

**EFFECTS OF FORMATIVE ASSESSMENT
METHOD ON STUDENTS' ACHIEVEMENT
IN SENIOR SECONDARY SCHOOLS
GEOGRAPHY IN FAGGE LOCAL
GOVERNMENT AREA OF KANO STATE,
NIGERIA.**

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Abstract

This study was examined to investigate the effects of formative assessment method on students' achievement in senior secondary schools geography in Fagge Local Government Area of Kano State, Nigeria. Three specific objectives and three hypotheses guided the study. The study employed the quasi-experimental research design.

Experimental and control group. Experimental group was taught using the formative assessment method while the control group was taught using traditional lecture method. A total of 78 students (44 males and 34 females) from two public senior secondary schools in Fagge LGA participated in the study. Purposive sampling technique was used. The formative assessment technique employed for the study included open-ended questions, written test and Geography Achievement Test (GAT). A validated test instrument was used to collect data from the students for this study, with the instrument adapted. Data collected were analysed using paired sample t-test and independent sample t-test statistical tools. They show that formative assessment method has a significant effect on the students' achievement in geography, that is, in the pre-test and the post-test, the mean scores of the post-test is significant higher than the pre-test. It also revealed that there is significant difference in the mean achievement scores of student who are exposed and students who are not exposed to formative assessment method. Also, there is no gender difference in the achievement scores of geography students that are exposed to formative assessment. It was recommended that teachers should be trained on how to effectively implement formative assessment in their teaching and that evaluation of student learning should be continuous, providing feedback in a timely manner to help in the promotion of learning.

Key word: formative Assessment, Students Achievement, Geography

Introduction

Assessments play an important role in education because they provide valuable information about student performance and help educators make informed decisions about teaching strategies and curriculum development. While learning outcome assessment assesses the knowledge, skills, and abilities acquired by students over a period of time, learning outcome assessment focuses on evaluating the effectiveness of teaching methods and strategies used by educators. Assessment of learning outcomes is the most important component of the training process. This helps teachers see how well students are achieving their desired learning goals and identify areas that need further improvement. This type of assessment can take many forms, including tests, quizzes, projects, presentations, and portfolios.

By assessing student performance, teachers can provide feedback and support to improve the learning experience. One of the main purposes of learning assessments is to measure a student's knowledge and understanding of a subject. This allows teachers to identify gaps in instruction and adjust their teaching strategies accordingly. Assessments also help students to clearly understand their strengths and weaknesses and focus on areas that need improvement. It also

motivates students to actively participate in the learning process and take responsibility for their education.

According to Bernard (2013), he defined “assessment” as the use of various procedures to gather information about teaching and learning. There are two types of evaluation: summative evaluation and formative evaluation. Formative assessment provides immediate feedback to both teachers and students regarding the teaching and learning process.

Formative assessment is an important aspect of the teaching and learning process. This involves gathering information about students' understanding and progress during their studies and providing feedback that can be used to improve learning. Filas (2012) cites Bloom, Hasting, and Madus (1971) who believed that formative assessment is beneficial to both students as a way to diagnose student learning.

Implementing formative assessment methods can have a significant impact on student achievement. Formative assessment methods such as quizzes, class discussions, and peer assessments have been shown to improve students' academic achievement in geography. These methods provide immediate feedback to students, allowing them to identify their strengths and weaknesses. By understanding the areas in which they can improve, students can take the necessary steps to improve their learning. This

process of self-reflection and self-correction is critical to academic growth. Formative assessment methods also encourage active participation in the learning process. Students are more motivated to learn when they know their progress is being tracked and assessed. Formative assessment methods also improve critical thinking and problem-solving skills as students are required to analyze and evaluate their own work and the work of their peers. Introducing formative assessment methods in Geography in secondary schools will improve the overall learning environment. These methods promote a learner-centered approach to learning, shifting the focus from the teacher to the student. Pupils actively participate in their own learning and take responsibility for their own development. This change in dynamic promotes a positive, collaborative learning environment where students feel comfortable sharing their ideas and engaging in discussions. Formative assessment methods also promote effective communication between teachers and students. Regular feedback helps teachers identify student misconceptions and provide targeted support. This personalized learning approach ensures that students receive the guidance they need to overcome their challenges. Moreover, formative assessment methods allow teachers to tailor instruction to students' needs and allow the curriculum to be tailored to students' learning styles and abilities.

