

Interaction Effect of Youtube Instructional Package Videos on Secondary School Students' Academic Achievement And Retention In Economics In Education District Vi, Lagos State

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Abstract

The purpose of the study was to experimentally determine the interaction effect of YouTube instructional package videos on secondary school students' academic achievement and retention in Economics in Education District VI, Lagos State. Two research questions and two hypotheses were formulated to guide the study. The study employed a quasi-experimental research design. The population for the study was 10,250 secondary school II students (SS II) of Economics in education district VI, Lagos State. Purposive sampling technique was employed in the study to select two schools with 115 students. The two test used were adopted from West Africa Examination Council (WAEC) past questions on concept of demand, concept of supply and utility theory from 1995-2016. Research questions were answered using mean and standard deviation while hypotheses were tested at 0.05 level of significance using Analysis of Covariance (ANCOVA). The result shows an F-ratio of 1.178 with associated probability value of 0.028 in respect to the interaction effect of method and gender on students' achievement scores in Economics. Thus, the conclusion drawn was that there is no significant interaction effect of method and gender on the mean achievement scores of students in Economics.

Keywords: Achievement, Retention, YouTube, Interaction Effect, and Economics

I. INTRODUCTION

Social media is an online package that has transformed the interaction and communication of instructors and learners throughout the world. Effective instruction builds bridges between student knowledge and the learning objectives of the subject matter. Using social media such as a teaching method in the classroom is seen to engage students in the process of knowledge acquisition, aids student retention of knowledge motivates interest in the subject matter and illustrates the relevance of many concepts and by implication enhances student academic achievement in Economics [1].

Economics teachers in general are continually faced with instructional challenges as the diversity of students in classrooms widens. Researchers are interested in implementing best teaching methods that enhance students' achievement at all levels of education. Oviawe [2] refers to teaching method as the types of activities pursued by teachers, and pupils

together in discussion group work, surveys, demonstrations and viewing. The mediocre teacher tells, the good teacher gives an explanation, the superior one gives illustration and the great teacher inspires [3]. In the view of Oyedeji in Oviawe [4] teaching methods is the process of using specific instructional devices by a teacher to disseminate knowledge to the learners. Teaching method is referred to as a strategy or plan that summarizes the approach a teacher uses to achieve the desirable objectives of a lesson [5]. The method used by a teacher in presenting lessons is essential because it determines the interest students will have in the lesson and this makes the current study to refer to teaching method as a technique through which a teacher inculcate knowledge unto the learners to enhance their academic achievement, interest, and retention in a subject. There are various teaching methods that can be used by a teacher in teaching secondary school students but for this study, the teaching methods will be limited to YouTube instructional package videos (YIPV) and conventional teaching method (CM).

YouTube is a video-sharing website that gives room to users to upload videos on various subjects and watch videos that are uploaded by other users. The website started as an independent website in 2005 and was taken over by Google in 2006. Videos uploaded on YouTube can also be linked to other websites such as Google classroom website. YouTube was launched in 2005 as a place where instructors or learners could record and share videos with little or zero cost [6]. Being one of the world's most famous search engines, YouTube provides for the inexpensive distribution of educational content, including course material from educational institutions, non-governmental organization, and individual. This website could provide learners of Economics with authentic situations and with everyday clips that help them to get a better understanding of Economics lessons. Konijn, Veldhuis and Plaisier [7] regards to YouTube as a research environment that provide materials for study purposes. In the view of this study, YouTube is a video-sharing website in which its users can watch, share, like, and upload videos for others to access. Many researchers believed that students get positive indicators when they watch nature and real-life videos [8]. Watching videos on YouTube will help students to memorize and recall the events more easily. This website provides learners of different subjects, particularly senior secondary school Economics students with authentic and everyday clips that can make a conventional classroom an active technological driving one.

