EFFECTS OF FORMATIVE ASSESSMENT WITH FEEDBACK ON SECONDARY SCHOOL ECONOMICS STUDENTS' ACHIEVEMENT IN LAFIA, NASARAWA STATE, NIGERIA

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Abstract

The paper investigated the 'Effect of formative assessment with feedback on secondary school Economics students' achievement in Lafia Local Government Area of Nasarawa State, Nigeria. The study aimed to determine the difference between mean achievement scores of experimental and control groups in terms of achievement gains with gender as a moderator variable. Two research questions with two hypotheses were formulated to facilitate the study—a quasi-experimental design involving a pretest, post-test, and post-posttest control group. The study population comprised 4,508 senior secondary II Economics students in Lafia Local Government. The sample consisted of two intact classes of 105 senior secondary II Economics students from two schools in Lafia Local Government. A simple Random Sampling procedure was used to select four schools that participated in the pretest, after which two schools with similar abilities were chosen for the study. The instruments used for data collection were the researcher-developed Economics Achievement Test (EAT). Experts validated the instrument in Education and Economics with a mean achievement validation index of 0.80. A reliability index of 0.82 was also obtained through the Cronbach alpha method. Data analysis was conducted using mean and standard deviation to answer research questions and Analysis of Covariance to test the hypotheses. The result showed that there was a significant difference between the experimental group and the control group. The result also indicated that gender was not an important factor in students' achievement when taught Economics using formative assessment with feedback. The study concludes that using formative assessment feedback in teaching Economics significantly affected the mean achievement score of students in Economics. Based on the findings and conclusion, the researchers recommended that formative assessment with feedback for teaching economics be encouraged and mandated to use formative assessment with feedback when teaching Economics to close the gender gap and maintain better retention. Finally, formative assessment with feedback that is not gender biased should be employed by teachers and encouraged by the government and relevant stakeholders in Education.

Keywords: *Formative assessment, feedback,*

Introduction

Formative assessment is one of the education assessment types; it is also called educative assessment. Formative assessment accesses and aids students' performance during the instruction process and is used for obtaining continuous feedback from both teacher and students to determine the progress of learning during a course of instruction and improve learning during a course instruction, and for improving learners' performance through remediation (Anikweze.2019). In an educational setting, the formative assessment might be

the teacher, learner or both providing the feedback on student work. Formative assessment can be diagnostics, standardized tests, quizzes, oral questions or draft work. Anikweze (2013) posits that formative assessment is the assessment for learning, generally carried out throughout a course or project; it is often referred to as continuous assessment or educative assessment. Formative assessment that occurs within and between instructional units (Medium- Circle assessment) as well as within and between lessons (Short –cycle assessment) has been shown to improve students' achievement. Formative assessment across making periods, quarters, semesters, terms or years had not been shown to improve students' achievement. However, formative assessment cannot achieve its desired objective without immediate feedback. In other words, formative assessment can only achieve its desired aim in teaching and learning when immediate feedback or remediation is given. Smith and Gorard (2015) asserted that formative assessment with feedback is pivoted to helping teachers improve the day –today assessment of their students because it enhances learning and gives learners specific guidance on strengths and weaknesses. They also asserted that assessment could only be formative if its feedback on the teaching-learning process is for students to improve. Effective feedback should enable them to know exactly what they would have to do to close the gap between the actual and desired performance.

Smith and Gerard (2010) added that feedback becomes formative when students are provided with scaffold instruction or thoughtful questioning that serves as prompts for sustained and deeper discussion. This instructional approach closes the gap between their current or present level of understanding and the desired learning goal, aside from giving prompt or immediate feedback. Hattie (2000) suggested taking time to provide learners with information on what exactly they did well and what may still need improvement. According to Hattie (2000), it is also important that the learner knows what he is doing differently than before. Simply telling the students to try again or reconsider their work does not possess formative qualities because it does not strategically guide learning by telling them how or why they need to do this. In their view, Nicol and Macfarlane (2004) stipulated that "Besides providing a framework for sharing educational objectives with students and for chatting their progress. The formative assessment generates feedback that students can use to enhance learning and achievements, and teachers adjust their teaching practice to correspond to their students' needs. Thus, it is obvious that formative can have a powerful influence on achievement by providing feedback and remediation to students regarding what they know and where they make errors or have misconceptions (Hattie, 2000).

