

Effects of Multimedia on Students Performance in Geography among Senior Secondary School Students in Guyuk Local Government Area, Adamawa State

Urbanus Benjamin Tulam and Alexander Rhoda Benjamin

Department of Geography, School of Arts and Social Sciences,
Adamawa State College of Education, Nigeria.

ABSTRACT

The study examines effects of Multimedia on students performance in Geography among senior secondary schools in Guyuk Local Government Area. The study employed pre-test-post-test control group and experimental group quasi experimental research design. The sample population comprises of SS 2 Geography students drawn from four public secondary schools in the study area. Data collected was analyzed using significance and percentage and mean were used to answer research question, while t-test was used to test all the hypotheses at 0.05 levels of significance. The result showed that geography students taught concept using animated-media strategy achieved higher academically with mean score of 39.45, than their lecture group counterpart with mean score of 24.29. The finding showed that students exposed to developed animated agricultural package performed significantly better than those exposed to the conventional lecture method. The study therefore recommends that the use of Animated-Media Strategy in teaching geography in school should be encouraged by stake holders in the education industries such as Federal Ministry of Education, State Ministries of Education; NERDC among others.

Keywords: Geography, Multimedia, Instructional Material, Performance.

INTRODUCTION

Geography as a school topic is extremely essential and beneficial to students and anybody attempting to cope with the ever-changing realities of our day. This is because the planet, which is the subject of geography study, is the theater in which nearly all human activities take place, and it is only logical that man understands the nature and character of the world, as well as the consequences of interactions between man and his environment. Abdul (2012) defined Geography as a science of spatial relationships which focuses attention mainly on the interaction between man and his environments. Aman (2011) also views Geography as an interdisciplinary field of study that influence agriculture, industry, commerce, economic development. Geography potentially assists cross-disciplinary learning and helps student to recognize the connections between geography and other field of study or specialization. Therefore, knowledge of Geography is essential for successful living because of its practicable intellectual value (Abidoye and Ogunniyi 2012).

Unfortunately, reports on students' academic performance in Senior Secondary Certificate Examination (SSCE) in Geography have not been encouraging (WAEC Chief Examiner's reports have highlighted persistent poor performance of school certificate geography (WAEC 2014, 2015 and 2017). This poor performance could be attributed to poor method of instruction (Sharma 2013), wide coverage of the subject (Ofodu, 2010), insufficient instructional materials (Abidoye and Ogunniyi 2012) and inadequate qualified teachers (Balogun, 2006).

However, in order to achieve the objectives of Geography in senior secondary school curriculum, very rich and variety of methods and instructional materials need to be employed. Multimedia package could be used by teachers to facilitate effective teaching and learning of geography and also to improve students' performance in the subject. Multimedia according to Sharman (2013) is refers to computer-mediated information that is presented concurrently in more than one medium. It consists of some, but not necessary all of the following elements: text, still graphic images, motion graphics, animations, hypermedia, photographs, video, and audio, i.e sound, music and narration. Multimedia technologies and applications are probably one of the most exciting innovations in the age of information evolution. Gender is another important factor affecting students' academic achievement in school subjects. Balogun (2013) reported that gender has significant influence on achievement while Mohammed (2014) reported otherwise. This situation therefore sustains the curiosity of researchers on

this, making it necessary for the need to understand how achievement is influenced by gender and multimedia package in Geography.

Statement of the problem

The teaching and learning of Geography in secondary school is characterized with the use of conventional teaching method, which always makes teachers to dominate the class while the learner remain passive. The use of conventional method often responsible for learners' low interest and poor academic achievement of students in the subject. The need to make use of modern technology therefore arise. This study investigated the impacts of multimedia on secondary school academic performance in Geography in Guyuk local government area.

Purpose of the study

The main purpose of this study was to investigate the effects of multimedia on students performance in Geography among Senior Secondary School in Guyuk local government area of Adamawa State. Specifically, the study would seek to find out:

- i. the rate of usage of multimedia instructional materials for teaching Senior Secondary School Geography in Guyuk local government area.
- ii. effect of multimedia on the students' academic performance in senior secondary school in Guyuk local government area.
- iii. the effect of multimedia on gender achievement on geography examination.

Research Question

The following research questions were drawn for the study.

- i. What is the effect of multimedia usage in teaching geography among senior secondary schools Guyuk local government area Adamawa State?

Research Hypotheses

Ho₁: There is no significant difference between students taught using traditional method and multimedia material in senior secondary school in Guyuk local government area.