A conventional teaching method is a classroom where no modern technology or devices are used to facilitate students' understanding of a lesson. The conventional teaching method is a teaching method in which the teacher transmits information orally to the learners [3]. Most of the time, the teacher writes on the board while the students write copied what is written on the board by the teacher and sometimes the make use of the cardboard as an instructional materials. The conventional teaching method could be referred to as a traditional method of teaching before the invention of educational technologies that can be used in the four walls of a classroom. According to the educator, the conventional teaching method may include recitation, dramatization and others. Conventional teaching method is centered on the teacher and not the students. Since student's activity in the conventional classroom is passive and gullible, using technology as an instructional material in the classroom could enhance students' achievement in the subject matter of Economics.

Economics as a subject matter has been given a range of meanings over the last 200 years. However,

all the meaning have a common concept and inclined towards a general principle which covers microeconomics or macroeconomics. Economics is regarded as how to make choices well and also studies the allocation of limited resources in response to unlimited wants [9]. Economics is a subject with two main branches namely microeconomics and macroeconomics. Microeconomics is a branch of Economics that deals with the study of the economy in small by considering individual price level while macroeconomics is the study of the economy at large putting into consideration aggregate price level. The knowledge of microeconomics and macroeconomics helps individual students in everyday decision making. Base on works of literatures reviewed, YouTube instructional package videos in Economics classroom could provide students with good knowledge and understanding of their lessons. Additionally, learners use YouTube instructional package videos as a learning tool that helps them in clear understanding and after class, students can explore the Economics topic that was taught in the classroom.

The present study is of the view that concept of demand, the concept of supply and utility theory should be well delivered through the use of modern teaching technology such as YouTube instructional package videos because the West Africa Examination Council (WAEC) chief examiner's report May/June 2015, Nov/Dec 2015 and May/June 2017 proved that students do not have good attempts in most questions set in these areas thereby affecting the students' academic achievement and retention in senior secondary school Economics. This broad course has to be well taught by the teacher through modern teaching technology such as YouTube instructional package videos to facilitate quick understanding on the part of both the male and female learners and to checkmate interaction effect or the gap between method and gender.

The importance of interaction effects in any kind of experimental research is important because it tells the researcher(s) how two or more independent variables work together to impact the dependent variable. An interaction effect is the simultaneous effect of two or more independent variables (YouTube instructional package videos and gender) on at least one dependent variable (Academic achievement or retention) in which their joint effect is significantly greater (or significantly less) than the sum of the parts [10]. Including an interaction term effect in a diagnostic model provides the researcher with a better image and understanding of the relationship between the dependent and independent variables. Further, it helps to explain more of the changeability in the dependent

variable (achievement) against the independent variable (gender).

The influence of gender on academic achievement could be experienced in nearly every sphere of life. They are noticeable in the choice of career pursuit and gender imbalance at various educational levels. This could be attributed to differential treatments given to the male and female child from home. The actual state of gender participation causes of gender inequality and probable ways of restoring gender balance in various fields of human endeavour had been the concern of many research studies [2]. Oviawe believes that available literature seems to confirm the fact that gender is an important variable in academic achievement and retention of students at secondary school level of education. Gender is seen as socially ascribed attributes which differentiates feminine from masculine [11]. It is the fact of being male or female [12]. Olurode and Soyombo [13] found that gender is significant in the understanding of the developmental effort of a nation. This is because sustainable human development cannot take place without equitable participation by men and women. The study is of the view that the academic achievement of male and female students in various subjects at the secondary school level of education will contribute to societal well-being in the future.

Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished a specific goal that constitutes the focus of activities in formal learning settings such as senior secondary schools, colleges, polytechnics, monotechnics and universities. Academic achievement as knowledge acquired in school subjects such as Economics and marks obtained in tests in an examination [14]. Adeyemo [15] stated that academic achievement means achievement of a student in school examination. Students' academic achievement is quantified by a measure of the students' academic standing with those of other students of his age [16]. Students' academic achievement can also be determined by the method adopted by the teacher in teaching the subject. Academic achievement and retention of senior secondary school students of Economics in Lagos State could be promoted if teachers use appropriate methods in teaching the students.

Student retention is one of the more interwoven and intricate issues of senior secondary school education. Meaningful learning is a product of retention. Since the aim of teaching and learning some concepts in Economics by making use of different teaching strategies and instructional materials is to

establish a behavioral object and make learning more meaningful in which this is the ultimate goal of teaching. Retention is the process or ability to retain and remember things in the future [17]. Various modern teaching techniques have been adopted in senior secondary schools but social media have been neglected despite the role YouTube can play in improving student academic achievement and retention in Economics if effectively utilized by teachers.

