys to success and progress of an individual. Therefore, best methods have to be used in order to enhance effective teaching and learning. Consequently, the need to employ the use of teaching aids otherwise referred to as audiovisual resources to enhance effective teaching and learning. The influence of audio visual materials in promoting student's academic achievement and teaching and learning in mathematics cannot be over emphasized. The materials used by teachers to teach and drive home their subject points at the primary and secondary school levels of our education system is incontrovertibly a paramount important issue in practical classroom interaction and successful transfer of knowledge from the teacher to the students. Audio visual are materials which assist teachers to make their lessons explicit to students. They are also used to transmit information, ideas and notes to learners. Audio visual materials include both visuals and audiovisuals such as pictures, flashcards, posters, charts, tape recorder, radio, video, television, computers among others. These materials serve as supplement to the normal processes of instruction.

In other words, audio visual instructions simply mean the presentation of knowledge to be gained through the seeing experience. According to Roberta (2014) visual education is a method of imparting information which is based upon the psychological principle that one has a better conception of the thing he sees than of the thing he reads about or hears or discusses. Audio visual instruction also simply means a supplementary device for making learning objective real and effective. Experiences provide with the

help of audiovisual aids are generally interesting full of life and provide a clear vision leading to perfect understandability and adaptability in life. Audio visual aids are not self contained teaching devices. They are not in the field of learning to replace books and teachers. They are important because they make experiences important by attaching importance to their natural existence and further use. Audio-visual aids are most effective tools for developing flawless communication and interaction between student and content as well as student and teacher. These aids not only help to save the time of teacher but also help in developing and arousing curiosity, creativity and motivation. It emphasizes on the comprehension of knowledge and concept as well as keeps working on developing sound foundations for higher and further studies. Examples of Audio-visual aids include; Television, Motion pictures, standard lantern, sub-standard slide projector, strip projector, micro-slide projector, radio among others.

Education is the greatest weapon for self-confidence and civilization. In teaching and learning, instructional materials have been a triumphant entry, bringing benefits to both teachers and students. This makes it essential for every teacher and student to be familiar with the topic taught through the use of materials which the students can hear and see things for themselves. Several researchers in Nigeria have investigated into the use of audio visual instructional materials in teaching and learning. This research was undertaken because of the importance to which audio visuals can have on the teaching of Mathematics in Nigeria. Previous studies have not examined the effect of audio visuals in the teaching of Mathematics in the study area. However with all the researches made on the effects of instructional materials especially Audio-visual materials, no

research has been specific to the study area on the effect of audio visual aid in the teaching and learning of mathematics. Mathematics is a practical subject and as a result, students are supposed to be shown in a practical term, how the various process of farming is carried out before it is practicalized on the field. This can only be possible through the use of audio visual aid. This study is motivated by the fact that students do not retain for long or understand what they are taught without audio-visual aids. Such learning does not encourage participation and lacks interest or stimulation. The study will also investigate the hindrance to the use of audio visual aids in the study area.

Traditional teaching methods such have not proved to be effective in the teaching and learning of a practical subject like mathematics, hence the use of audio visual in the teaching and learning of mathematics. Hence the study of this is imperative to help with the advantages and the application of this teaching method in the boosting of Mathematics in the study area. Audiovisual resources according to Dike (1989) do not only increase the motivation of the teachers and learners; they add clarity to the topic taught and make learning more interesting. Nowadays, information technologies have affected every aspect of human activity and have a potential role to play in the field of education and training. The need of new technologies in teaching learning process grows stronger and faster. The information age of knowledge provides feasibility for discovery, exchange information, communication and exploration to strengthen the teaching learning process. A study of the application of information technology can be effectively done if a better understanding of the use of audio visual is established through research of this nature.

Objectives of the Study

The main objective of the this study is to determine the Effect of Audio Visual Aids in the teaching and learning of Mathematics in selected Secondary School in Makurdi Metropolis, Benue State, Nigeria. The specific objectives of the study are to:

- a. Ascertain the relevance of the use of audio-visual aids in teaching Mathematics in Secondary Schools in Makurdi Metropolis.
- b. Ascertain the extent to which audio visual aids are used in teaching Mathematics in Secondary Schools in Makurdi Metropolis.
- c. Identify factors influencing the use of audio visual aids in Secondary Schools in Makurdi Metropolis.
- d. Identify strategies for improving the use of audio visual aids in secondary Schools in Makurdi Metropolis.

