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Impact Of Graphics On Academic Performance Of Upper Basic Students In Social Studies In Katsina State, Nigeria

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ABSTRACT
This study examined the Effects of graphics on performance in Upper Basic Students in Social Studies in Katsina State. The study adopts pretest, posttest control group quasi–experimental research design. The target population for this study was 5109 Upper Basic II Students in public Schools in Kankia Zonal Education Quality Assurance, Katsina State. The sample of the study was 160 Upper Basic II Students randomly drawn from the study area. The study was guided by two objectives, research questions and hypotheses respectively. This study utilized one validated research instruments with reliability coefficient of 0.8 and 0.9, namely: Social Studies Performance Test (SSPT). Research questions were answered using descriptive statistics in form of Mean, Standard deviation, Mean Rank and Sum of Ranks. Hypotheses were tested using ANCOVA at 0.05 level of significance. Findings shows that there is significant difference between the mean academic performance scores of male and female students exposed to graphics and lecture method. It was concluded that the use of graphics in teaching Social Studies prove to be effective in improving students' academic performance. The researcher recommended among others that Government of Nigeria through its agencies organize workshops, talk shops and seminars for Social Studies teachers on the use of graphics for teaching of Social Studies concepts.
Keywords: Graphics, Performance, Upper Basic, Social Studies.

INTRODUCTION

Okonkwo, (2000) perceives Social Studies simply as the study of man and his physical and social environments and how man interacts with others. Rikichi, (2011) provides an elaborate definition of Social Studies as an educational program which embraces knowledge, values, Skills, Methods, resources, evaluation and societal experiences offered to learners in an effort to promote positive learning and acquisition of useful skills. Okon, (2002) maintained that Social Studies curriculum is keen about developing desirable socio-civic and personal behaviour of an individual in the quest to help the young manage the physical and social forces of the world in which they live.

Mayer, (2008) defined graphics as, the iconic expressions of content that are designed to optimize learning and performance in ways that improve the bottom-line performance of organization. This definition incorporates three ideas: Iconic; which refers to representations of content that are pictorial. The surface features of such visuals may be static or dynamic and they may have high or low degrees of correspondence to real things. Thus a photograph is a highly realistic representation that is static. The second idea in the definition „designed to optimize learning and performance; refers to the purpose of the visual. The focus here is on graphics that are intended to support learning or improve performance in the workplace, such as text pages and online screens as well as work aids such as job

cards and Web screens designed to help workers complete job tasks more effectively. Thirdly, bottom-line performance; means visuals that improve learning or performance in ways that pay off in improved organizational results.

Abimbade, (2019) describes graphics as two – dimensional materials in that, they have surfaces that are flat with an area (length and breadth). A well-designed graphics may provide the needed structure that allows learners to effectively select, organize, and integrate new information (Mayer, 2011).

The application of graphics to present learning contents to students in Nigerian primary and junior secondary schools has been a challenging task to most teachers. Problems associated aspects – ranging from teachers‟ attitude to work, dispositions of school managements to use of instructional media, and a multitude of other factors. A reasonable percentage of the teachers at basic level Nigeria educational system are not abreast to new trends and developments in the field of education. As a result, most of them lack the required knowledge about the peculiarities of graphics and the conditions in which they provide best results in learning. This may be attributed to the scantiness of literatures on the subject, and shortfall in refresher courses / workshops for the teachers.

Inadequacy of skills on design of graphic resources among teachers is also another area of concern. After the decision to present a learning content in visual form has been reached by a teacher, the problem of basic illustration techniques arise. The difficulty in physically forming an image on paper becomes so frustrating to some teachers that they give up the idea and all the potentials of visual communication is lost. The deficiency of knowledge about the principles and elements of graphic design, a nervous hand, and a dripping pen often force many teachers into the avenue of escape. Except for the few who have the advantage of training in drawing or have access to art services, creating visual image is one of most challenging problems in teaching.

The use of appropriate criteria for selection and application of graphics to learning tasks is ssential. Unfortunately this is another area where most teachers are lagging behind. This could be serious problem because no matter how good a graphic material is, it may not produce the desired impact unless it suits the learners‟ level of intelligence, prior knowledge, and learning styles. This is because while a particular graphic is helpful to some set of students, it could be distractive to others.