However, Economics is an important subject to students and society because it cuts across all spheres of human endeavours. Economics as a discipline was introduced into the Nigerian secondary school curriculum in the early seventies, and since then, it has gained popularity among all students (Adeyemi, 2010). The subject studies how individuals, firms, governments and nations choose to allocate scarce resources to satisfy their unlimited wants. This subject's nature, foundation and existence are related not only to the social sciences but to many other disciplines outside the region. It has a bumping effect on other special studies like biological science, engineering and mathematics science, to mention a few (Anyanwu, 2002). Economics also helps students better understand government policies, Economic problems and situations of the society and therefore be in a position to offer effective solutions to them. Adekunle (2005) held the view that Economics is a subject which must be thoroughly understood right from the start of the issue. Therefore, formative assessment with

feedback is pivotal to ensuring that students thoroughly understand Economics from the beginning to the end. Because every stage of teaching and learning exercise, the teacher gives feedback to the students regarding their performance, and students respond to the feedback. Norlin (2014), the use of feedback has become an important practice by teachers in the classroom, though research has proven it to be beneficial, teachers do not always practise it". Norlin added that the type of feedback, the timing of its use and the way it is used could positively affect students in the classroom. Feedback often occurs after a student's response or when information about a specific task is provided.

Table 1

Summary of WAEC result for schools in Lafia, Nasarawa State

Year	N0 of Candidates	A-B	C4-C6	D7-E8	Failures	Total
2015	2,635	45	94	1,009	1464	2,635
2016	2,579	26	385	951	1,217	2,579
2017	2,316	85	341	864	1,027	2,316
2018	2,244	102	44	800	1,284	2,230

Source: Field work by the researchers 2018

Table 2

Economics Students Achievement in NECO

Year	N0 of Candidates	A-B	C4-C6	D7-E8	Failures	Total
2015	1,334	97	123	389	822	1,334
2016	1,086	118	129	480	359	1,086
2017	906	130	96	201	479	906
2018	807	82	67	158	500	807

Source: Fieldwork by the researchers, 2018

Economics is inclusive, which helps to build confidence by; encouraging the belief that everyone can do Economics, emphasizing effort, not innate ability, modelling enthusiasm for teaching and learning related mathematical subjects (Mensah, Okyere & Kuranchie, 2013), and .addressing the learning styles of students by providing a variety of ways for students to gain an understanding of difficult concepts, helping students to appreciate the value of Economics in their lives and choosing activities carefully not too easy, not too hard so that students can be both challenged, successful and develop a positive attitude towards the study of Economics (Ministry of Education, Ontario, 2004). All these measures to address students' attitudes in the studies of Economics could be achieved or actualized as posited by Ontario 2014 when it is done regularly or the use of formative assessment and feedback is fully implemented. In speaking about the importance of formative assessment, the National Mathematics Advisory Panel (2008) confirms that effective formative assessment positively impacts students' achievement and attitude toward the subject, while feedback can produce more efforts from students on future work (Norlin, 2014).

Formative assessment provides feedback and information during the instructional process while learning is taking place. The feedback and future instructions may be concerned with remediation or the provision of further learning opportunities. The study investigated how formative assessment and feedback affect students' attitude, retention and achievement in Economics in senior secondary schools. To support this imagination with

empirical evidence, the study investigated how formative assessment with feedback can affect senior secondary school students' attitude, retention and achievement in Economics.

