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EFFECTS OF VIDEO BLOG INSTRUCTIONAL PACKAGE ON ACHIEVEMENT AND CONCEPTS OF COMPUTER SCIENCE AMONG JUNIOR SECONDARY SCHOOL STUDENTS IN ABUJA MUNICIPAL AREA COUNCIL

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ABSTRACT

This study was carried out to determine the effect of Video Blog on achievement and concepts in Computer science among Junior Secondary School Students in Abuja Municipal Area Council. The study employed a quasi-experimental designed, pre-test post-test control group design. A purposive sampling technique was used in selecting two (2) Government Junior secondary schools in Abuja Municipal Area Council. The samples of 120 students across the two (2) schools were randomly selected and assign to Experimental and Control group respectively. Two research questions and two null hypotheses were raised to guide the study and were tested at 0.05 level of significant. The reliability co-efficient of CSAT was 0.65. The data collected was analyzed using means and Standard Deviation (SD) for the research questions, while the null hypotheses were analyzed using analysis of variance (ANOVA), t – test statistics and analysis of covariance (ANCOVA) using statistic package for social science (SPSS) version 20.0. The Video Blog Package was validated by Two (2) computer science experts from school of technology education, while the CSAT was validated by Computer Science teachers in the two secondary schools used for the research. The Video Blog Instructional Package was field tested at Junior Secondary School, Tundun Wada, Wuse Zone 4, Abuja with 20 students for Pilot study; the Pilot study is to test run the effectiveness of the package. There is no significant difference in the mean achievement scores of male and female students taught computer science using Video Blog Instructional Package (VBIP) the study also revealed that there is no significant difference in the mean retention scores of students taught computer science using video blog and those taught using discussion method. Based on the findings of the research, it was recommended among others that teachers and educators can utilize Video Blog Instructional Package (VBIP) for teaching computer science concepts but lecture method when used appropriately can also enhance academic performance of the students and Video Blog Instructional Package (VBIP) in teaching and learning computer science serves as a stimulus which emboldens good performance in their studies.

Introduction

The growth of web-based applications has made the web an important educational medium. In the world today, the web is transforming into a fully interactive space and the control of content has been decentralized to allow everyone to work together, build, advertise, subscribe and share information (Asmus& Bonner, 2005). Computer technology has gained recognition worldwide whether it is being used for teaching, financing, chatting, emailing and among others; That is why it is always said that computer science education is a must since almost every activity is computer driven and one cannot be able to make progress as far as his career options are concerned except it is matched with knowledge of computer and/or computing technology. Thus the study of computer science as a subject in secondary schools is crucial because at this stage, education is central and critical to the child future development (Kwache, 2013).

Computer science education in schools has become one of the fastest growing and far reaching developments in Nigeria (Aigbomian 2002, Okebukola&Ajewole, 2000). Computer is conceived as a device or machine designed especially to perform calculations, process data and store information which can be easily retrieved when required (Adamu& Bello, 2002). Ahore (2000) described computer as a device for executing precisely stated rules with accuracy, rapidity and with great reliability. Computer science education, on the other hand, is described by Okebukola (2001) as the learning that can lead to computer literacy. This implies that the aim of learning and teaching computer education is to make individual develop the knowledge and skills of computer application or use. Furthermore, in order to adequately respond to the changing needs of the schools, it is necessary for the Ministry of Education, curriculum developers, and teacher trainers to understand existing practice to enhance academic achievement of student and the way to accomplish this is to adopt the use of web blog technology like video blog in the teaching of computer science.

Video blog (sometimes referred to as a weblog) is a web publishing tool that allows authors to quickly and easily self-publish text, artwork, videos, pictures, links to other blogs or Web sites, and a whole array of other content. Blogs can be personal like online diaries or more formal and professional. The last decade has also seen a significant rise in the number of blogs (and micro blogs) being used in education and this is reflected in the growing body of research into the educational use of blogs (Trajtemberg&Yiakoumetti, 2011). Blogs are also being used in a variety of ways. The advanced features of current blogging platforms can be used by students to keep ePortfolios (Shao-Ting, 2012) and by educators to design content management systems (Dowling, 2011). The functionality of blogs as online diaries with simple posts and comments remains core to a good blog. These features of blogs can be used by teachers to post lists of their daily learning activities, for students to keep a record of their daily work, and for both teachers and students to keep lines of communication open at all times. Also, teachers can give students more opportunities to participate in their learning, either by commenting on post made by teachers or by creating their own blogs to be read and reviewed by their peers, The result of this process is learners generated content (LGC) that can be shared to enhance student achievement in teaching and learning.