Statement of the Problem

The frequent failure of Nigerian students in internal and external geography subject examinations such as West African Examinations Council (WAEC) and National Examinations Council (NECO) is a matter of concern to all stakeholders in the education sector. The problems identified are poor teaching methods, inadequate teaching materials and infrastructure facilities, and poor assessment practices used by many secondary school geography teachers. This study investigated the effects of formative assessment methods on the achievement of geography students in Fagge Local Government Secondary School, Kano State, Nigeria.

Objectives of the study

This study investigated the effects of formative assessment methods on the performance of Geography students in Fagge Local Government Secondary School, Kano State, Nigeria. Specifically, this study looked at the following:

1. To examine the effect of formative assessment method on students' achievement in secondary schools geography in the study area.
2. To examine significant difference between students exposed to formative assessment method and students in control group.
3. To examine significant gender difference in the achievement of geography students who are exposed to formative assessment method of evaluation.

Research Hypotheses

1. There is no significant difference in the pre-test and post-test formative assessment method on students' achievement mean scores of geography students in the study area.
2. There is no significant difference between students exposed to formative assessment method and students in control group in the achievement mean scores of geography students in the study area.
3. There is no significant gender difference in the achievement mean score of geography students who are exposed to formative assessment method of evaluation in the study area.

Methodology

Quasi-experimental design with experimental and control group was used in this study to examine effect of formative assessment method on students' achievement in secondary schools geography in Fagge Local Government Area of Kano State, Nigeria. Two (2) groups were purposeful selected for the experimental and control group. Experimental group was taught using the formative assessment method while the control group was taught using traditional lecture method. The targeted population comprises of all senior secondary school two (SS II) geography students in Fagge Local Government in Kano State, Nigeria. A total of 78 students (44 males and 34 females) from two public senior secondary schools in Fagge LGA

participated in the study. Purposive sampling technique was used. The formative assessment technique employed for the study included open-ended questions, written test and Geography Achievement Test (GAT). A validated test instrument was used to collect data from the students for this study, with the instrument adapted from the work of Ahmodu (2023) with reliability coefficient of 0.78. The researcher further subjected the instrument to reliability coefficient test using Cronbach's Alpha and the instrument established a reliability coefficient of 0.83. The instrument for data collection was administered two times at different intervals of six weeks, that is, before treatment (pre-test), after treatment (post-test) to determine the effects of the treatment. The instrument was administered by the researchers and the researcher assistants. Data collected were analysed using paired sample t-test and independent sample t-test statistical tools.

Results

The results of the study were analysed based on the research hypotheses stated.

Hypothesis One: There is no significant difference in the pre-test and post-test formative assessment method in the students' achievement mean scores of geography students' in the study area.

Table 1: Summary of t-test of mean scores of the Achievement Scores for the pre-test and post-test when using the formative assessment method.

Variable	N	X	SD	Df	T	p-value	Decision
Pre-test	4						
	4	21.32	6.335	43	-20.702	.0000	Rejected
Post-test	4	43.27	4.189				
	4	43.27	4.189				

Note: $p > 0.05$

Table 1 shows the achievement scores of the pre-test and post-test when using the formative assessment method. The pre-test has a mean score of 21.32 with a standard deviation of 6.335 while the post-test has a mean score of 43.27 with a standard deviation of 4.189. The computed t-value = -20.702 and p-value = 0.000 was significant at 0.05 alpha level of significance. This indicates There is significant difference in the pre-test and post-test formative assessment method in the students achievement in secondary schools geography in the study area. Thus, we rejected the null hypothesis.

Hypothesis Two: There is no significant difference between students exposed to formative assessment method and students in control group in the achievement mean scores of geography students in the study area.

Table 2: Summary of t-test of mean scores of the Achievement Scores for the experimental and control groups

Variable	N	X	SD	Df	T	p-value	Decision
Experimental Group.	44	43.02	4.123	76	19.460	.0000	Rejected
Control Group.	34	21.06	5.841				

Note: $p > 0.05$

Table 2 shows the achievement mean scores of the experimental and control groups on formative assessment method. The experimental group has a mean score of 43.02 with a standard deviation of 4.123 while the control group has a mean score of 21.06 with a standard deviation of 5.841. The computed t-value = 19.460 and p-value = 0.000 was significant at 0.05 alpha level of significance. This indicates there is significant difference between students exposed to formative assessment method and students in control group in the achievement mean scores of geography students in the study area. Thus, we rejected the null hypothesis. The result is in favour of experimental group.

Hypothesis Three: There is no significant gender differences in the achievement mean scores of geography students who are exposed to formative assessment method of evaluation in the study area.

Table 3: Summary of t-test of mean scores of the Achievement Scores based on gender.