Academic achievement refers to how much knowledge pupils have obtained from a specific course of study. According to Omachi in Okoyefi (2014), achievement refers to a student's academic position at any particular time. It has to do with achieving a goal successfully (s). The purpose of a test of achievement is to assist the teacher and students evaluate and estimating the level of success achieved in studying a particular idea. It may also be used to assess information and skill retention. It's also useful for measuring the effectiveness of education. Students' accomplishment in connection to instruction and the overall success of learning outcomes is one of the topics at stake in education today. Hassan in Okoyefi (2014) states that effective learning and academic performances contribute to national development. It is extremely important to parents, teachers, and students; even the greater society is aware of the long-term consequences of high and low academic accomplishment since the output of schools is expected to influence society's destiny. They will only be able to do so if they can remember what they have learned in school. Gender is a systematic way that distinguishes men and women, notably in the case of men and women. Depending on the circumstances, it can range from sex to social role to gender identity. Gender, according to Okeke (2004), is a social or cultural construct with features, behaviour, and roles that differ from one area to the next or from culture to culture. It's not the same as sex, which is biologically fixed and universal.

According to the amount of research on the subject, gender concerns in science education have attracted substantial attention. Babajide (2010) states that educational practitioners offer a male viewpoint in science disciplines like physics, biology, and chemistry. However, according to Nwosu in Okoyefi (2014), students' development of science process skills is not gendered specific. Agonmuoh and Nzewi (2003), Ogunleye and Babajide (2011), and Agonmuoh and Nzewi (2003) support a considerable gender effect on scientific accomplishment. Madu (2004) and Agomuoh (2010) discovered that gender impacted students' conceptual shifts, with male students benefiting more. Some academics believe that male students do better than female students. However, others disagree, claiming that success is influenced by various factors, including socioeconomic status, teaching approach, and so on. As a result, the problem of gender has not yet been resolved, particularly in connection to students' economic accomplishments, necessitating more research, particularly when experimenting with novel teaching methodologies.

According to James and Folorunso (2012), individuals who got remediation therapy outperformed those who merely received feedback treatment. The control group, which received simply a test with no feedback or remediation, performed the worst. This demonstrates that feedback and remediation would allow learners to review the acceptable responses, offering further insight into the topic and improving performance on the next try. The study found that using a mix of feedback and remediation to help pupils acquire secondary school mathematics was more beneficial. Ajogbeje (2013) discovered that therapy substantially impacted pupils' mathematical achievement. However, in mathematics, gender or socioeconomic status (SES) had no significant impact on success.

Martin (2020) found out that there was no significant difference between the treatment and control groups based on the means of pretest and post-test scores. While not statistically significant, the treatment group did show a larger Increase of students with at

least a 60% improvement in achievement. The lack of statistical significance between the control and treatment groups could be caused by the ineffectiveness of the formative assessment or the inability to exclude other variables in the classroom setting. Olagunju's (2015) findings from the study revealed that formative assessment has a strong significant difference in the mean achievement score of Mathematics students exposed to it. There is no significant difference in the mean achievement scores of students not exposed to formative assessment. Also, there is no gender difference in the achievement scores of Mathematics students exposed to formative assessment.

The behaviourist theory is the theoretical foundation that underpins this research (McLeod, 2007). This is a learning theory that focuses objectively on visible behaviours and any autonomous mental operations. Behaviour theorists characterise learning as acquiring new behaviour depending on contextual factors. Conditioning has been identified as a universal learning mechanism by behaviourists' experiments. Under behaviourism, there are two forms of conditioning: classical conditioning and operant conditioning, each resulting in a different behavioural pattern. B.F. Skinner's operant conditioning theory is pertinent and applicable to the current investigation. This is known as operant conditioning, when a reaction to stimuli is reinforced. Essentially, this idea is more functional and fits into the recent study of a basic feedback system. For example, if a reward or feedback follows a stimulus-response, the reaction becomes more likely in the future. This idea is useful in the classroom because it helps teachers consider alternative methods to encourage students by praising their good conduct for inspiring them to succeed in their studies. The researcher utilized feedback on formative assessment to students as encouragement and observed its impact on students' achievement, retention, and attitude in mathematical components of Economics.

