EFFECT OF ASSESSMENT FOR LEARNING WITH FEEDBACK ON SENIOR SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT AND RETENTION IN ECONOMICS IN NASARAWA STATE, NIGERIA

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Abstract

This study examined the effect of Assessment for learning with feedback on senior secondary school students' academic achievement in Economics in Nasarawa State. The study employed quasi–experimental research design involving the non-equivalent pretest, posttest, control group design. The target population comprised 15, 550 SS II students from secondary schools in Nasarawa State for the 2018/2019 academic session. A sample of 120 (85 male and 35 female) SS II students from two randomly selected public secondary schools in Nasarawa Local Government Area of Nasarawa State. Data were collected using Economics Achievement Test (EAT). The logical consensus of the experts gave 0.90 index of rational validity and the reliability coefficient of 0.85 was obtained for EAT using Kuder-Richardson formula (K-R21). Mean and standard deviation were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 alpha. Results revealed that the use of Assessment for learning with feedback provided favourable effects on the experimental group and the effect led to significant improvement in students' achievement in Economics. Similarly, sex does not significantly affect the mean achievement scores of students' taught Economics using Assessment for learning with feedback and those taught using conventional instructional tools. It was concluded that Assessment for learning with feedback was more effective in enhancing students' achievement, in Economics than conventional instructional tools. Thus, the study recommended that Assessment for learning with feedback should be used in the teaching of Economics to enhance learning so as to maintain the closed gap between male and female on the achievement score in the subject.

Keywords: Assessment for learning, Economics, Feedback, Students' achievement

Introduction

Economics is one of the major school subjects taught at the Senior Secondary level. Economics seeks to inculcate in students the basic skills for: analyzing economic problems; making rational use of scarce resources to satisfy unlimited wants; understanding and appreciating various government policies especially where choices have to be made; understanding of the complex nature of economic life; analyzing fascinating socio-political and economic behaviour of the society. According to Akande and Babalola (2010), Economics ensures the creation of national economic policies designed to achieve certain economics goals. These policies and goals include national economic growth leading to higher standard of living, national full employment leading to suitable jobs for all citizens who are willing and able to work, economic efficiency leading to maximum fulfillment of wants using the available national productive resources, economic freedom making workers and consumers have a high degree of freedom in their economic activities, national economic security making the handicapped and aged to earn minimum level of income, balance of trade by achieving favourable balance of trade with the rest of the world in international trade and financial transactions.

The hopes of every country of the world to develop human capital for effective functioning of the society are hinged on education, being an instrument of change. However, this can only be achieved through purposeful and qualitative education for the citizens. Despite the noble objectives of Economics, the academic achievements of students' at the external examination have been poor in Nigeria. According to West African Examination Council Chief Examiner's reports (2014-2019), 60% of the candidates who sat for WASSCE between 2012 and 2018 in Nigeria passed Economics at credit level and above. The current state of affairs is displeasing and this trend could hamper meaningful development in Nigeria and Nasarawa State in particular. The poor academic achievement of students in Economics could be attributed to lack of utilization of appropriate instructional tool, abstract nature of teaching Economics concepts among others. Afolabi (2009) posited that students usually fail in examinations owing to improper teaching methods and lack of essential teaching aids for instructional delivery. Zakaria, Solfitri, Daud and Abidin (2012) opined that students' poor performance over the years has been attributed to teachers' use of inappropriate teaching methods and instructional tools which make students become passive and have less interaction with each other in doing task. Possibly, the poor achievement of students in Economics could also be attributed to the inability of teachers to properly administer assessment for learning. When students are taught by teachers who assess their students using assessment for learning their results both in the school-based and external assessments would improve because when a teacher gets to know students' areas of difficulties, misconceptions and how effective his/her teaching strategy has been, the teacher will make efforts to carryout remediation and improve where necessary. Alubaleze (2004) further explained that lecture method is teacher-centered. Lecture method makes instruction boring and the teacher cannot guarantee carrying the boring students (Okeke, 2007). The implication is that lecture

method makes the teacher active and learner passive listener in the teaching and learning environment.