Achievement on the other hand is the result of instruction. It is the degree to which students, instructors or establishment has accomplished their instructive objectives. It is regularly measured by examinations or continuous evaluation in which there is no agreement to how it is best tried or which view points are most essential (Annie, 2006). The teacher or evaluator is also the only person to determine students' achievement. Academic achievement can also be said to be the measurement of the effects of specific programme of instruction or training (Kulbir, 2005). Paul (2008) examined the Effect of intensive Web-based Resources on the Performance and Attitude of High School Biology Students. A causal-comparative research study was performed in order to determine the effect of immersing students in an environment rich in web-based materials. The study subjects comprised of 69 high school students from the Midwest United States. Findings in this study clearly show that web intensive instruction did improve scores from pre-test to post-test. The results also indicate that, in this instance, web-based instruction was neither as effective nor as well received as more discussion methods. Ru-Chu, (2010) conducted a research on Blended learning using video-based blogs: Public speaking for English as second language students. The study methodology combined qualitative and quantitative approaches and included peer and instructor feedback, interviews, self-reflection and a learning satisfaction

survey. A total of 44 college seniors majoring in English participated in the study. The results of the study showed that this model could contribute to learning effectiveness and student satisfaction if the blended model is implemented with sufficiently supportive equipment and course plans.

Gender issue has been a thing of debate over the decade because of its importance as far as education is concerned. There has been variance as to how gender affects learning which, if not addressed properly could taint the image of an individual. Omale (2012) observed that boys were more superior to girls in school achievement in biology while Anagbogu, Ezeliora (2007), reported that Men are dominant with superior sex having better brain and learns faster than women. Onwuegbuna (2009) found out that there was no significant difference in the achievement of male and female students when computer assisted instruction was used. Adesoji and Fisiyi (2001) also design a study to analyze the problem solving difficulties of male and female student when they solve problem based on volumetric analysis. The study revealed that more girls than boys had difficulties in three of the stages of problem solving. Also, 63% of the girls could not reason out the solution to the problem. They, therefore, concluded that the claim that boys are better problem -solvers could be said to be true. Gimba (2006) noted that there was a there was a significant difference in the performance of girl and boys taught with -mathematical models. The girl did better than the boys in mathematics achievement test (mat) however, Gambari (2004) noted that there was a significant difference in the performance of boys and girl taught physics and mathematics and computer. These finding clearly support the established fact that gender differences exist in learning ability of students.

Statement of the Problem

Low achievements in science generally is a problem when viewed from the perspective of the importance of technological development to any nation, more especially is the low achievement in Computer science in the Junior Secondary School Certificate Examination (JSSCE) as revealed by Chief Examiners Report (2011; 2012 and 2013). A review of junior secondary school certificate examination and junior NECO from 2010 -2014 shows a significant decline in students' achievement. This poor performance as noticed by the researcher is partly due to difficulties associated with the choice of suitable instructional packages that can enhance teaching encountered by teachers. Adegoke, 2011 reported that students are not actively involved in developing knowledge, they basically receive information passively. The instructional method employed by the teacher plays an important role in meaningful learning. Based on this, the Federal Government of Nigeria in the National Policy of Education recommended the development and use of innovative materials in schools to enhance the teaching and learning processes (Olalere, &Taiwo, 2009). Such innovative teaching materials include the use of Internet/Online teaching as a medium of delivering instruction in schools. However, no previous research has been carried out in respect to the use of Video blog instructional package in learning computer science. This study therefore helps to fill the gap in this area by using a well-designed video blog to find out if it will improve the achievement of junior secondary school students in Computer science in Abuja Municipal Area council. It is against this backdrop that this study is being carried out.

Aim and Objectives of the Study

1) To determine the difference in the achievement of junior secondary school students taught computer science using Video Blog Instructional Package (VBIP) and those taught using discussion method.
2) To find out whether there will be difference in the Mean achievement scores of male and female students taught computer science using Video Blog Instrutional Package (VBIP).

Research Questions

The following research questions were raised and answered in this study.

1. Will there be any difference in the Mean achievement scores of junior secondary school students taught computer science using Video Blog Instructional Package (VBIP) and those taught using discussion method?
2. Is there any difference in the mean achievement scores of male and female students taught computer science using Video Blog Instructional Package (VBIP)?

Research Hypotheses

Two null hypotheses were formulated and tested in this study.

HO_1: There is no significant difference between the mean achievement scores of junior secondary school students taught computer science concepts using Video Blog Instructional Package (VBIP) and those taught using discussion method.

HO_2: There is no significant difference between the achievement scores of male and female junior secondary school students taught computer science concepts using Video Blog Instructional Package (VBIP).