2.0 LITERATURE REVIEW

Theoretical Framework

Constructivist theory

Constructivist Theory shows that learning is an active process in which learners construct new ideas or concepts based upon their current/past knowledge. The theory of constructivism suggests that learners construct knowledge out of their experiences. However, constructivism is often associated with pedagogic approaches that promote active learning, or learning by doing such as the use of audio-visuals in teaching and learning. The theory was propounded by John Dewey in 1859. Constructivist theory further states that the task of schools is to help students to develop new meanings in response to new experiences rather than to learn the meanings others have created. This theory described how the teaching and learning process work in order to improve the students skills; in order to have a compound meaning about teaching and learning process, and the way people

create meaning of the world through a series of individual constructs. Most audiovisual courses consisted of short dialogues and sets of recorded drills and pictorial graphics.

Audio visuals develops in the mind of the people a formation of cognitive skills to facilitate join the skills and attitudes of the people and the information showing through different cods.

Audio-visual methods in teaching can improve classroom instruction and student understanding. Today, technology offers many possibilities for the teacher that wants to capitalize on the appetite of a new generation of multimedia presentations. Lesson plans on the use of the media must be consistent with the objectives of the program to have a maximum effect on student's performance.

This theory is relevant to our study because in the classroom, the constructivist view of learning can point towards a number of different teaching practices which include audio visual. In the most general sense, it usually means encouraging students to use active techniques (experiments, real-world problem solving techniques using audiovisual aid which create an indelible mark in the mind of the student) to create more knowledge and then to reflect on and talk about what they are doing and how their understanding is changing.

Conceptual Framework **Concept of Audio Visuals.**

By audio-visual aids, we usually mean the most modern or the most recently used of these methods (films, filmstrips, radio and television). Visual aids are far older. They correspond to a profound tendency among the immense majority of men to materialize their thoughts in the form of graphic or sonorous images or to give their thoughts a concrete frame of reference.

Plato himself took care to set the scenery of his dialogues, and he used concrete words and concrete comparisons (for example, the cave) as foundations for his most abstract ideas. In France, the *Très riches heures du duc de Berry* brings out the importance which 'illustration' can take in a work which would have otherwise sunk into oblivion. Xylographic images preceded the printing press by three-quarters of a century and the first illustrated book by nearly a century. The tremendous success of the 'images of Epinal' in books peddled from door to door in France was only a manifestation of popular taste in a society where illiterates continued to be in a majority and where images went with oral literature. Films, radio and television, considered as educational instruments, have merely developed – at a rapid rate – alongside older means whose importance remains considerable. Their common denominator lies in their function as aids (Prasad, 2005).

Using audio-visual aids and other technologies developed in this modern scientific era for the purpose of achieving concrete education proves beneficial for teacher and student and educational system as whole. It brings diversification in methods of instruction. They are equally useful at all levels of education. Appropriate use of audio-visual aids in teaching of English, Geography, History, Science, Languages, Art, Agriculture and many other technical and vocational subjects is increasing day by day. Prasad (2005) contend that audio-visual aids and their use are not only limited to educational purposes rather if we go back in history we find Martin Luther suggesting to use empty walls for the promotion of Protestant movement. In fact this idea leads to the invention of writing board or black board which is used today

in almost every school worldwide. Some other social objectives are also achieved through the use of audio-visual aids i.e. in an awareness campaign about Human Immunodeficiency Virus (HIV) audio-visual aids are used.

While studying the broad umbrella term of audio-visual aids, one can easily come across different types of audio-visual equipments ranging from simple hand-made charts to highly sophisticated projectors. The classification of audio-visual aids is presented graphically as under:

1. Projected Aids
2. Non-Projected Aids

Audio-visual material contributes valuable experiences for teachers and students. Almost every form of instruction is based on verbalism, but the use of audio-visual aids minimizes the verbalism and facilitates students to concentrate and motivate them towards abstract thinking and imagination to better understand the concept.