The study aims to examine the interaction effect of YouTube instructional package videos on secondary school students' academic achievement and retention in Economics in Education District VI, Lagos State. Specifically, the study sought to:

- determine the interaction effect of teaching method and gender on the achievement scores of students in Economics.
- determine the interaction effect of teaching method and gender on the retention scores of students in Economics.

The following research questions guided the study.

- What is the interaction effect of gender and teaching method on achievement scores of students in Economics?
- What is the interaction effect of gender and teaching method on the retention of students in Economics?

The following null hypotheses guided the study and were tested at 0.05 level of significance.

H₀₁: There is no significant interaction effect of gender and teaching method on the achievement scores of students in Economics.

H₀₂: There is no significant interaction effect of gender and teaching method on the retention scores of students in Economics.

II. MATERIALS and METHODS

The study was a quasi-experimental research design. The use of intact classes was to avoid the threat of selection bias among the students and to avoid re-arranging and re-grouping which could disrupt the normal lesson of the schools involved in the study. The study was carried out in Education District VI, Lagos State. The three local government areas that made up Education District VI are Ikeja Local Government, Mushin Local Government and Oshodi-Isolo Local Government. The population for this study comprised

of 10,250 SSII schools students of Economics (2018/2019 set) drawn from schools in education district VI, Lagos State. The sample size of the study was 115 senior secondary school students offering Economics. The 115 students sample size was obtained through purposive sampling techniques because only schools with adequate computers with internet and available for use by the students were considered in the district. The intact classes of the SSII students of Economics from two public senior secondary schools were used as the sample size. The nature of the study, however, required that the sample should be purposively selected. Two instruments were used for data collection. They were Economics Achievement Test (EAT) and Economics Retention Test (ERT) which were 50 multiple choice objective questions each and were adopted from West Africa Examination Council (WAEC) past questions from 1995 – 2016 which was limited to the concept of demand, the concept of supply and utility theory, in which all these topics are offered SSII. To ascertain the reliability of

the research instruments, a pilot study was carried out in Education District 1, Lagos State. Two types of reliability testing were conducted to determine the internal consistency using Kuder Richardson 20 (K – R 20) and temporal stability using test – retest of Spearman Rank – order correlation. The reason for using K-R 20 was because the test has a binary variable in terms of right and wrong answers and also has varying difficulty. Spearman Rank-order correlation is used because it centered on the differences in rank orders and not the differences in mean. The K – R 20 gave reliability of 0.96 while the test – retest of Spearman Rank – order correlation gave a result of 0.77 which shows that the Economics achievement test and retention test instrument are highly reliable.

Mean and standard deviation was used to answer the two research questions that guided the study. The two null hypotheses that guided the study were analyzed using Analysis of Covariance (ANCOVA).

III. PREPARATION OF TABLES

Table I

Mean and Standard deviation of the interaction effect of gender and teaching method on the mean achievement scores of students in Economics.

Variables Method	N	Pretest		Posttest		Mean Gain
		\bar{x}	SD	\bar{x}	SD	
Gender						
YIPV	35	27.43	10.90	73.44	11.40	46.01
Male						
Female	25	26.00	11.27	73.52	9.51	47.52
CM	33	24.94	10.24	57.33	12.12	32.39
Male						
Female	22	26.09	9.14	57.27	10.89	31.18

YIPV = YouTube instructional Package Videos; CM = Conventional method

Table II: Analysis of covariance (ANCOVA) of the interaction effect of gender and teaching method on the mean achievement scores of students in Economics

Source	Type III Sum of				
	Squares	Df	Mean Square	F	Sig.
Corrected Model	17175.378 ^a	4	4293.844	115.178	.000
Intercept	27678.819	1	27678.819	742.458	.000
Pretest	9683.712	1	9683.712	259.756	.000
Method	6269.203	1	6269.203	168.165	.000
Gender	.266	1	.266	.007	.933

Method * Gender	43.931	1	43.931	1.178	.0280
Error	4100.796	110	37.280		
Total	518264.000	115			
Corrected Total	21276.174	114			

Table III

Mean and standard deviation of the interaction effect of gender and teaching method on the mean retention scores of students in Economics.

