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Mathematics Continuous Assessment Scores as Predictors of Students' Performance in Junior Secondary School Mathematics Examinations in Ekiti State, Nigeria

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Abstract

This study examined Mathematics Continuous Assessment Scores as predictors of students' performance in Junior Secondary School Mathematics Examinations in Ekiti State. The subjects consisted of 360 Junior Secondary School Students sampled from twelve selected Junior Secondary Schools in Ekiti State. Descriptive research design of expo-facto type was adopted. The scores of the students were collected from the selected schools and analysed using correlation analysis. Three null hypotheses were tested using correlation analysis at 0.05 level of significance. Results revealed that there were significant relationships between JSS1, JSS2, JSS3 Mathematics Continuous Assessment and JSS1, JSS2, JSS3 Mathematics examinations respectively. It was among others recommended that training should be given periodically to the secondary school teachers by the government in administering continuous assessment in schools.

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Introduction

One of the most important and significant developments in Nigerian educational system of recent, is the introduction of continuous assessment in evaluation of pupils, particularly at the primary and secondary levels of education in Nigeria. The implication of this is that every teacher in the primary and secondary school should understand and administer continuous assessment to the pupil effectively. The emphasis on continuous assessment is not limited to Nigeria alone. Several other African countries notably Kenya, Zambia, Ghana and Liberia have adopted the same policy. Continuous assessment is a method of evaluating the progress and achievement of students in educational institutions. According to Yoloye (1984), continuous assessment aims at getting the truest possible picture of each student's ability and at the same time helping each student to develop his or her ability to the fullest. The method or process of continuous assessment takes into account in a systematic view of the whole performance of the students during a given period of schooling. Moreover, continuous assessment has the characteristic of being, Comprehensive by making use of many evaluation instruments; Cumulative by putting into consideration all the past records to compute the final grades of the students (Ward, 1980).

One of the innovations in the new educational policy is the adoption of the four-tier educational system tagged '6-3-3-4'. This means a pupil is to spend six years in primary level, three years each at junior and Senior Secondary levels and finally four years at tertiary level of education. According to the national educational policy,

> *Ultimately, there will be no formal examination at the end of the first six years of primary education. Certificates will be based on continuous assessment, and will be issued by the headmaster of the school. Junior secondary school leaving certificate will be based on a combination of continuous assessment and final examination conducted by the individual State Ministry of Education, Continuous assessment will constitute 60% of the final grade. Senior secondary school leaving certificate will be based on a combination of continuous assessment and a final formal examination conducted by West African Examinations Council (WAEC) (NPE, 2004)*

Continuous assessment evaluates the students in all the three domains of Learning: cognitive, affective and psychomotor. So, teachers are supposed to assess the students on cognitive development, acquisition of practical skills, and as well as often neglected domain the affective objectives which include all variables of personality of the three domains The affective objective often appear to be the most difficult to assess as it requires the use of good and valid instruments, and the process of assessment may be complex and sometimes subjective (Bloom, 1959). Teachers therefore face difficult tasks of carrying out proper and valid assessment of these variables, which should contribute sixty-percent to final grading in Junior Secondary examination.

The government realized, before the introduction of continuous assessment, the enormous tasks that would be involved in the implementation of the policy, and the inevitable need to give the teachers the necessary training was recognized. Initially a long term measure was to introduce relevant courses in Measurement and Evaluation into the curricula of teacher education programmes in the nation's Universities and Colleges of Education. The contents of courses include: Construction, validation and use of evaluation Instruments Assessment, Transformation and Interpretation of scores; and Record-keeping and Reporting.