Assessment is considered to be one of the main educational tools available to use for different purposes, among which is to maximize learning as well as to motivate students, to improve their performance so that they can meet pre-specified goals and standards. Assessment has assisted teachers over the years to measure learners' achievement through the internal administration of unannounced quizzes, periodic tests and final examinations. Thus, assessments are usually viewed and taken as indicators of school achievement and success, more so than as tools to investigate the cause of success or failure during learning (Shepard, 2000). The conventional assessment approach adopted by most curricula is one where teachers teach and then administer tests and examinations to find out what learners have achieved (summative assessments). This approach leaves the teachers at the centre of the teaching-learning process, where they continue to teach and grade student performance. This approach tends to ignore and disregard the learning needs of the weaker students who do not possess the capacity to learn at the same pace and timeframes as the others. Consequently, they end up at the bottom of their classes in their schools' grading system or packing order (Chappuis & Stiggins, 2002).

Teachers and learners cannot perform optimally or effectively without the availability of adequate information on student's standing at any given time and the extent of his/her progress towards the achievement of instructional objectives. Hence, the tests given periodically, as formative evaluation, are supposed to remove the threatening effects of a single test (summative test) generally given at the end of a course of study. Some of the aspects of formative assessment that are very relevant in the teaching-learning outcomes include the frequency of the period of reporting on teacher-learner achievements, effecting immediate feedback of results into the teaching-learning situation and the emphasis that the results of these in-course assessments be combined with those of terminal assessments in deciding the final output of the individual learner. Assessment for learning (AfL) is an approach to teaching and learning that creates feedback which is then used to improve students' performance. Assessment for Learning (AfL) according to Onuka and Oludipe (2006), is an assessment practice that broadens and expands the forms, mode, means and scope of assessment in the school in other to facilitate and enhance learning by providing immediate feedback. School-Based Assessment comprised of the continuous and terminal or final assessment carried out in the school, which impact on the child's readiness, capacity and interest to learn. Bardwell (1981) submitted that feedback is the information, which a teacher provides a student about his/her performance on a particular task or test. Ajogbeje (2012) opined that Assessment for learning process includes the provision of feedback to students on their scores or performance in a given test.

It is expected that with the emphasis on the training of teachers, the level of instruction would improve which invariably would enhance better academic achievement and retention in the subject. Academic achievement is viewed as

attainment in a school subject as symbolized by score or mark on an achievement test (Ogbonna, 2007). Students' academic achievement can be explained in form of scores obtained from tests or examinations on courses taken. Ogbonna (2007) further explained that academic achievement depends on various factors which include the teacher's instructional methods, learning environment and the learner. The same factors affect retention of learning. Retention can be defined as learner's ability to recall facts that have been previously learned. Okekeokosisi (2012) referred to retention of learning as learner's ability to transfer information earlier learned or learner's ability to repeat performance, or behavior earlier acquired, elicited after a period of time. It implies that a learner who repeats and acquired information with less error is said to have retained the learned material. Retention according to Ngwoke and Eze (2010) is the process by which a child stores information in his memory for use at a later period. Retention occurs when facts or experiences are stored in the long term memory. This entails that the teaching method is expected to stimulate students to learn and equally have ability to enforce leaning retention. The implication is that evaluation of students' leaning needs to extend beyond post test for a consideration of individual students in terms of their ability to generalize and transfer of learning.

Sex refers to the socially, culturally constructed characteristics roles which are ascribed to male and female in any society (Erinosho, 2005; Okeke, 2008). However, some studies have shown contradictory in students' academic achievement and retention in science and liberal arts/social science subjects which Economics is one; Tahir, Tariq and Khaalid (2012) revealed that students assessed through formative assessment with feedback significantly scores higher than students who were not given feedback. Likewise, Ojugo, Ugboh, Onochie, Eboka, Yerokun and Iyawa (2013) indicated that all those exposed to formative testing relatively performed better than those not exposed to formative testing in the research groups in the "Graphical Solution of Quadratic Equation Achievement Test" (GSQEAT); Olagunju (2015) revealed that formative assessment has a strongly significant difference in the mean achievement score of Mathematics students that are exposed to it ($t = 36.54$, $p = 0.00$) while there is no significant difference in the mean achievement scores of student who are not exposed to formative assessment ($t=2.053$, $p = 0.045$). Also, there is no gender difference in the achievement scores of Mathematics students that are exposed to formative assessment ($t=0.112$, $p = 0.053$); Kuza (2019) revealed that there was a significant difference between the experimental group and the control group (F_{cal}, 1df, $0.05\alpha = 92.277 > F_{cri} = 3$. The result also indicated that gender was not a significant factor in students achievement when taught Economics using formative assessment with feedback (F_{cal}, 1df, $0.05\alpha = 29.695 > F_{cri} = 3.84$). There was also a significant difference between the retention gain of the experimental group and the control group. (Fcal, 1df, $0.05\alpha = 29.695 >$ Fcri $= 3.84$). However, Ajogbeje (2013) revealed that there is a significant effect of treatment on students' achievement in mathematics. However, there was no significant effect of gender and Socio-Economic Status (SES) on achievement in Mathematics; Oyinloye and Imenda (2019) revealed