Methodology

The research design adopted for this study was a quasi- experimental, pre-test post-test control and experiment groups design. It involves pretest, posttest, non – equivalent, non-randomized research design. The population for the study comprised of 18,580 students in Abuja Municipal Area Council from 60 Junior Secondary Schools, The target population is the Junior Secondary School (JSS III) students. The sample for this study was 120 students which were purposefully selected from two schools within the population. These schools were randomly assigned to experimental and control groups. The experimental group (JSS Maitama - Abuja) was taught using video blog while the control group (JSS Wuse Zone 6-abuja) was taught using the discussion method of instruction. Both groups were taught within a period of eight (8) weeks. Two instruments were used for this study which includes: Treatment instrument Computer Science Video Blog (CSVB) and Test instrument Computer Science Achievement Test (CSAT). The treatment instrument was developed using Hypertext Preprocessor, Hypertext makeup language (PHP, HTML) and (CSS) Cascading style sheet scripting languages while the test instrument consist of 30 multiple choice test questions which contained five options (A-D) in which there is only one correct answer. The face and content validity of the instruments was done by computer science experts and educational Technology specialists. The reliability was carried out using test-retest method and Pearson Product Moment correlation co-efficient (PPMC) formula was used and reliability co-efficient of 0.65 was obtained. The data collected were analyzed using mean, standard deviation-test statistics and analysis of variance (ANOVA).The research questions were answered using mean and standard deviation while the null hypotheses were tested using analysis of covariance (ANCOVA) from statistical package for Social Science (SPSS) version 20.0, at 0.05 alpha levels of significance.

Results

Research Question One: What are the mean achievement scores of Junior Secondary School Students taught computer science using Video blog (VB) and those taught using discussion method?

In answering research question one, the scores of the students in experimental and control groups were computed using mean and standard deviation as shown in Table 1.

Table 1: Mean and Standard Deviation of Pretest and Posttest Scores of Experimental and Control Groups

Group	N	Pretest		Posttest		Mean Gain
		Mean ($\bar{x}$)	Standard Deviation	Mean ($\bar{x}$)	Standard Deviation	
Experimental	60	21.80	5.314	22.90	4.999	1.10
Control	59	22.33	5.821	22.83	4.871	0.50

Table 1: shows the mean and standard deviation of the pretest and posttest scores of the experimental and control groups. The result reveals that the mean and standard deviation of the pretest and posttest scores of experimental group are21.80 and 5.314 and 22.90, 4.999 respectively. This gives a mean gain of 1.10 in favour of the posttest. Similarly, the mean and standard deviation of the pretest and posttest scores of the control group

are22.33, 5.821 and 22.83, 4.871 respectively. This gives a mean gain of 0.50 in favour of the posttest. Also from the result, it can be seen that there is difference between the mean posttest scores of the experimental group (22.90) and the control group (22.83), the difference being 0.7 which is in favour of the experimental group.

Research Question Two: Is there any difference in the mean achievement scores of male and female students taught computer science using video blog (VB)?
In answering research question two, the achievement mean scores of the male and female students in the experimental group were analyzed using mean and standard deviation as shown in Table 2.

Table2: The Mean and Standard Deviation of Pretest and posttest Achievement Scores of Male and Female Experimental Group.

Group	N	Pretest		Posttest		Mean Gain
		Mean ($\bar{x}$)	Standard Deviation	Mean ($\bar{x}$)	Standard Deviation	
Male	17	21.41	5.40	22.47	5.431	1.06
Female	13	22.31	5.38	22.90	4.50	0.59

Table2: shows the mean and standard deviation of the prestest and posttest scores of male and female experimental group, from the result, It can be seen that the mean and Standard Deviation of the pretest and the posttest score of themaleare21.41 and 5.40 and 22.47, 5.41 respectively. The mean gain is 1.06 in favor of the male achievement score. Similarly, the mean and standard deviation of pretest and posttest score of female are 22.31 and 5.371 and 22.90, 4.50. The mean gain is 0.59 in favor of the male posttest score.

Results on Hypotheses

HO_1: There is no significant difference in the mean achievement scores of Junior Secondary School Students taught computer science using Video Blog Instruction Package (VBIP) and those taught using discussion method.
In testing hypothesis one, the mean scores of students exposed to Video Blog Instruction Package (VBIP) and those taught with discussion method were analyzed using ANCOVA as shown in Table 3.