Empirical Review

Oko (2012) studied the use of Audio-Visual for effective teaching of Mathematics in primary schools in Nigeria. The study employed questionnaire survey to provide insight into awareness of the investigational group on audio-visual aids. Study participants consisted of 20 Form 2 students of evenly distributed academic performance, with 10 in control group and 10 in experimental group. Students in control group were taught using chalk and talk method while students in experimental group were taught using audio-visual aids. Pre- and post-assessments were administered to the students in both group to monitor how the two teaching approaches affected students' test results. A survey was conducted among students in experimental group to gauge their perceptions towards the use of

audiovisual aids in teaching. The pre- and post-assessment results were analyzed with Analysis of Variance (ANOVA) while the survey findings were analyzed with Pearson correlation. Statistical Package for Social Science (SPSS) was used for the statistical analyses. The study shows that audio-visual aids are effective in increasing the understanding of students as indicated in the significantly improved marks for post assessment in the experimental group. Students were observed to be more attentive when audio-visual aids were played. Majority of students in the experimental group agreed that the use of audio-visual aids increased their interest and ability to remember the contents. The students in general expressed that they were motivated to learn if audio-visual aids were incorporated in the teaching and learning process. This study contributes to teaching of lower secondary science in rural schools by suggesting that teachers in rural secondary schools could download the audio-visual aids prior to using them in lesson delivery and the aids should undergo review to ensure appropriateness. In rural schools, financial allocation and maintenance of portable hardware for display of the audio-visual aids in teaching and learning should be looked into for the betterment of teaching and learning.

Akpan and Okoli (2017) investigated the effect of the use of Instructional Materials on Academic Performance of Pupils in Ikwuano Abia State. The study population comprised of all the students from the public and private primary schools in Ikwuano Local Government Area of Abia state. The simple random samplings technique was used for the selection of the sample and 300 pupils made up the sample for the study. The instruments for data collection were a questionnaire and the result of a post-test. Data collected were analyzed using simple mean and

percentage. The findings were that the children who were taught with instructional materials performed better than those who were not. It was recommended that teachers should be made to undergo seasonal trainings to acquaint themselves of the modern trends in instructional technology; they should make out time for improvisation of instructional materials; an instructional material bank should be located within the reach of the teacher for easy access; there is the need to explore and expand the scope of instructional materials from charts, and pictures to overhead projectors, slides and web-based instruction which will require satellite receiver, computer, television, electronic boards etc.

Adebowale and Adekanye (2012) studied the introduction of audio-visual resources (AVR) in teaching and learning has far reaching effect on the management and infrastructure facilities in libraries. A total of 150 male respondents and female librarians, lecturers and students were selected from three colleges of education in Lagos State of Nigeria using Random sample technique. Data were collected through 20 items questionnaire. The integration of both books and non-book materials into the library system will go a long way in providing necessary information to clientele. This study surveyed the audio-visual resources availability and use for library services among colleges of education in Lagos State. Findings revealed that apart from FCE, AOCOED and LACOPED had no access to AV resources, no adequate time for training while respondents were of the opinion that AVR has a significant effect on teaching learning. Findings also revealed that the major obstacle faced is inadequate funding, skill, monitoring, irregular supply of electricity, non-provision of AV resources and attention of

the government hindered the use of AV resources. Based on the result of the findings, the Federal Government of Nigeria should publish a position paper on provision of AV resources centers and to appoint professionals to man AVR centers. The centre should consist of departments like Graphics, Electronics, Audio-Visual unit, and be funded by federal and state government among other findings.

Doosuur & Igyuve (2013) studied the use of audio-visual materials in the teaching and learning processes in Colleges of Education in Benue State-Nigeria. The study was based on achieving the following purposes: to evaluate how the library meets the needs of the teachers in supply of audio-visual materials; the types and quality of audio-visual materials available in the college, their frequencies of use and inhibitions and finally what steps the librarian has taken in promoting or creating an awareness of the available audio-visual resources in the library. Two sets of questionnaires were administered to lecturers and staff in order to elucidate the needed information. The researcher also went to the college to observe and also to administer the questionnaire. Through the questionnaire and observation made by the researcher, data were collected, organized and analyzed using non-parametric statistical techniques like percentages and frequencies; mean was also used in research question three for easy analysis and discussion because of the number of the items involved. It was finally discovered that: The College collection of audio-visual materials is fairly adequate. The lecturers in the college rarely use audio-visual resources in teaching. The chalkboard is the only audio-visual material frequently used by the lecturers. Non-availability, lack of supporting infrastructures and human factors are hindrances to the use of audio-visual aids in the college. There are numerous

benefits that students derive from the use of audio-visual aids. The awareness of available audio-visual resources created by the librarian is not impressive.