One major hindrance of these empirical studies is that the results of the studies cannot be generalized away from the target population of the schools used for such studies; hence, the results can only be applied to the areas under investigation. Economics is an important subject that helps students better understand government policies, Economic problems and situations of the society and therefore be in a position to offer solutions to them. Unfortunately, there has been a trend of poor achievement in Economics at the SSCE level. This poor achievement is mostly a result of students' inability to solve questions with quantitative manipulation of variables, mathematical and statistical equations, percentages, diagrams and graphs, as reported by the WAEC chief examiner (2018). Possibly, the poor achievement of students in Economics could be attributed to the inability of teachers to administer formative assessments and feedback. When students are taught by teachers who assess their students using formative assessment and feedback, their results both in the school-based and external assessments will improve. Because when a teacher gets to know students' areas of difficulties, misconceptions and how effective their teaching method has been, the teacher will make efforts to carry out remediation and improve where necessary. Therefore, the study investigated the effect of formative assessment feedback on secondary school Economics students' achievement.

Research Questions

The following questions were formulated to guide the study:

- What is the achievement mean scores of students taught Economics using formative assessment with feedback and that of their counterparts without feedback?

- How does the achievement mean scores of male students exposed to formative assessment with feedback on quantitative elements of Economics differ from that of their female counterparts?

Objectives

The objective of this study was to determine the effects of formative assessment and feedback on secondary school Economics students' achievement in Lafia, Nasarawa State. The specific objectives of the study are to:

- Compare the mean achievement score of students taught Economics assessed using Formative Assessment with feedback and that of their counterparts without feedback.
- Compare mean achievement score of students taught and assessed using formative assessment with feedback on students' achievement in quantitative elements of Economics when segregated according to gender.

Hypotheses

The following null hypotheses were formulated and tested at a 0.05 level of significance.

- There is no significant difference in the post-test Economics achievement mean scores of students between the control and experimental groups.
- There is no significant difference in the post-test Economics achievement mean scores of students in the experimental as moderated by gender.

Methodology

The following methods were used in this study:

Research Design

The study adopted a Quasi-experimental design involving the pretest – post-test, post-posttest control group design. This design was used because it is suitable for analyzing gain scores, that is, the difference between pretest and post-test scores. Quasi-experimental is justified because the random assignment of subjects to experimental and control groups is applied in the true experimental design. The true experimental design was not used because it would have disrupted the school programmes. The use of intact class was suitable for the design. Thus, an intact class was used. The structure of the design is presented in table 4 below:

Table 3: Quasi-Experimental Design Table

Method	Independent Variables	Random Assignment	Pretest Observation	Treatment	Posttest Observation	Dependent Variable
Same Experimenter	Formative Assessment with Feedback	Exp. Group (R G_1)	O_1	X	O_2	Achievement, Retention & Attitude
	Assessment with no feedback	Control Group (R G_2)	O_1	-	O_2	
	← six weeks of teaching →					

01 X 02---------- Experimental Group (Group one)

03 04---------- Control Group (Group Two)

The design has the experimental group as group 1 and the control group as group 2. The experimental and control groups are exposed to the pretest as 01 and 03, respectively. Only the experimental group received treatment with the letter "X", after which the two groups were post-tested as represented with 02 and 04 for experimental and control groups, respectively. This was in the form of a lucking deep where letters T and C were written in two separate papers squished. Two students were called from two different arms of the same class to pick. Letter "T" stands for the Experimental group while "C" stands for the control group. The class representative that picked "T" for the entire class members was the experimental group, while the class that picked the letter "C" class as the whole members became the control group.

Population

The target population for the study comprised 4,508 Senior Secondary II Public School Students in Lafia, Nasarawa State, of which 2,492 were males while 2016 were females with 14 senior secondary schools.

Sample and Sampling Techniques

The sample used intact classes of SSII Economics students from four mixed (Co-educational) schools in Lafia Local Government. The entire schools were listed, and random sampling was used to select the four mixed schools from the list. The four mixed (Co-educational) Schools chosen for the study were given the pretest. From their mean scores, the two schools with nearly similar abilities were selected for the experiment. The intact classes of 54 and 51(105) students per class were randomly assigned to experimental and control groups.