Table 3: Analysis of Covariance (ANCOVA) Result of Achievement Scores of Experimental and Control Groups

Source	Type III Sum of Squares	df	Mean Square	F_{Cal}	P - Value.
Corrected Model	120.128	2	60.064	2.648	.079
Intercept	1027.318	1	1027.318	45.295	.000
Pretest	120.062	1	120.062	5.294	.025
Group	.625	1	.625	$.028^{ns}$	.869
Error	1292.805	57	22.681		
Total	32786.000	60			
Corrected Total	1412.933	59			

*Significant at $p < 0.05$

Table 3 shows the ANCOVA results of the achievement scores of groups taught using the video blog instructional package (VBIP) (experimental group) and those taught with discussion method (control group). From the table, the $F_{Ca}L = 0.028^{ns}$ and $p < 0.05$.

This indicates that thereis no significant differencebetween themean scores of theexperimental group and that of the control group, because the Fcal $=0.028^{ns}$. Hence, hypothesis one is not rejected. Therefore, there is no significant difference in the mean achievement scores of students taught Computer science using Video Blog Instructional Package (VBIP) Instructional Package and those taught with discussion method. This reveals that the treatment has effect on the students' academic achievement.

HO_2: There is no significant difference between the mean achievement scores of male and female Junior Secondary School Students taught computer science using video blog. (VB)

In testing hypothesis two, the mean scores of male and female students in experimental group were analyzed using ANCOVA as shown in Table 4.

Table 4: Analysis of Covariance (ANCOVA) Results of the Achievement Scores of Male and Female Experimental Group

Source	Type III Sum of Squares	df	Square Mean	F_{Cal}	P – Value
Corrected Model	116.376	2	58.188	2.583	.094
Intercept	359.755	1	359.755	15.967	.000
Pretest	109.142	1	109.142	4.844	.036
Gender	3.212	1	3.212	$.143^{ns}$	.709
Error	608.324	27	22.531		
Total	16457.000	30			
Corrected Total	724.700	29			

Significant at $p > 0.05$

Table 4 shows the ANCOVA results of the achievement scores of male and female students in experimental group. From the result, there is no significant difference between the mean achievement scores of the male and female experimental group at 0.05 level of significance. (F_{Cal}= 0.143; $p < 0.05$). Therefore, hypothesis two is accepted. Hence, there is no significant difference in the mean achievement scores of male and female students taught Computer Science using Video Blog Instructional Package (VBIP).

Summary of the Findings

There was no significance difference in the achievement of students taught computer science using Video Blog Instructional Package (VBIP) and those taught using the discussion method and also, male and Female students taught Computer science using the Video Blog Instructional Package (VBIP) and those taught using the Discussion Method had similar mean achievement score.

Discussion of Findings

Students taught Computer Science using Video blog and those taught using the Discussion Method performed equally. The result however disagree with the findings of Ru Chu (2010) whose results showed that blended learning using video blog could contribute to learning effectiveness and student satisfaction if the blended model is implemented with sufficiently supportive equipment and course plans. So also, the results disagreed with the findings of Paul (2008) whose result shows that web intensive instruction did improve scores from pre-test to post-test. The results however agreed with the findings of Andrew, Elisa and Phil, (2012) whose results provide empirical evidence that, when used as a complementary tool, discussion recordings are a valuable supplement for students. Also, the result neither agrees with the findings of Paul (2008), whose results indicate that web-based instruction was neither as effective nor as well received as more discussion methods.

Male and Female students taught Computer science using the video blog and those taught using the discussion Method performed equally. This finding agrees with that of Onwuegbuna (2009) who found out that there was no significant difference in the achievement of male and female students when computer assisted instruction was used. However, this finding disagree with the findings of Adesoji and Fisiyi (2001) who design a study to analyze the problem solving difficulties of male and female student when they solve problem based on volumetric analysis. The study revealed that more girls than boys had difficulties in three of the stages of problem solving. They, therefore, concluded that the claim that boys are better problem -solvers than their girl counterpart. So also, the findings disagree with that of Gimba (2006) who noted that there was a there was a significant difference in the performance of girl and boys taught with -mathematical models. The girl did better than the boys in mathematics achievement test. These finding clearly support the established fact that gender differences exist in learning ability of students.

Conclusion

The finding of this study also shows that the use of video blog is not better than discussion method for computer science teaching. Students taught using video blog had similar achievement with counterparts in the control group taught with discussion method. In addition, the outcome of this study showed that the use of video blog is independent of gender. This means that both male and female can learn better with the use of a video blog.

Recommendations

Based on the findings of this study, it is recommended that:

1. Video Blog Instructional Package (VBIP) should be used together with the discussion method to enhance students' achievement in computer science.
2. Government and curriculum developers should embrace the integration of student-centered learning approach together with the existing method in teaching and learning process.
3. Finally, both boys and girls alike should be encourage to utilize Video Blog Instructional Package (VBIP) as this package is gender friendly.

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