3.0 METHODOLOGY

Research design

The survey research design is used for this study. This research was carried out in Makurdi Metropolis with public secondary schools spread evenly across the council wards of the Local Government Area. The population of this study consists of the Mathematics teachers and Senior Secondary School Students offering Mathematics in the selected secondary schools in Makurdi Metropolis. The population of the study comprises four hundred and forty three (443) respondents which includes teachers and students.

The Simple random sampling procedure was used for selection of the sample size. Seven schools out of 40 accredited secondary schools in the two Local Government in Makurdi Metropolis were randomly selected by simple random sampling. To be effective in the data collection process, the researcher used one instrument which is the Teacher-student Assessment questionnaire (TSAQ). The instrument of data collection- the questionnaire was validated by my supervisor and statistician who are experts in the field of study. The reliability of the instrument will be determined through testing the internal reliability of our instrument using Cronbach alpha criteria.

A Cronbach Alpha of values of 0.7 and above shows that the questionnaire for the study is reliable.

Method of Data Analysis

The data for the study was collected, coded and analyzed using computer-based Statistical Package for Social Sciences (SPSS Version 20.0 for Microsoft Windows). Various statistical methods were used in analyzing this study: percentages, frequency and tables were used to examine the respondents' bio-data. Mean rating was used to examine the specific objectives of the respondents while Paired Sample t-test was used to test the hypotheses of the study

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4.5 Testing the hypotheses of the Study

The hypotheses of the study were tested using the t-test statistics which examines the mean differences between small samples (in this case male and female responses) of teacher's perception on the subject under discussion.

H₀₁: There is no significant difference between the mean responses of male and female teachers on the relevance of the use of audio visual aids in teaching and learning of Mathematics in secondary Schools in Makurdi Metropolis.

Table 1: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Mean response of Male	20.3000	20	10.13644	2.26658
	Mean Response of Female	10.0000	20	12.76096	2.85344

Source: SPSS Result, 2019

Table 1b: Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Mean response of Male - Mean Response of Female	10.3000	14.68655	3.28401	3.42648	17.17352	3.136	19	.005

Source: SPSS Result, 2019

The result of the paired sample test showed that there is a difference in the Mean difference in the responses of Male respondents (20.3000) compared to Mean Response of the female respondents (10.000) and the result is statistically significant ($p < 0.05$) as shown by the result of the significant level represented in the Paired Samples Test table above. Hence, we reject the null hypothesis; in other words, we accept that the estimate is statistically significant at 5% level of significance. This means that there is a

significant difference between the mean responses of male and female teachers on the relevance of the use of audio visual aids in teaching and learning of Mathematics in secondary Schools in Makurdi Metropolis, Benue State

H₀₂: There is no significant difference between the mean responses of male and female teachers on the extent of use of audio visual aids in teaching and learning of Mathematics in secondary Schools in Makurdi Metropolis.

Table 2: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Mean response of Male	12.9000	20	11.34576	2.53699
	Mean Response of Female	13.6000	20	15.31906	3.42545

Source: SPSS Result, 2019

Table 2b: Paired Samples Test

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Mean response of Male - Mean Response of Female	-.70000	18.36501	4.10654	-9.29509	7.89509	-.170	19	.866

Source: SPSS Result, 2019

The result of the paired sample test showed that there is a difference in the

Mean response of male respondents (12.9000) compared to Mean Response of

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the female respondents (13.6000) and the result is not statistically significant ($p < 0.05$) as shown by the result of the significant level represented in the Paired Samples Test table above. Hence, we accept the null hypothesis; in other words, we accept that the estimate is not statistically significant at 5% level of significance. This means that there is no significant difference between the mean responses of male and female teachers on the extent of use of audio visual aids in

teaching and learning of Mathematics in secondary Schools in Makurdi Metropolis, Benue State

H03: There is no significant difference between the mean responses of male and female teachers on the factors influencing the use of audio visual aids in teaching and learning of Mathematics in Secondary Schools in Makurdi Metropolis.