Instruments for Data Collection

One instrument was used for data collection in this study. Via; Economics Achievement Test (EAT). The Economics achievement test developed by the researchers consisted of two sections. Section A is for background information, while section B contains twenty (20) objective items. The researchers used this instrument to determine the level of achievement of SSII in quantitative elements of the Economics curriculum on the topics of measures of dispersion, theory of consumers' behaviour, and concept of demand and supply.

Procedure for Instrument Development

Economics Achievement Test (EAT)

The first step in developing EAT was to outline the objectives under measures of central tendency, theory of consumer behaviour, theory of cost and elasticity as contained in the Economics curriculum. A Table of specifications covering twenty (20) objective items was drawn.

Table 4
Table of Specification for Economics Achievement Test

Content	Period	Cognitive objection Know 10%	Comp 10%	Appl 30%	Anal 20%	Synth 20%	Eval 10%	Total 100%
Measures of dispersion	3 (25%)	1	0	2	1	1	0	5
Theory of cost	4 (33%)	1	1	2	1	0	1	6
Elementary treatment of utility theory	2 (27%)	0	1	1	1	1	0	4
The concept of demand and supply	3 (25%)	1	1	1	1	0	1	5
Total	**12 (100%)**	**3**	**3**	**6**	**4**	**2**	**2**	**20**

K = Knowledge, C = Comprehension, A = Application, A = Analysis, S = Synthesis, E = Evaluation.

After preparing the Table of specifications, the researchers wrote the items in line with the table of specifications. The items were appraised to remove vague items and modify some mistakes made. This is followed by the arrangement and compilation of the test items.

Validity of Economics Achievement Test (EAT)

The type of validity that the researchers established here is content validity because content validity takes care of adequate representation of each content area and the appropriateness of fluency and language. After writing the EAT, it was subjected to the judgment of two experts, one in the Economics Department Federal University Lafia and Nasarawa State University, respectively. They were asked to establish whether the items adequately represent the objectives stated in the Economics curriculum on the topics. They were also asked to assess the item's content-related validity and cognitive level coverage and make corrections or suggestions where necessary. The Logical Consensus Validity index obtained was 0.94; this indicated that the instrument was capable of measuring what it does intend to measure.

Reliability of Economics Achievement Test (EAT)

A trial test was carried out to establish the reliability of Economics Achievement (EAT), and an internal consistency estimate was applied using Kuder-Richardson Method (K-R20). Kuder-Richardson Reliability is also known as Rational Equivalence or inter-item consistency. It is a method based on a single administration. It is based on the consistency of responses to all items. To compute the reliability Coefficient, the EAT was administered to one hundred and twelve students in two schools that are not part of the sampled schools, 60 students from GSS Ombi II and 52 from Lafia East. The reliability index obtained was 0.79. This indicates that the instrument has high reliability

Administration of the Instrument

The face-to-face method was adopted in administering the Economics Achievement (EAT) to the students. The exercise was carried out by the researcher with the assistance of

the school Economics teacher. After the administration, the questionnaire was collected and scored by the researcher.

The students were taught measures of dispersion, theory of cost, elementary treatment of utility theory and the concept of demand and supply by the researcher using the normal lesson periods allotted to the teaching of Economics in the school timetable. The experimental group was taught using formative assessment and feedback, while the control group was taught using the lecture method. The secondary school system allowed only three periods of 40 minutes each for the teaching and learning of economics per week. After teaching the four topics to both groups, the researcher administered a formative Economics Test (EAT) to both the control and experimental group. After marking each test, the researcher intends to give a remediation procedure to address the students' learning needs.

Method of Data Analysis

Means and standard deviations were used to answer the research questions, while Analysis of Co-Variance (ANCOVA) was used for testing the hypotheses at a 0.05 level of significance. ANCOVA was considered an appropriate statistic because the pretest scores were used as covariates, and the difference in the groups' performance was observed in the ANCOVA results. The pretest and the post-test scores were then compared to determine the influence of the treatment conditions on the dependent variables of interest. Post-posttest scores were also compared to determine the level of feedback between males and females students within the experimental group after Experimentation.