Variables			Posttest		Retention test		Mean Gain
Method	Gender	N	\bar{x}	SD	\bar{x}	SD	
YIPV	Male	35	73.43	11.40	60.23	10.09	-13.19
	Female	25	73.52	9.51	59.20	10.23	-14.32
CM	Male	33	57.33	12.12	48.24	10.97	-9.09
	Female	22	57.27	10.89	48.00	10.81	-9.27

YIPV = YouTube instructional Package Videos; CM = Conventional method

Table IV: Analysis of covariance (ANCOVA) of the interaction effect of gender and teaching method on the retention scores of students in Economics.

Type III Sum of					
Source	Squares	Df	Mean Square	F	Sig.
Corrected Model	13995.071 ^a	4	3498.768	174.696	.000
Intercept	bbb12.552	1	12.552	.627	.430
Pretest	10081.181	1	10081.181	503.361	.000
Method	bb90.843	1	90.843	4.536	.035
Gender	11.662	1	11.662	.582	.447
Method * Gender	5.816	1	5.816	.290	.591
Error	2203.051	110	20.028		
Total	354352.000	115			
Corrected Total	16198.122	114			

IV. RESULT and DISCUSSION

Research Question 1

What is the interaction effect of gender and teaching method on the Mean (\bar{x}) achievement scores of students in Economics? Data for answering research question 1 are presented in Table I.

The result presented in Table I shows the interaction between method and gender on the mean achievement scores of students in Economics. The result shows that the male group had a pretest mean of 27.43 with a standard deviation of 10.90 and a posttest mean of 73.44 with a standard deviation of 11.40. The difference between (mean gain) the pretest and posttest for male group is 46.01. The female group had a pretest mean of 26.00 with a standard deviation of 11.27 and a posttest mean of 73.52 with a standard deviation of 9.51. The difference between (mean gain) the pretest and posttest mean for the female group is 47.52. For each of the two groups, the posttest achievement mean were greater than the pretest achievement means with the female group having higher mean gain. This indicated that YouTube instructional package videos appeared to have improved the achievement score of both male and female students. Result in Table 1 also shows that the male group taught with conventional/lecture method had a pretest mean of 24.94 with a standard deviation of 10.24 and a posttest mean of 57.33 with a standard deviation of 12.12. The difference between the pretest and posttest mean for male group is 32.39. The female group had a pretest mean score of 26.09 with a standard deviation score of 9.14 and a posttest mean of 57.27 with a standard deviation of 10.89. The difference between the pretest and the posttest mean for the female group was 31.18. For each of the two groups, the posttest mean score were greater than the pretest means scores. The male group in the control group gained more scores than their female counterpart; this means there was an interaction between method and gender on students' achievement in Economics.

Hypothesis 1

H₀₁: There is no significant interaction effect of gender and teaching method on the achievement scores of students in Economics.

The result in Table II shows that an F-ratio of 1.178 with associated probability value of 0.028 was obtained with respect to the interaction effect of method and gender on students' achievement scores in Economics. Since the associated probability (0.280) was greater than 0.05 level of significance set as the criterion for taking a decision, the null hypothesis (H₀₁)

was not rejected. Thus, the conclusion drawn was that there is no significant interaction effect of method and gender on the mean achievement scores of students in Economics.