The lukewarm attitudes of some school managements towards providing necessary materials and encouragement to enable teachers improvise graphic visuals also deprives students from benefiting from the array of effective visual illustrations obtainable in textbooks and other printed sources. This ultimately undermines the academic achievements of students in junior secondary schools.

The importance of education to the economic, and socio - political development of a multi – cultural country like Nigeria cannot be over-emphasis. The Social Studies curriculum is designed to enable students become responsible citizens and to lay a sound foundation for their subsequent study of related subjects such as Economics, History, Government, Geography, and Religious studies at higher levels of education (FRN, 2004). It was observed that, in spite of the various innovations introduced into the educational system, the attainment of the desired goals remains an illusion. This under-performance of students in Basic Social Studies is attributed to many factors such as; the constant use of the lecture method of teaching, the attitude of students and teachers towards the subject, difficulty in managing overcrowded classes due to rapid population growth and so on.

The use of the lecture method by teachers has been criticized by many researchers (Newby and Lai, 2008). This instructional method, according to them, is extremely didactic in approach, teacher-centered, and does not lead to meaningful learning. It can only encourage the development of passivity, docile learning and over-dependence on the teacher and on textbooks. Little effort is being made by teachers to supplement the oral instruction offered to learners with the integration of variety of graphic learning resources such as photographs, pictures, cartoons, to charts, maps, and diagrams. Novak and Gowin (2014) observed that, the kind of strategies for teaching and learning which are capable of achieving the objectives of the school and society are those which emphasize on learners‟ creative skills and child centered Inquiry-based instruction. The graphics based teaching is proposed in this study in order to investigate its impact, is one of the activity-based teaching strategy in which students work as a team in small groups while they share ideas and experiences in the process. This could lead to improved academic performance of students in school (Roberson, 2012).

Again, the fact that students learn, remember, perform, and understand learning tasks in different ways (Cherry, 2012) pose a challenge the educational system that assumes everyone learn the same

material in the same way through delivering lesson content via oral instruction alone (Lane, 2012). The incorporation of graphics in a lesson enable teachers to present a visual - spatial representation of learning materials; this combined with oral instruction can facilitate learning among greater number of students. Also engaging the learners in the actual production of graphic visuals offer to students the opportunities for hands – on experience, which is one of the best ways to learn.

Clark and Lyons, (2004) identified differences in learners‟ characteristics such as; age, sex, and social background among the factors that influence students‟ academic achievements. To this end graphic resources could be employed to remedy some of these disparities among learners via promoting effective content delivery across the various segments of students. The integration of this valuable teaching strategy is often a neglected skill among a greater number of Nigeria junior secondary school teachers.

Performance is defined as the observable or measurable of a person in a particular situation, usually experimental situation (Simpson and Weiner, 2019). In relation to educational research, academic performance can be regarded as the observable and measurable behavior of a student in a particular situation. The academic performance of a student consists of scores obtained from teacher – made test, first term examination, mid semester test and so on. However standardized tests can provide a more direct representation of the student‟s knowledge and aptitude than his or her grade in school (Yusuf, 2010).

Academic performance as the outcome of education generally refers to how well a student is accomplishing his or her tasks and studies (Bell, 2012). In the view of Miller and Birch (2007), the measurement of students previous educational outcomes are the most important indicators of students‟ future achievement; this means the higher previous attainment, better the students‟ academic performance in future endeavors. It is against this background that it becomes imperative to conduct a study on the Impact of Graphics on Academic Performance of upper Basic Students in Social Studies.

Objectives of the study

The Objectives of the Study were as follows:

1. Find out the impact of graphics in facilitating the academic performance of upper Basic students in Social Studies in Katsina state.
2. Investigate the impact of graphics on the academic performance of male and female upper Basic students in Social Studies in Katsina state.

Research Questions

1. What is the difference in the mean performance scores of students taught Social Studies concepts using graphic and those taught the same concepts using lecture method?
2. What is the difference in the mean performance scores of male and female students taught Social Studies concepts using graphics and those taught using lecture method?