that learners following an AfL instructional approach performed statistically higher that those following normal classroom instruction. Thus, the questions which readily come to mind are: Would the mean achievement scores of students' taught Economics using Assessment for learning be improved? Would gender of students affect their academic achievement of Economics (Economics analysis)? Thus, the study explored the effect of Assessment for learning on students' achievement and retention in Economics in Nasarawa State**.**

Research Questions

The following research questions were raised to guide the study:

1: What are the mean achievement scores of students taught Economics using Assessment for learning with feedback and those of their counterparts without feedback?
2: What are the mean retention scores of students taught Economics using Assessment for learning with feedback and without feedback?
3: What are the mean achievement scores of students taught Economics using Assessment for learning with feedback and without feedback based on sex disparity?

Research Hypotheses

The following hypotheses were postulated and tested at 0.05 alpha level:

1. There is no significant difference in the mean achievement scores of students taught Economics using Assessment for learning with feedback and those of their counterparts without feedback.
2. There is no significant difference in the mean retention scores of students taught Economics using Assessment for learning with feedback and those of their counterparts without feedback.
3. There is no significant difference in the mean achievement scores of students taught Economics using Assessment for learning with feedback and without feedback based on sex disparity.

Methodology

The study employed quasi–experimental research design involving the non-equivalent pretest, posttest, control group design. The study population comprised 15, 550 SS II students from public secondary schools in Nasarawa State for the 2018/2019 academic session. A sample of 120 (85 male and 35 female) SS II students from two randomly selected secondary schools in Nasarawa Local Government Area of Nasarawa State; out of 120 students sampled, 79 (54 male and 25 female) are in experimental group and 41 (31 male and 10 female) are in control group respectively. Data for the study were obtained using a 50 items Economics Achievement Test (EAT). Content validity was ensured in EAT by developing a table of specification. Face validity was obtained for EAT by subjecting the instrument to critical appraisal of two research experts. The logical consensus of the experts gave 0.90 index of

rational validity. Reliability of the instrument was established by using Kuder-Richardson formula (K-R21) method of estimating coefficient of internal consistency. The reliability coefficient of 0.85 was obtained for EAT. Two research assistants were adequately trained for two days by the researchers on how to administer the treatment. Thereafter, EAT was administered as pretest to SS II students by the research assistants in their respective schools and the pretest lasted for one hour. The teachers marked EAT, the pretest scores of EAT was collated and handed over to the researcher. Hence, the result of the pretest was used to identify two public secondary schools with similar ability in Economics out of the four public secondary schools selected. The two public secondary schools identified with similar ability in Economics were used for the study. After the pretest, the treatment commenced on the next Economics period by Economics teachers in the two public secondary schools identified and lasted for four weeks of eight periods of forty minutes per period per week. To minimize the influence of memory effect associated with test wise students, the EAT items were juggled by the researcher and administered on the students as posttest immediately after the treatment by the research assistants. At the end of the posttest which lasted for one hour, the EAT scripts were collected and marked by the teachers. The scores from EAT was collated and handed over to the researcher. The rationale for the conduct of posttest was to determine the academic achievement of the students in Economics after treatment. Two weeks after the posttest, EAT items were again juggled by the researcher and administered on the students as post posttest by the research assistants. At the end of the post posttest which lasted for forty minutes, the scripts were collected and marked by the teachers. The scores were collated and handed over to the researcher. The rationale for the conduct of post posttest was to determine the retentive power of the students in Economics after two weeks of treatment and posttest. The pretest, posttest and post posttest scores were recorded after each marking exercise. The EAT items were scored 2 marks each and the maximum mark was 80 for each of pretest, posttest and post posttest respectively. Mean and standard deviation were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses formulated at 0.05 alpha level.

Results

Research Question One: What are the mean achievement scores of students taught Economics using Assessment for learning with feedback and those of their counterparts without feedback?

The pretest and posttest scores of students on EAT were used to compute mean and standard deviation as shown in table 1.