Research Question 2

What is the interaction effect of method and gender on the retention scores of students taught Economics? Data for answering research question 2 is presented in Table III

The result presented in Table III shows the interaction between method and gender on mean retention scores of students in Economics. Result shows that the male group had a posttest mean of 73.43 with a standard deviation of 11.40 and a retention test mean of 60.23 with a standard deviation of 10.09. The difference between (mean gain) the posttest and retention test mean of the YouTube instructional package videos (YIPV) male group is -13.19. The female group had a posttest mean of 73.52 with a standard deviation of 9.51 and a retention test mean of 59.20 with a standard deviation of 10.23. The difference between (mean gain) the posttest and the retention test mean of the YIPV female group is -13.44. For each of the two groups, the retention mean scores of both groups was less than the posttest achievement scores with the male group having higher mean gain. Result in table 10 also shows that the male group taught with conventional/lecture method had a posttest mean of 57.45 with a standard deviation 12.21 and a retention test mean of 48.24 with standard deviation of 10.97. The difference between the posttest and retention test for male group is -9.21. The female group had a posttest mean of 57.27 with a standard deviation of 10.82. The difference between the posttest and retention test mean for the female group was -9.27. For each of the two groups, the posttest mean score were greater than the mean retention mean scores. This result shows that students taught with YouTube instructional package videos retained knowledge than those taught with lecture method. In conclusion, there was an interaction between method and gender on students' retention in Economics.

Hypothesis 2

H₀₂: There is no significant interaction effect of gender and teaching method on the retention scores of students in Economics.

The result in Table IV shows that an F-ratio of 0.290 with associated probability value of 0.591 was obtained with respect to the interaction effect of method

and gender on students retention in Economics. Since the associated probability (0.591) was greater than 0.05 level of significance set as the criterion for taking decision, the null hypothesis (H_0) was not rejected. Thus, the conclusion drawn was that there is no significant interaction effect of method and gender on students' retention in Economics.

For male and female groups exposed to both methods, the posttest achievement means were greater than the pretest means with female group having higher mean gain than their male counterpart when using YouTube instructional package, while the male group had slightly higher mean gain than their female counterparts when exposed to conventional/lecture method. There is no significant interaction effect of method and gender on the mean achievement scores of students in Economics.

For male and female groups exposed to both methods, the achievement means were greater than the retention test means with female group having higher mean gain than their male counterpart when using YouTube instructional package videos, while the male group had slightly higher mean gain than their female counterparts when exposed to conventional/lecture method. There is no significant interaction effect of method and gender on the mean retention scores of students in Economics.

The result shown further that there is a slight difference between the mean achievement scores of male and female student taught Economics using YouTube instructional package videos. It show an F – cal of 0.07 over the observed probability value of 0.933 which was significant at 0.05 level of confidence testifies the result. The female students score was slightly higher than the male students score with the female students having higher mean gain over the male students. This finding is in line with Adigun, Onihunwa, Irunokhai, Sada, and Adesina [18] whom findings revealed that gender as a factor does not have a significant influence on students' achievement in computer. Though, some researches maintain that males achieve significantly than females in social sciences and sciences, others have found out that females achieve significantly better than males. So, the result of this study is at variance with Ogunkunle in Ajai and Imoko [19] in Nigeria, where part of the findings established significant difference in favour of males and another part in favour of females. These are generalizations for male and female and they do not apply individually to all males and females. It thereby stands that male and female learners are capable of competing and collaborating in Economics. In addition, this finding showed that performance is a function of

strategy and orientation, not gender. It has been established in this study that there is no significant interaction effect of method and gender on the mean scores in the post Economics achievement test of students taught Economics. This finding is in consonance with Israel [20] who found no interaction effect between method and gender.

The result shown that there is a slight difference between the mean retention scores of male and female students taught Economics using YouTube instructional package videos. The result also shows that F – cal of 0.582 with probability value of 0.447 was significant at 0.05 level of confidence testifies the result. The male students score is slightly higher than the female students score with the male students having higher mean gain over the female students. This finding is in line with Tella [21] which findings reveals that gender have a significant achievement in mathematics. It has been established in the result that there is no significant interaction effect of method and gender on the mean scores in the retention test of the Economics retention test of the students. This finding is in agreement with DeBerard, Glen and Deana [22] who found no interaction effect between method and gender in relation to retention.

V. Conclusion

In view of the literatures reviewed, YouTube videos and the fact that most of the serving secondary school teachers may not be familiar with its use, the government and stakeholders in both Economics Education and Special Needs education should organize intensive workshop and seminars on the use of modern teaching techniques such as the YouTube instructional package videos amongst others for the in-service teachers. This will help to enhance their competence especially in the choice and the use of YouTube instructional package videos.

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