Null Hypotheses

$H_{o1:}$ There is no significant difference between the mean academic performance scores of students taught Social Studies concepts using graphics and those taught the same concepts using lecture method.

$H_{O2:}$ There is no significant difference between the mean academic performance scores of male and female students exposed to graphics and those taught using lecture method.

RESEARCH METHODS

Research Design

This study is set to examine the Infacts of graphics performance among upper basic students in Social Studies in Katsina State, Nigeria. The study is delimited to public Junior Secondary School (now upper basic level) students in Katsina state.

This study utilized pretest posttest quasi experimental and control group design. The target population for this study was all JSS II Students in public Junior Secondary Schools in Zonal Education Quality Assurance, Katsina State. According to Katsina State Basic Education Board (2019) census there are twenty one (21) schools with total number of five thousand one hundred and nine (5,109) JSS Students in this level spread into three local government areas namely Kankia, Kusada and Ingawa that constituted the zone. Out of this figures 2,897 were males and 2,212 were females. The sample of

the study consists of one hundred and sixty (160) Upper Basic II Students drawn from three intact classes of JS II students in the study area. The schools in the selected areas had more than one arm of JS II, thus, the researcher sampled only one arm of JS II from each school used. In this case, twelve schools (four from each Local Government area) were pretested in selecting schools and ensured that equivalence in terms of academic performance were met before treatment. The result of the pretest was then subjected to ANOVA to find out if there was is any significant difference in the sample. Schaefer's test was used to find out the arms with no significant difference which finally helped the researcher to end up with three arms one from each of the three selected schools from three Local Government Area. In assigning schools into experimental and control conditions, simple random sampling technique was used. In each school, intact classes were used for the study.

This study utilized the use of one research instrument, namely: Social Studies Performance Test (SSPT) which was developed by the researcher.

For the purpose of this research, pretest was administered to the respondents using the validated instrument for the study. That is; Social Studies Performance Test (SSPT) at least three days before the commencement of the treatment for the researcher to ascertain the significant difference among the three groups in term of performance. After the pretest the test were marked and recorded.

After the pretest the treatment was carried out for six weeks, that is graphics was used to teach the experimental group. Lecture method was used to teach the control group. After the treatment the same instruments were re administered to the same respondents to determine the effects (if any) of the independent variables (Graphics) on the dependent variables (academic performance). The test items were marked and recorded. Thereafter the three recorded scores of three sets of tests were subjected to analysis.

RESULTS AND DISCUSSION

The result and analysis of data obtained is presented under the following: Answering Research Questions; Testing Null Hypotheses

Research Question 1: *What is the difference in the mean performance scores of students taught Social Studies concepts using graphic and those taught the same concepts using lecture method?*

Table 1: Mean and S.D. of academic performance of students in Experimental and Control Groups

Groups	N	Mean	Std. Deviation	Mean Difference
Experimental 1	40	31.50	2.32	
Control	50	10.14	2.44	21.36 & 16.47

Table 1 presents Mean and standard deviations of academic performance of students in Experimental and Control Group. From the results obtained, experimental group 1 recorded a mean of 31.50 and standard deviations of 2.32; and control group recorded a mean of 10.14 and standard deviations of 2.44. Students taught using graphics performed better than those exposed to same concept using lecture method. The mean difference between experimental group and control group is 21.36.

Null Hypothesis one

There is no significant difference between the mean academic performance scores of students taught Social Studies concepts using graphics and those taught the same concepts using lecture method.