Ho₂: There is no significant effect on gender achievement when student are taught geography using multimedia as a subject.

Scope of the Study

The study is limited to Senior Secondary Schools offering Geography in Guyuk Local Government Area of Adamawa State. The study is also limited to determining the effect of multimedia materials in teaching and learning geography.

Significance of the Study

This research work will be a point of reference for students, academia, researchers, and authors, who could embark on further study on the subject matter. In other words, it will be a reference material for future academic research. The findings of this study will be of great benefit to students, teachers, school authority and Adamawa state education commission. This study will expose students to multimedia facilities like computers, projectors, digital cameras, CD/DVD plates etc. The study will offer the teachers the opportunity to touch, handle and even get acquainted with these ICT/ multimedia tools in the course of using them in the teaching of geography. With this exposure, geography teachers in Guyuk local government area of Adamawa state will become ICT competent.

The findings of this study will enable the school authority to realize the importance of newer technologies (power point presentation and digital video instruction) in teaching in their schools. This will enable them support and uphold the use of these technologies in teaching especially in geography as well as other subjects. The findings of this study will also encourage the school authority to budget for the procurement of these newer instructional media for better and effective delivery of instructions.

The findings of this study will provide insight to the Adamawa State Ministry of Education on the importance of integrating new technologies into the various schools subjects. This perceptible will aid her in policy formulation which will encourage the applications of these teaching media in teaching not only geography, but in some other subjects in various secondary schools across the state.

Research Methodology

Research Design

This study adopted a quasi-experimental research design as it deals with research method is often used to study people's feelings, thinking and attitudes about specific aspects hence will be relevant for this study.

Population of the Study

This study targeted some selected Senior Secondary School (SSS) students in public secondary schools in Guyuk Local Government Area of Adamawa state. The SSS II Students were particular targeted due to the

fact that at that level, they have been exposed to the greater extent of multimedia material in the curriculum which could have develop and stabilize their attitude towards the subject with time. At such level also, they could almost predict where they would range as far as performance in the subject concerned.

Sample and Sampling Technique

The schools selected using purposive sampling technique. The schools or sample size of the study comprise of boarding or day senior secondary schools in the study area. Four government senior secondary schools in Guyuk local government area were used for the study.

Research Instrument

The instrument to be use for the collection of data for the study was “Geography Achievement Test (GAT) see appendices II - VIII. The researcher developed the instrument “Effect of Multimedia on Students Performance in Geography among Senior Secondary School”.

Method of Data Collection

A GAT and lesson was presented to be used by the researcher in collecting data. Intact classes were used. A letter of introduction was collected from the Department of Science Education, Adamawa State University, Mubi. This was presented to the principals of the various selected schools.

Method of Data Analysis

Data collected was analyzed using significance and percentage and mean was used to answer research question, while t-test was used to test all the hypotheses at 0.05 levels of significance.

RESULTS AND DISCUSSION

Research Question One: What is the rate of usage multimedia in teaching geography in Senior Secondary Schools Guyuk local government area Adamawa State

Table 1: Mean and Standard Deviation of Students Academic Achievement of Experimental and Control Group.

Variable	N	Mean	Std. Deviation	Mean Difference
Experimental	56	39.45	7.32	
Control	60	24.29	4.16	12.90

Table 4.1 above shows that experimental group has a mean of 39.45 and Standard Deviation of 7.32, which is greater than the mean of control group (24.29) with standard deviation of 4.16 and a mean difference of 12.90. This shows that geography students taught concept using animated-media strategy achieved higher academically, by mean score of 39.45, than their control group counterpart with mean score of 24.29.

Testing Hypotheses

Two research hypotheses raised in this research were tested and verified using inferential statistic and presented in Tables 2 and 3 respectively. Computer statistic software, SPSS, (Statistic Package for Social Sciences) is used in the analysis. All test were verified at $p < 0.05$ levels of significance.

Testing Null Hypothesis One

H₀: There is no significant difference between students taught using traditional method and multimedia material in senior secondary school in Guyuk local government area.

Table 2: Results of t-test Analysis of Performance Scores of the Subjects in the Experimental and Control Groups.