Table 3: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	MeanresponseofMale	35.8500	20	23.36501	5.22458
	MeanResponseofFemale	17.3000	20	16.31951	3.64915

Source: SPSS Result, 2019

Table 3b: Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Meanresponseof Male – MeanResponse ofFemale	18.55000	22.59826	5.05313	7.97369	29.12631	3.671	19	.002

Source: SPSS Result, 2019

The result of the paired sample test showed that there is a difference in the Mean responses of male respondents (35.8500) compared to Mean Response of the female respondents (17.3000) and the result is statistically significant ($p > 0.05$) as shown by the result of the significant level represented in Table 3b above. Hence, we reject the null hypothesis; in other words, we accept that the estimate is statistically significant at 5% level of significance. This means that there is a significant difference between the mean

responses of male and female teachers on the factors influencing the use of audio visual aids in teaching and learning of Mathematics in Secondary Schools in Makurdi Metropolis State.

H04: There is no significant difference between the mean responses of male and female teachers on the strategies for improving the use of audio visual aids in teaching and learning of Mathematics in Secondary Schools in Makurdi Metropolis State..

Table 4: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
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Pair 1	MeanresponseofMale	20.3500	20	25.06471	5.60464
	MeanResponseofFemale	13.8000	20	14.82743	3.31551

Source: SPSS Result, 2019

Table 4b: Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Meanresponseof Male – MeanResponseof Female	6.55000	30.78187	6.88304	-7.85636	20.95636	.952	19	.353

Source: SPSS Result, 2019

The result of the paired sample test showed that there is a difference in the Mean responses of male respondents (20.3500) compared to Mean Response of the female respondents (13.8000) and the result is statistically significant ($p > 0.05$) as shown by the result of the significant level represented in table 4b above. Hence, we accepted the null hypothesis; in other words, we accept that the estimate is statistically significant at 5% level of significance. This means that there is no significant difference between the mean responses of male and female teachers on the strategies for improving the use of audio visual aids in teaching and learning of Mathematics in Secondary Schools in Makurdi Metropolis, Benue State.

Discussion of Findings

This research work was conducted mainly to investigate the Effect of Audio Visual Aids in Teaching and learning of Mathematics in Senior Secondary School in Makurdi Metropolis State. Its primary objectives was to ascertain the relevance of the use of audio-visual aids in teaching and learning of Mathematics in Secondary Schools in Makurdi Metropolis State, ascertain the extent to which audio visual aids are used in teaching and learning of Mathematics in Secondary Schools in Makurdi Metropolis, Benue State, identify

factors influencing the use of audio visual aids in Secondary Schools in Makurdi Metropolis State and identify strategies for improving the use of audio visual aids in secondary Schools in Makurdi Metropolis, Benue State.

The result of the paired sample test showed that there is a difference in the Mean difference in the responses of Male respondents (20.3000) compared to Mean Response of the female respondents (10.000) and the result is statistically significant ($p < 0.05$) as shown by the result of the significant level represented in the Paired Samples Test Table. Hence, we reject the null hypothesis; in other words, we accept that the estimate is statistically significant at 5% level of significance. This means that there is a significant difference between the mean responses of male and female teachers on the relevance of the use of audio visual aids in teaching and learning of Mathematics in secondary Schools in Makurdi Metropolis State. The result of the findings showed that Audio visual aids are relevant in improving the academic performance of students, and that the relevance of audio visual teaching material is tied to the level of proficiency of the instructor. This agreed with Oko (2012) who investigated the use of Audio-Visual for effective teaching of

Mathematics in primary schools in Nigeria.