Results

The results were presented according to the research questions and the hypotheses.

Research Question One: What is the difference between the achievement mean score of students taught Economics using formative assessment with feedback and that of their counterparts without feedback?

This research question was answered by comparing the mean achievement scores of the experimental and control groups, as shown in Table 5.

Table 5
Means and Standard Deviations of the Students' Pretest and Post-test Scores by Groups

GROUP	N	PRETEST		POSTTEST		MEAN Gain
		X	SD	X	SD	
Exp	54	5.70	1.689	16.3	3.508	10.43
Contr	51	5.65	2.1	13.62	2.2254	7.97

Table 5 indicates that the overall mean achievement post-test for the experimental group in the post-test (taught formative assessment with feedback) was ($\dot{X}$ = 16.13) with a standard deviation of 3.508. The mean post-test score for the control group in the post-test (taught without the use of Formative Assessment with feedback) was ($\dot{X}$ = 10.96) with a standard deviation of 2.254. Therefore, the students taught using experimental had higher mean scores than those taught without experiments. As indicated by the standard deviations, the range of scores was also higher in the experimental group than in the control group. From

the data in the table, the students taught using assessment had higher mean achievement gain (10.54) than those taught without assessment and feedback (5.37). The mean gain for the experimental group is 10.43, while for the control group is 7.97. To decide on this, hypothesis one was tested.

Research Question Two: How does the achievement mean scores of male students exposed to formative assessment with feedback on quantitative elements of Economics differ from that of their female counterparts?

To answer this research question, the researcher compared the mean achievement scores of male and female subjects treated using formative assessment with feedback.

Table 6

Means and Standard Deviations of Experimental students' post-test and pretest scores by Gender

GENDER	N	PRETEST		POSTTEST	
Male	28	5.71	1.1410	15.96	3.260
Female	26	5.70	1.975	16.30	3.463

The data in table 4 revealed that the female students had a slightly higher mean score ($\dot{X}$ = 16.65) than their male counterparts ($\dot{X}$ = 15.96) when taught quantitative elements of Economics using formative assessment with feedback. The female students also had a higher standard deviation of 3.463 compared to that of the male students' 3.232. the data from the table also indicates that male students had almost similar mean achievement scores of 15.96 with their female counterparts having 16.65. The data suggested that the performance of the two gender groups may have been equal.

Hypotheses Tested

Hypothesis One: There is no significant difference in the post-test achievement mean score of students between the control and experimental groups.

This hypothesis was tested by subjecting data between the control and experimental groups to the analysis of Covariance.

Table 7

ANCOVA test of Significance Difference Between Experimental and Control Groups

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected model	855.159	2	427.579	58.027	0.000
Intercept	1015.466	1	1015.466	137.809	0.000
Group	679.957	1	679.957	92.277	0.000
Error	751.603	102	7.367		
Total	201082.000	105			
Corrected Total	1606.762	104			

Table 7 shows that the calculated F-ration for the group treatment on students' achievement in Quantitative element of Economics is 92.277 which is significant beyond 0.05 level of significant at 0.000 level of significance (F_{cal}, 1DF, 0.05, 0.05, 1DF, 0.05 = 92.277 >Fcal = 3.84). The decision, therefore, is to reject the null hypothesis. This implies a significant difference between the mean achievement of students taught quantitative elements of Economics with formative assessment with feedback and those taught without assessment

and feedback. This implies that the experimental group scored significantly higher than the control group taught without formative assessment with feedback. The implication is that the use of formative assessment with feedback is more effective than the method without the use of formative assessment with feedback.

Hypothesis Two: There is no significant difference in the post-test Economics achievement mean scores of students in the experimental group as moderated by Gender. This research hypothesis was tested by subjecting data from the post-test and pretest for the male and female Gender of the experimental group to analysis of covariance, as shown in Table 8.