Table 1: Descriptive Statistics for Students' Mean Achievement Scores based on Two Teaching Methods

Groups	N	Sum	Mean	Std. Deviation
Assessment for Learning	79	1304.00	24.2061	10.4738
Lecture method	41	1292.00	16.5142	5.3902

Table 1 shows the descriptive statistics for significant difference in the mean achievement scores of students taught Economics using Assessment for learning with feedback and lecture method as 24.2061 and 16.5142 respectively. The implication of the finding is that the academic achievement of students taught Economics using Assessment for learning with feedback is higher than the academic achievement of those taught without feedback.

Research Question Two: What are the mean retention scores of students taught Economics using Assessment for learning with feedback and without feedback?
The posttest and post-posttest scores of students on EAT were used to compute mean and standard deviation as shown in table 2.

Table 2: Descriptive Statistics for Students' Mean Retention Scores based on two teaching methods

Groups	N	Sum	Mean	Std. Deviation
Experimental	128	7221.00	56.4141	7.70267
Control	112	4398.00	39.2679	4.39488

Table 2 shows the descriptive statistics for significant difference in the mean retention scores of students taught Economics using Assessment for learning with feedback as 56.4141 and 39.2679 respectively. This implies that the mean retention scores of students taught Economics using Assessment for learning with feedback and without feedback are higher than the mean retention scores of those taught using conventional method.

Research Question Three: What are the mean achievement scores of students taught Economics using Assessment for learning with feedback and without feedback based on sex disparity??
The pretest and posttest scores of male and female students on EAT were used to compute mean and standard deviation as shown in table 3.

Table 3: Descriptive Statistics for Male and Female Students' Mean Achievement Scores based on Two Teaching Methods

Groups	N	Sum	Mean	Std. Deviation
Experiment Male	54	1601.00	24.5297	18.17066
Experiment Female	25	1411.00	23.7400	16.51531
Control Male	31	1681.00	14.1182	11.76310
Control Female	10	1342.00	14.2032	12.22521

From table 3, the mean achievement score of male (24.5297) is slightly higher that of female (23.7400) experimental (Assessment for learning with feedback). But, the mean achievement scores of both male (14.1182) and female (14.2032) in the control group were statistically the same in the whole number. This implies that Assessment for learning with feedback can significantly improve students' achievement irrespective of sex disparity.

Hypothesis One: There is no significant difference in the mean achievement scores of students taught Economics using Assessment for learning with feedback and those of their counterparts without feedback.
To test null hypothesis 1, the mean achievement scores for experimental groups and control group from pretest and posttest with EAT were compared using ANCOVA and the results obtained are presented in Table 4:

Table 4: Summary of ANCOVA for Students' Achievement Scores in EAT

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	Experiment	10341.704[a]	4	2585.426	123.768	.000
Intercept	Experiment	625.347	1	625.347	29.936	.000
Control	Experiment	1292.627	1	1447.279	69.283	.000
Error	Experiment	2402.263	115	19.191		
Total	Experiment	318572.000	120			
Corrected Total	Experiment	12743.967	119			

Table 4 shows that there is a significant difference in the mean achievement scores of students taught Economics using Assessment for learning with feedback F(4, 115) = 69.283; P = 0.000. This suggests a statistically significant difference between the mean achievement scores of students' taught Economics using Assessment for learning with feedback and the control group. Thus, the null hypothesis is rejected.

Hypothesis Two: There is no significant difference in the mean retention scores of students taught Economics using Assessment for learning with feedback and those of their counterparts without feedback.

Table 5: Summary of ANCOVA for Students' Retention Scores in EAT

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Exp Post	2.511[a]	1	2.511	.042	.837
Intercept	Exp Post	4725.151	1	4725.151	79.773	.000
Control Post	Exp Post	2.511	1	2.511	.042	.037
Error	Exp Post	6515.551	110	59.232		
Total	Exp Post	374407.000	112			
Corrected Total	Exp Post	6518.063	111			

a. R Squared = .000 (Adjusted R Squared = -.009)
b. R Squared = .098 (Adjusted R Squared = .090)

Table 5 shows that there is a significant difference in the mean retention scores of students taught in Economics using Assessment for learning with feedback and control group F(1, 110) = .042; P =.037. This suggests a statistically significant difference between the mean retention scores of students taught Economics using Assessment for learning with feedback and the control group. Thus, the null hypothesis is rejected.