Variable	N	Mean	S.D	Df	t-value	t-crit	p. Alpha	decision
Experimental	56	39.45	7.32					
				109	9.315	1.98	0.00 0.05	Sig
Control	60	24.29	4.32					

*Significant at $p < 0.05$ level of significant

Table 2 results, shows that the t-value computed is 9.315 and the p-value of 0.00 is observed at degree of freedom of 101. Since the critical p-value of 0.00 is less than the alpha value of 0.05, there is a significant difference in the academic achievement of the subjects in experimental and control group. A significant difference implies rejection of null hypothesis and retaining alternate hypothesis. Consequently, null hypothesis that states that there is no significant difference in the academic achievement scores of geography students taught using traditional method and multimedia material. The significant difference is in favor of experimental group (multimedia) as revealed in their mean scores.

Testing Null Hypothesis Two

Ho: There is no significant effect on gender achievement when student are taught geography using multimedia as a subject.

Table 3: t-test Analysis of Academic Performance Scores of the Male and Female Students in the Experimental Group.

Variable	N	Mean	S.D.	Df	t- value	t-crit	p ^ˆ value	Alpha	Decision
Experimental: Male	35	29.18	6.03	66	4.37	1.0	0.33	0.05	Not Sig
Female	21	27.05	5.72						
Control: Male	35	27.19	5.91	79	3.26	1.0	0.07	0.05	Not Sig
Female	25	25.79	6.81						

*Significant at $p < 0.05$

From the result in table 3, it is observed that in the experimental group, the t-value of 4.37 is obtained and the p-value observed is 0.33 at the degree of freedom of 66. The critical p-value of 0.33 is greater than the alpha value of 0.05. This shows that there is no significant difference. A no significant difference implies retaining of null hypothesis and rejecting alternate hypothesis. Accordingly, null hypothesis that stated that there is no significant difference in the academic performance of male and female students exposed to multimedia instructional materials was retained.

In the same table, academic achievement of male and female students in the control group was also compared. From the result obtained, t-value observed is 3.26 and p-value of 0.07 was obtained at degree of freedom of 79. Since the observed p-value is greater than alpha value, there is no significant difference in the academic achievement of male and female students exposed to control method.

Discussion

From the findings in Table 1 and 2, the study reveals that experimental group recorded the highest mean score than control group, which shows that there is a significant difference in the academic performance of the subjects in experimental, and control group. A significant difference implies rejection of null hypothesis and retaining alternate hypothesis. Therefore, null hypothesis that states that there is no significant difference between students taught using traditional method and multimedia material in senior secondary school in

Guyuk local is rejected. The significant difference indicates that multimedia strategy recorded the highest mean score than the traditional method. This finding is supported by Aremu and Abiodun (2010), Lin, (2011), Tayo, (2012), Aksoy (2012) and Thomas and Israel (2014). Tayo, (2012)'s finding reveals that Students exposed to developed animated agricultural package performed significantly better than those exposed to the conventional control method.

In addition, Aksoy (2012), in a study title "Effects of Animation Technique on The 7th Grade of Erarum MEB Yildizkent IMKB Primary School" confirms that animated media technique is more effective than traditional teaching method in terms of enhancing student's academic achievement. This finding gain further support from the work of Thomas and Israel (2014) on effectiveness of animation and multimedia teaching on students' performance in science subjects. The finding revealed that there is significant difference in the academic achievement of students exposed to animated media teaching over the control method. Kajuru and Ado, (2012) established that, innovative teaching strategies with integrated resource materials enhance academic achievement of students.

From the result in Tables 3 revealed that there is no significant difference in the academic achievement of male and female students exposed to Multimedia Strategy. This finding is in harmony with those of authorities such as Patrick and Ezenwa, (2000), Haruna, (2000), Maikano, (2007), Mari 2010, Usman, (2010) who in their separate studies in various discipline found that the application of instructional treatment on a mixed gender school population improves the academic achievement of students irrespective of gender. The findings of Ado, (2012) revealed that there is no significant difference in the performance of gender in chemistry due to exposure to instructional strategy. Maikano (2007), found no significant difference in the

academic achievement between male and female students taught ecological concepts using outdoor laboratory instructional strategy. Similarly, Mari (2010), further supports this assertion in his study on entry qualification and performance which shows that male and female students admitted with the same entry qualification have no difference in their performance. In addition, Usman (2010), opines that outdoor laboratory method enhances academic achievement of students in spite of their gender.

Conclusion

Based on the findings of this study, the following conclusions were drawn:

- i. Students taught weather concepts using Animated-Media Strategy achieved better academically than using control method.
- ii. Students taught using Animated-Media Strategy exhibit high level of retention in weather concept than control method.
- iii. Female students taught weather concept using animated-media strategy did not differ significantly from their male counterpart.