The result of the paired sample test showed that there is a difference in the Mean response of male respondents (12.9000) compared to Mean Response of the female respondents (13.6000) and the result is not statistically significant ($p < 0.05$) as shown by the result of the significant level represented in the Paired Samples Test table above. Hence, we accept the null hypothesis; in other words, we accept that the estimate is not statistically significant at 5% level of significance. This means that there is no significant difference between the mean responses of male and female teachers on the extent of use of audio visual aids in teaching and learning of Mathematics in secondary Schools in Makurdi Metropolis Benue State. This agreed with the work of Doosuur and Igyuve (2013) who studied the use of audio-visual materials in the teaching and learning processes in Colleges of Education in Benue State-Nigeria. The question on Audio visual aids is mostly used by students at the senior class was also highest in the work of Ball, (2008) noted that Audio visual aids is mostly used by students at the senior class. The result of the paired sample test showed that there is a difference in the Mean responses of male respondents (35.8500) compared to Mean Response of the female respondents (17.3000) and the result is statistically significant ($p > 0.05$) as shown by the result of the significant level represented in table 13b above. Hence, we reject the null hypothesis; in other words, we accept that the estimate is statistically significant at 5% level of significance. This means that there is a significant difference between the mean responses of male and female teachers on the factors influencing the use of audio visual aids in teaching and learning of Mathematics in Secondary Schools in

Makurdi Metropolis, Benue State. This follows the result of similar study conducted by Bavelas, and Coates, (2002) who found the same result. This is also in line with the study of Canary (2001) who stated that Unwillingness on the part of school management to provide audio visual materials, High cost of audio visual materials and training of operators negatively affects usage.

The result of the paired sample test showed that there is a difference in the Mean responses of male respondents (35.8500) compared to Mean Response of the female respondents (17.3000) and the result is statistically significant ($p > 0.05$) as shown by the result of the significant level represented in table 13b above. Hence, we reject the null hypothesis; in other words, we accept that the estimate is statistically significant at 5% level of significance. This means that there is a significant difference between the mean responses of male and female teachers on the factors influencing the use of audio visual aids in teaching Mathematics in Secondary Schools in Makurdi Metropolis, Benue State. This finding is in line with that of Akpan and Okoli (2017) who investigated the effect of the use of Instructional Materials on Academic Performance of Pupils in Ikwuano Abia State. Their findings indicate that teachers need to be resourceful in instructional materials selection, planning and utilization so as to help in the use of the instructional materials.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

Conclusion

The study examined effect of Audio Visual aids in teaching and learning of Mathematics in selected Secondary Schools in Makurdi Metropolis, Benue

State. The research was conducted to bring to the fore, findings that will help to bring about the effective utilization of audio visual aids in the teaching of Mathematics in the study area. The analysis of data using mean and standard deviations shows that there is a significant difference between the mean responses of male and female teachers on the relevance of the use of audio visual aids in teaching Mathematics in secondary Schools in Makurdi Metropolis, Benue State. Also, the responses from most of the student indicate that the use of audio visuals aid is necessary in the teaching and learning of mathematics.

It has been shown by the results of different researches including our study that audiovisual aid makes a significant impression on the mind of the students. Audiovisual aids are helping thousands and thousands of students to improve and get the most useful information to develop their skills through them. Audio-visual aids in the classroom have been shown to enhance teaching methods and improve student comprehension. Today's technology offers many choices to the informed educator who wishes to capitalize on a new generation's appetite for multimedia presentations. The findings of our study is in line with the submission that lesson plans that incorporate the use of audio-visual aids should be consistent with curriculum objectives and not served improperly.

5.3 Recommendations

Based on the findings of this study, the following recommendations are made:

- a. As shown by the result of the study, the relevance of audio visual teaching material is tied to the level of proficiency of the instructor. Hence, Mathematics teachers should be trained to be equipped with the ability to handle the teaching of

Mathematics using audio visual aids.

- b. The use of audio visual aids should not only be limited to the teaching of practical mathematics in very few schools as shown by the result of the study. Its use can be extended to cover other aspects and concepts in mathematics.
- c. As shown by the result of the study, the high cost of audio visual materials and training of operators negatively affects usage. Hence, government can come to the aid of the school but the schools should as a matter of urgency provide at least one audiovisuals for the teaching and learning of Mathematics in the school.
- d. Mathematics teachers using Audio visual aid in teaching must avoid too much information on any single visual so as not to confuse the students the more. It is better to keep few slides than use multiple slides that will be confusing.

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