Table 8

ANCOVA Tests of Significance Difference Between Gender Experimental Group

Source	Type III Sum of Squares	df	Mean Square	F	Sig
Corrected model	220.491	2	110.245	15.083	0.000
Intercept	388.290	1	388.290	53.124	0.000
Pretest	214.080	1	214.080	29.289	0.000
Gender	6.905	1	6.905	0.945	0.336
Error	372.769	51	7.309		
Total	14934.000	54			
Corrected Total	593.259	53			

The data in Table 8 indicates that the computed F-value for the effects of gender on treatment is 0.945 and a significance value of 0.336. This value was not significant at the 0.05 level of significance (Fcal, 1df, 0.05@ = 0.945 <FCri = 3.84). The null hypothesis was, therefore, not rejected. This means that there is no significant difference in the mean achievement scores between the male-female students taught quantitative elements of Economics using formative assessment with feedback. They, therefore, achieved equally when taught using formative assessment with feedback. This is because the method is motivating, and it is not gendered biased.

Discussion of Results

This study investigates the effects of formative assessment with feedback on secondary school economics students' achievement in Lafia, Nasarawa State, Nigeria. The experimental and control groups compared the impact of formative assessment with feedback on the mean achievement scores of students in quantitative Economics. The result revealed that the students taught Economics using formative assessment with feedback scores had higher mean achievement scores than those taught without using formative assessment with feedback method. The Table indicates that the students taught with formative assessment and feedback (experimental group) scored higher than those in the control group. The above finding agrees with that of Tahir, Tariq and Khalid (2012). In their study, the results revealed that students assessed through formative assessment with feedback significantly scored higher than students who were not given feedback. Olagunju (2015) found out that formative assessment has a strong significant difference in the mean achievement score of Mathematics students exposed to it, and there is no significant difference in the mean achievement scores of the student who are not exposed to formative assessment. Also, there is no gender difference in the achievement scores of Mathematics students exposed to formative assessment. For instance, if a reward or feedback follows the response to a stimulus, then the responses become more probably in the future. The theory allows teachers to think of

different ways in which they could motivate students by reinforcing them to do well in their education.

With regards to the influence of gender on the mean achievement scores of students when taught Economics using formative assessment with feedback. The result revealed that the difference between the mean scores of male students and that of female students in the experimental group are related though in favour of the female students, indicating the same achievement. This means gender was not a significant factor in students' academic achievement in Economics as both genders achieved equally when taught using formative assessment with feedback. The result is in agreement with that of Ajogbeje (2013), in their study on the effects of formative testing with feedback on students' achievement in junior secondary school mathematics revealed that there was a significant effect of treatment on students' achievement in mathematics. However, there were no significant effects of gender on achievement in mathematics when the same teaching method was used. Contrary to Okeke (2001), the gender difference in academic achievement in favour of male students was not innate. She pointed out that such difference was rather due to sex rote stereotyping in the society, which ultimately tends to influence curriculum instructions in favour of the male students. The result indicated that the method was motivating and was not gender-biased.

Conclusion

The use of formative assessment with feedback in teaching quantitative elements of Economics significantly affected the mean achievement score of students in Economics. The use of formative assessment with feedback was, therefore, more effective than the method without the use of formative assessment with feedback for teaching Economics. Gender was not a significant factor in the students' achievement scores in Economics when taught using formative assessment with feedback. The male and females show the same level of achievement. The use of formative assessment with feedback had a significant effect on achievement retention of students as the experimental group retained achievement gains more than the control group taught Economics without feedback.

Recommendations

Based on the findings of this study, the following recommendations were made:

- The use of formative assessment with feedback for teaching Economics should be advocated and included in the Senior Secondary Schools Economics Curriculum. Teachers should be mandated to teach and assess the students with Formative Assessment with Feedback regularly when teaching Economics.
- Economics teachers should be encouraged and mandated to use formative assessment with feedback to maintain the closed gap between the male and female gender on the achievement score in Economics from the study as it is not gender-biased.

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