In conclusion, the treatment, animated-media strategy has the potentiality of enhancing senior secondary geography students' academic achievement, retention, and interest in weather concept.

Recommendations

Based on the findings of this study, the researcher recommend that:

- i. The use of Animated-Media Strategy in teaching geography in school should be encouraged by stake holders in the education industries such as Federal Ministry of Education, State Ministries of Education; NERDC among others. This can be done through periodic seminars and workshops to teachers on how to use animated media in teaching.
- ii. Both Federal and state ministries of education should make adequate provision for computers in secondary schools. Such computers should be properly managed for utilization in animation class.
- iii. Federal and state ministries of education should provide projectors for teaching geography in all secondary schools with immediate effect. The projector will be use with the aid of computers in power point projection of animated media. The use of this package will facilitate the challenges of limited instructional materials, time of teaching and sustained students' interest at lesson.
- iv. Curriculum planners and curriculum development bodies in Nigeria like NERDC should design programme and policies that will incorporate the use of Animated- Media Strategy in teaching and learning sciences at Senior Secondary School level.
- v. Promotion of awareness/enlightenment to teachers and students through seminars and workshops and training of geography teachers for the teaching, guidance and counseling of students.

Suggestions for Further Studies

From the findings of the study the following suggestions are made for further studies:

- i. More studies should be conducted on impacts of Animated-Media Strategy on motivation, attitude, and science process skills in secondary schools and tertiary institutions in Nigeria.
- ii. Studies are required on developing animated-media strategy by researchers in all the subjects taught at secondary schools and primary schools and observe its impact on classroom management and class size.
- iii. More studies should be conducted by scholars on the use of Animated-Media Strategy in classroom management and coverage of geography syllabus in secondary schools of Nigeria.

References

- Abdul J.N (2007). *Effect of field work on students achievement in environmental Education content in senior secondary school geography* (unpublished) master Thesis, University of Nigeria, Nsukka.
- Abidoye, J. A. and Oggunniyi S. O. (2012). Availability and utilization of Instructional materials as factors of students' academic performance in Geography in Ondo State secondary schools. *Nigerian Journal of Research and Production*, 20 (1), 37- 44.
- Aman, S. (2011). *What are the aims and the objectives of teaching geography?*
<http://www.preservearticles.com>.

- Aksoy, G. (2012). The Effects of Animation Technique on the 7th Grade Science and Technology Course. *Creative Education*, 3, 304 - 308.
- Aremu, A, and Abiodun, S. (2010). Computer Animation and Academic Achievement of Nigerian Senior Secondary Schools Students in Biology. *Journal of Educational Technology*. 6(2).
- Balogun O. (2000). *Introduction to instructional technology*, Zaria, ABU, University press.
- Kajuru, Y.K. and Ado, I.K. (2012). Effects of Constructivist Teaching Strategy on Gender in Learning of Addition and Subtraction Skills at Primary School Level. *Journal of Studies in Science and Mathematics Education, Zaria: Ahmadu Bello University*, 2(1):82-88.
- Mohammed, S.A. (2000) Assessment of female students' performance in selected Science courses. *Journal of gender and development*. 1 (1& 2): 61-64
- Maikano, S. (2007). *Effects of Outdoor and Indoor Laboratory Experience on Secondary School Students' Academic Achievement and Retention in Ecology in Kaduna State*. An Unpublished M.ed Thesis. Department of Education, Ahmadu Bello University, Zaria.
- Mohammed, S.A. (2000) Assessment of female students' performance in selected Science courses. *Journal of gender and development*. 1 (1& 2): 61-64
- Mari J.S (1994). *The Understanding of Science Processes and Its Relationship to Achievement in Integrated Science*. Published M.Ed Thesis. Department of Education, Ahmadu Bello University, Zaria.
- Ofodu G.O (2010) Gender, school location and class level as correlatives of Reading interest of secondary school students. *Journal of contemporary studies*: 119-124.
- Sharma P. (2013) Roles of interactive multimedia for enhancing students' achievement and retention. *International journal of distance education*. 2(3): 12-22.
- Tayo, D. (2012). Effects of Animated Agricultural Package on Attitude and Performance of JSS Students in South Western Area, Nigeria. *MJSS Journal*. Retrieved on 12/05/2013 FROM www.mcser.org/index.php.
- Thomas, O.O. and Israel, O.O (2014). Effectiveness of Animation and Multimedia Teaching on Students Performance in Science Subjects. *British Journal of Education, Society and Behavioral Science*, 4 (2).