Hypothesis Three: There is no significant difference in the mean achievement scores of students taught Economics using Assessment for learning with feedback and lecture method based on sex disparity.

Table 6: Test of ANCOVA for Students' Mean Achievement Scores Based on Sex

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	Exp male	16707.140[a]	25	879.323	5.313	.000
	Exp female	13886.489[b]	25	730.868	16.590	.000
Intercept	Exp male	45.238	1	45.238	.273	.605
	Exp female	9.993	1	9.993	.227	.637
Control	Exp male	1215.828	10	243.166	1.469	.227
	Exp female	43.732	10	8.746	.199	.961
Error	Exp male	5296.553	31	165.517		
	Exp female	1409.742	31	44.054		
Total	Exp male	117808.000	54			
	Exp female	53964.000	54			
Corrected Total	Exp male	22003.692	53			
	Exp female	15296.231	53			

Table 6 shows that F (1, 31) = 1.469, P = .227 for Assessment for learning with feedback and F (1, 31) = .199 P = .961 for control group. This indicates that the differences between mean achievement scores of male and female students' taught Economics using Assessment for learning with feedback those taught using control group is not statistically significant. Thus, the null hypothesis is not rejected.

Discussion of Findings

The result of this study has revealed that students following the AfL instructional approach performed significantly higher than their counterparts in the comparison group who received normal instruction. The significant effect of the AfL instructional approach seen in this study can be attributed to the efforts and hard work of the two teachers who tried very hard to implement the AfL strategies with their learners. This involved making significant changes in the way they were accustomed to teaching, and for the learners in the way they were accustomed to learning. However, the study revealed that the academic achievement of students taught Economics using Assessment for learning with feedback was significantly higher than those taught using conventional instructional tools. This concurs with the finding of Tahir, Tariq and Khaalid (2012) who reported that students assessed through formative assessment with feedback significantly scores higher than students who were not given feedback. Similarly, the result agrees with earlier findings by other researchers such as Ojugo, Ugboh, Onochie, Eboka, Yerokun and Iyawa (2013) who indicated that all those exposed to formative testing relatively performed better than those not exposed to formative testing in the research groups in the "Graphical Solution of Quadratic Equation Achievement Test" (GSQEAT). The study contradicted earlier finding of Olagunju (2015) who reported that there is no significant difference in the mean achievement scores of student who are not exposed to formative assessment (t=2.053, p = 0.045).

The study also revealed that the mean retention scores of students taught Economics using Assessment for learning with feedback was significantly higher than the mean retention scores of those taught using lecture method. This is consistent with the findings of Kuza (2019) who reported that significant difference between the retention gain of the experimental group and the control group (Fcal, 1df, 0.05α = 29.695>Fcri = 3.84).

Moreover, findings from this study revealed that sex does not significantly affect the mean achievement scores of students' taught Economics using Assessment for learning with feedback and those taught using conventional instructional tools. This concurs with the findings of Olagunju (2015) who reported that there is no gender difference in the achievement scores of Mathematics students that are exposed to formative assessment (t=0.112, p = 0.053); Kuza (2019) also indicated that gender was not a significant factor in students achievement when taught Economics using formative assessment with feedback (F_{cal}, 1df, 0.05α = 29.695>F_{cri} = 3.84).

Conclusion

In view of the findings of this study, the following conclusions were drawn: Assessment for learning with feedback was more effective in enhancing students' achievement in Economics than lecture method. The effect of sex on students' achievement when taught Economics using Assessment for learning with feedback those taught using control group was not statistically significant.

Recommendations

Based on the findings of this study, the followings are recommended:

1. School Administrators should emphasis the use of Assessment for learning by all teachers and they should allow, encourage and provide incentives for them to attend seminars, workshops, conference and in-service training to enhance their performance and to acquire necessary skills to constructing formative tests.
2. Curriculum designers and subject advisors to consider the AFL strategies very seriously so that a systemic change can occur within the school system as a whole towards a better understanding of formative assessment, generally, and AFL in particular.
3. The researchers are convinced that the efforts that schools will make to embrace a better use of formative assessment, including AFL, will be justified by subsequent students' achievements.
4. For a better retention of learned experience, content or achievement gains in Economics formative assessment with feedback should be constantly observed. Finally, formative assessment with feedback that is not gender biased should be employed by teachers and encouraged by government and relevant stakeholders in Education.

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