Table 2: Summary of ANCOVA on significant difference in academic performance of students in Experimental and control groups

Source	Sum of Squares	Df	Mean Square	F	P Value	Remarks
Corrected Model	11541.694[a]	3	3847.231	497.133	.000	
Intercept	1524.690	1	1524.690	197.018	.000	
Pretest performance	5.354	1	5.354	.692	.407	
Groups	11529.879	2	5764.940	744.936	.000	Sig.
Error	990.571	128	7.739			

Total	75587.000	132
Corrected Total	12532.265	131

*Significant at P (0.01) < 0.05

Table 2 presents the Summary of ANCOVA on significant difference in academic performance of students taught Social Studies concepts using graphics and those taught the same concepts using lecture method. Results show that Sum of Squares observed is 11529.879; a mean square is7.739; an F value is 744.936 and the p value observed is 0.00. The p value recorded is less than alpha value. The hypothesis is therefore rejected on the account that there is significant difference in the academic performance of students taught Social Studies using graphics and those taught the same concepts using lecture method. To determine the direction of disparity, the researcher further analyzed the result using Post hock test

Research Question 2: *What is the difference in the mean performance scores of male and female students taught Social Studies concepts using graphics and those taught using lecture method?*

Table 3: Mean and S.D. of difference in of male and female students of students in Experimental and Control Group

Gender	N	Mean	Std. Deviation	Mean Difference
Male Experimental	25	31.2400	2.33238	
Female experimental	15	31.9333	2.31352	0.69
Male Control group	23	27.0000	3.69274	
Female Control group	19	26.1579	3.21910	0.84

Table 3 presented Mean and standard deviations of academic performance of male and female students in Experimental Group. From the result obtained, the Mean and standard deviations of male student in experimental group 1 is 31.24 and 2.33, while the Mean and standard deviations of female students in experimental group is 31.93 and 2.31. The Mean and standard deviations of male student in Control gruop is 27.0 and 3.62, while the Mean and standard deviations of female students in Control group is 26.15 and 3.21. A mean difference of 2.04 was observed between Male Experimental and Female experimental, while a mean difference of 0.84 was observed between Male Control group and Female Control group.

Null Hypothesis Two

There is no significant difference between the mean academic performance scores of male and female students exposed to graphic organizers and video advance organizers.

Table

4: Summary of ANCOVA on significant difference in academic performance scores of male and female students exposed to graphics.

Source	Sum of Squares	Df	Mean Square	F	P Value	Remark
Corrected Model	506.916[a]	4	126.729	14.244	.000	
Intercept	1286.536	1	1286.536	144.600	.000	
Pretest performance	6.936	1	6.936	.780	.380	
Gender	503.651	3	167.884	18.869	.000	Significant
Error	685.084	77	8.897			
Total	70154.000	82				
Corrected Total	1192.000	81				

a. R Squared = .425 (Adjusted R Squared = .395)

Table 4 presents the Summary of ANCOVA on significant difference in academic performance scores of male and female students exposed to graphics. Results show that Sum of Squares observed is 503.651; a mean square is 167.884; an F value is 18.869 and the p value observed is 0.00. The p value recorded is less than alpha value. The hypothesis is therefore rejected on the account that there is significant difference in the academic performance scores of male and female students exposed to graphics.

DISCUSSION

Finding number one indicates a significant difference between the mean academic performance scores of students taught Social Studies concepts using graphic and video advance organizers and those taught the same concepts using lecture method in favour of experimental group. Students taught using graphics performed better than those exposed to same concept using lecture method. This finding agrees with previous study Hopkins, K. S. (2001). reported that students perform better in recall scores when animation, graphics and narration were used in teaching.

Finding number two shows that there was significant difference between the mean academic performance score of male and female students exposed to graphics. This finding supported previous studies as that of Bichi (2004), Usman (2010) found that innovative teaching strategies with integrated resource materials enhance students' performance irrespective of gender.

CONCLUSION

Based on the findings concluded that, the use of graphics in teaching Social Studies concepts proved to be effective in improving students' academic performance. In terms of gender, the strategy was effective in improving academic performance of students in Social Studies than lecture method.

RECOMMENDATIONS

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

1. The Federal Government of Nigeria through its agencies such as the State Ministries of Education, Teacher Training Institutions and professional bodies such as NTI and STAN, to organize a special re training, workshops, and seminars to Social Studies teachers on the use of graphics in teaching and learning Social Studies.
2. The use of graphic in teaching Social Studies 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 through periodic seminars and workshops to teachers on how to use innovative strategies and media in teaching.
3. Curriculum development bodies in Nigeria such as NERDC should design programme and policies that will incorporate the use of graphics in teaching and learning Social Studies at Junior Secondary School level.

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