Variable	N	X	SD	Df	T	p-value	Decision
Male	4						
	4	43.18	4.025	76	-.148	.883	Accepted
Female	3						
	4	43.32	4.416				

Note: $p > 0.05$

Table 2 shows the achievement mean scores of the male and female on formative assessment method. The experimental group has a mean score of 43.02 with a standard deviation of 4.123 while the control group has a mean score of 21.06 with a standard deviation of 5.841. The computed t-value = 19.460 and p-value = 0.000 was significant at 0.05 alpha level of significance. This indicates that there is no significant gender differences in the achievement mean scores of geography students who are exposed to formative assessment method of evaluation in the study area. Thus, we accepted the null hypothesis.

Discussion of Results

This study investigated the effects of formative assessment methods on the academic performance of Geography students in Fagge Local Government Secondary School, Kano State, Nigeria. Research has shown that formative assessment has a significant effect on students' geography achievement in senior secondary schools. It was

found that there were significant differences in the pre-test and post-test formative assessment methods for student achievement depending on the geography of secondary schools in the study area. The results showed that the post-test was favorable, which means that using formative evaluation methods in teaching and learning has a positive effect. This is consistent with Ajogbeje (2013) who stated, “When formative assessments are used effectively, they ensure that students are adequately prepared for exams, and these frequent tests make students more engaged and committed to learning.” Increase academic achievement in the subject through the learning process. In the same vein, Olagunju (2015) stated that “formative assessment improves student achievement by making a large significant difference in the average achievement of secondary school students.” Ojugo (2013) also agreed that “formative assessment is beneficial to students because it helps diagnose their learning disabilities and prescribe alternative remedial interventions to improve academic performance in the subject.” The problem is. As a result, it was found that there was a significant difference in the scores of geography students in the learning area between students exposed to the formative assessment method and students in the control group. The results were favorable to the experimental group. This is consistent with Udukpong and Okon (2012) finding that “there are significant differences in the average academic achievement scores of students studying using

formative assessment methods.” Students who had positive dispositions toward their teachers' formative assessment practices performed better than their peers who perceived these practices as unhelpful to learning. These results are consistent with Bernard (2013) who stated, “Formative assessment is one of the assessment strategies that diagnose a student's learning difficulties in a subject with the goal of improving the student's academic achievement.” “There is a significant positive difference between students who are exposed to formative assessment and students who are not exposed to formative assessment,” Barnard added. Lastly, it was found that there was no significant difference by gender in the ratings of geography students who had been exposed to formative assessment methods in their major field. This suggests that gender does not have a significant impact on how students' achievement is formatively assessed in high schools in the study area. This finding is consistent with Adjobgeje (2013) who stated that “gender differences are not a significant issue when using formative assessments of boys and girls to determine the problem of poor performance.” Women may perform much better than men if the boys are not committed to the learning process. Similarly, Udukpong and Okon (2012) argue that male and female gender does not matter when using formative assessment methods.

Conclusion

In conclusion, assessment of learning and teaching outcomes is an important aspect of education. It provides valuable information about student performance, helps educators improve their teaching methods, and promotes accountability in the education system. By conducting assessments, educators can ensure that students are achieving desired learning outcomes and receiving a high-quality education. Therefore, prioritizing assessment in educational settings is essential to promote effective teaching and learning practices. Formative assessment plays an important role in learning and achieving educational goals. This promotes accountability, provides valuable feedback, helps set realistic goals, and ensures continuous improvement of teaching methods. However, it is important to ensure that formative assessments include both quantitative and qualitative measures to ensure a comprehensive assessment of a student's abilities. By embracing assessment as an integral part of the learning process, teachers and students can work together to achieve academic success. The impact of formative assessment methods on the academic performance of students in secondary schools in Fagge Local Government Area of Kano State, Nigeria is undoubtedly positive. These methods improve students' academic performance by providing immediate feedback, promoting active participation, and developing critical thinking skills. Additionally, implementing formative assessment

practices improves the overall learning environment by promoting student-centered learning, effective communication, and personalized learning. It is therefore important for educators in Fagge Local Government Area and beyond to use formative assessment methods as a means of improving students' Geography achievement and creating a positive learning environment.

Recommendations

Based on the study results and conclusions, the following recommendations were made:

1. Teachers should be trained on how to effectively use formative assessment in the teaching and learning process.
2. Student learning should be assessed on an ongoing basis and feedback provided in a timely manner to help promote learning.
3. Governments and school administrators should allow and encourage teachers to attend seminars, workshops, conferences, and in-service training to improve their performance and acquire the skills necessary to develop formative tests and how to integrate formative assessments with classroom procedures.

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