In order to cater for the serving teachers, as a short-term measure, workshops and conferences were organised for them on subject basis to enable them acquire the necessary

skills in the operation of continuous assessment in schools. Organisation of such workshops, as a matter of policy, has become part of the system for effective implementation and monitoring of the operation. The policy recognizes the fact that thorough and meticulous record-keeping and reporting are at the heart of continuous assessment, and that this must be supported by an efficient system of storage and retrieval of the records kept. It is therefore recommended that three types of records should be kept by school. These include:

i. Teacher's class or school Record, which contains detailed school activities and progress reports of the students;
ii. Pupil Cumulative Record card, which contains personal information of such student, periodic report of academic achievement, report of social and physical development, and yearly summary of progress; and
iii. The Transcript, which is a report prepared for and sent to other institutions to which a student may wish to transfer, or to employers. In order to facilitate effective monitoring and coordination of the operation of continuous assessment in Nigerian schools, a Committee System is adopted. The monitoring and coordination is carried out at four different committee levels,

a. School level
b. Local Government level
c. State level, and
d. National level,

The Committee at each level is to ensure proper operation of continuous assessment at that level. Among other functions, the committee monitors and coordinates;

a. Development of assessment instruments.
b. Proper use of the assessment instruments.
c. Assessment and record-keeping.
d. Identification of levels of ability, achievement and
e. Effective development for various individuals and groups.

In order to ensure that valid-records are kept for continuous assessment on cognitive and non-cognitive domains of the students, teachers are exposed to the use of some assessment techniques. Some studies conducted within and outside Nigeria have shown that continuous assessment scores can be used to predict students' performance in examinations, while some have found no correlation between students' assessment scores and their performances in examinations. Simeon and Denis (2005) found that positive relationship exists between the students' continuous assessment scores and students' performance in examinations. That performance of students in continuous assessment can be used to predict students' performance in the examinations. Kennedy and Nelson (2002) found that no correlation exists between the students continuous assessment scores and students' performance in examinations. This study is set out to investigate the relationship between the students' Mathematics continuous assessment scores and the Junior Secondary Mathematics examinations in Ekiti State.

A lot of controversy has been generated over whether or not the continuous assessment scores of students in Mathematics would predict the students' performance in Junior Secondary Mathematics examinations. The problem of this study therefore is to ascertain the extent to which the performance of students in the Mathematics continuous assessment could be used in predicting the performance of students in Junior Secondary Mathematics examinations. The purpose of the study is to ascertain the validity of Continuous Assessment

Mathematics scores as predictors of students' performance in Junior Secondary Mathematics Examinations. Specifically, this study is intended to find out whether:

i. The level of performance in Mathematics at Continuous Assessment scores is a good predictor of Junior Secondary School one (JSS1) Mathematics results.
ii. The level of performance in Mathematics at Continuous Assessment scores is a good predictor of Junior Secondary School two (JSS2) Mathematics results.
iii. The level of performance in Mathematics at Continuous Assessment scores is a good predictor of Junior Secondary School three (JSS3) Mathematics results.

Research Hypotheses

The null hypotheses generated for the study were stated thus:

1. There is no significant relationship between students' performance in JSS1 Mathematics Continuous Assessment scores and Junior JSSI Mathematics Examination.
2. There is no significant relationship between students' performance in JSS2 Mathematics Continuous Assessment scores and JSS2 Mathematics Examination.
3. There is no significant relationship between students' performance in JSS3 Mathematics Continuous Assessment scores and JSS3 Mathematics Examination.

Methodology

Descriptive research design of ex-post facto type was adopted for this study. The design was considered appropriate for the study for the researcher did not in any way have control on the examination scores used in the study. The researcher could not manipulate any variable. The target population for the study consisted of all Junior Secondary School students in Ekiti State. The subjects consisted of 360 Junior Secondary School students, sampled from twelve (12) selected Junior Secondary Schools in Ekiti State. Stratified and purposive random sampling techniques were used to choose the samples. The first stage was to stratify the geographical areas of Ekiti state into three Senatorial Districts, that is Ekiti North, Ekiti Central and Ekiti South. Simple random sampling technique was used to choose two Local Government Areas from each of the Senatorial Districts, The second stage was choosing two schools from each of the selected Local Government Areas using purposive random sampling technique. These schools were the two top schools in each of the six Local Government Areas, thirty students were randomly selected, in each sampled school.

The instrument used for data collection was an inventory. The inventory required among other things, data on enrollment figures and students' Mathematics Continuous Assessment scores, Third term JSSI Mathematics examination scores, Third term JSS2 Mathematics examination scores and second term JSS3 Mathematics examination scores. Data were analysed with the use of the correlation analysis.

Results

Research Hypotheses 1: There is no significant relationship between the students' performance in JSSI Mathematics Continuous Assessment Scores and JSS1 Mathematics examination.

Table 1: Correlation of JSS1 Mathematics CA scores and JSSI Mathematics Examination

Variables	N	$\bar{x}$	SD	df	r_c	r_t
Performance in JSS1 Mathematics CA Scores	360	0.62	0.29	358	0.65	0.1946
Performance in JSS1 Mathematics Examination	360	0.54	0.29			

*P< 0.05

From table 1 above, the r calculated of 0.65 was greater than the r table of 0.1946. Therefore, the hypothesis which state that there is no significant relationship between students' performance in JSSI Mathematics Continuous Assessment Scores and JSSI Mathematics examination is hereby rejected at 0.05 level of significance. It shows that there is a relationship between students' performance in JSSI Mathematics Continuous Assessment Scores' and JSS1 Mathematics examination.

Research Hypothesis 2: There is no significant relationship between students' performance in JSS2 Mathematics Continuous Assessment Scores and JSS2 Mathematics examination.

Table 2: Correlation of Mathematics Examination CA Scores and JSS2 Mathematics Examination

Variables	N	$\bar{x}$	SD	df	r_c	r_t
Performance in JSS1 Mathematics CA Scores	360	0.65	0.16	358	0.42	0.1945
Performance in JSS1 Mathematics Examination	360	0.57	0.21			

*P< 0.05

From table 2 above, the calculated r(0.42) was greater than the table r(0.1946). hence the null hypothesis was rejected. This shows a significant relationship between students' performance in JSS2 Mathematics Continuous Assessment Scores and JSS2 Mathematics examination.

Research Hypothesis 3: There is no significant relationship between students' performance in JSS3 Mathematics Continuous Assessment Scores and JSS3 Mathematics examination.

Table 3: Correlation of JSS3 Mathematics CA Scores and JSS3 Mathematics Examination.

Variables	N	$\bar{x}$	SD	df	r_c	r_t
Performance in JSS1 Mathematics CA Scores	360	0.56	0.19	358	0.32	0.1946
Performance in JSS1 Mathematics Examination	360	0.52	0.21			

*P< 0.05

From table 3 above, the calculated r(0.32) was greater than the table r(0.1946). Hence the null hypothesis was rejected. This shows a significant relationship between students' performance in JSS3 Mathematics Continuous Assessment Scores and JSS3 Mathematics examination.

Discussion

The foregoing has shown the analysis of data for this study. Mathematics continuous assessment scores as predictors of students' performance in Junior Secondary School Mathematics Examination. Findings were made, hypotheses 1, 2, and 3 revealed that there were significant relationship between students' performance in JSS1, JSS2, JSS3 Mathematics continuous assessment examination scores and JSS1, JSS2, JSS3 Mathematics examinations respectively in Ekiti State. That is, Mathematics continuous assessment scores could be used to predict students' performance in JSS Mathematics examinations in Ekiti State. The study is in consonance with the previous studies by Simeon and Dennis (2005) who found that positive relationship exists between the students' assessment scores and students' performance in examinations.

Conclusion

The findings of the study revealed that there was significant relationship between the Mathematics Continuous Assessment Scores and students' performance in junior secondary mathematics examinations in Ekiti State. That is, Mathematics Continuous Assessment scores

could be used to predict to a reasonable degree of accuracy students' performance in Junior Secondary Mathematics examinations in Ekiti State.

Recommendations

Based on the findings, the following recommendations were made for improvement:

1. Adequate training should be given to secondary school teachers regularly by the government on effective administration of continuous assessment.
2. Training should be given to secondary school teachers on a testing and measurement periodically.
3. The various government parastatals and institutions of learning should not relent in their efforts to train and retrain the teachers in the acquisition of the necessary skills, and to equip the schools with necessary resources that will facilitate proper conduct of continuous assessment and record keeping in the schools.
4. Continuous assessment format should be centrally prepared and coordinated by psychometricians from the various State Ministries of Education.

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