

## School-Based Assessment as A Predictor of Student's Academic Achievement in Junior School Certificate Agricultural Science Examination

**Agugoesi, O. Janehilda**

Department of Science Education, University of Nigeria, Nsukka

E-mail: [nwaobioluchi16@yahoo.com](mailto:nwaobioluchi16@yahoo.com)

### Abstract

This study focused on school-based assessment as a predictor of students' academic achievement in junior school certificate agricultural science examination in Obio/Akpor Local Government Area of Rivers State. Two research questions and corresponding hypothesis guided the study. It adopted the correlational research design. Four hundred JSS1 and 2 respondents' results who took part in the agricultural science 2014/2015 examination were used. Simple random sampling technique was used to draw the sample. The instrument used for data collection was "Students Academic Record Inventory" (SARI). Since the data were gotten from secondary source with standardized examinations, validity and reliability were efficient. Simple regression as well as multiple regression were used to analyse the data generated. The result of the findings showed that school based assessment (SBA) in agricultural science in JSS1 significantly predicts ( $R^2 = 0.030$ ;  $\text{Sig}=0.001$ ) junior school certificate examination scores. That of JSSII with  $R^2 0.056$  and  $\text{sig}=0.000$  significantly predicts JSCE scores. It was recommended among others that governments, school teachers, parents and other significant bodies should ensure that they aequate mentoring, monitoring and encouragement be given to the students as their performance initially can predicts their future performance.

**Keywords:** School Based Assessment, Students' Academic Achievement, Agricultural Science and External Examination.

### Introduction

Agriculture deals basically with the production of food i.e. plant products such as maize, cassava, yam, beans, cocoa, coffees and animal products like milk, meat, hides and skin, egg etc. for the benefit of both man, animals, agro-allied and non-agro-allied industries for the product of finished products (goods), industrial products. It provides raw materials for industries. It creates employment for the people of Nigeria and also an important foreign exchange earner to the government of Nigeria. It provides forests, forest resources and wildlife (game) reserves which serves as recreation and tourism center that yields government revenues. Agriculture affects positively every aspect of human endeavors' because of this, the Federal Government of Nigeria in 2011 came up with new agencies for agriculture known as Agricultural Transformation Action Plan (ATA) to enhance food production in Nigeria. Since the national policy on Education (NPE, 2013) made agricultural science compulsory in schools, there is need for teachers to improve in teaching and assessment method in order to expose the students to proper orientation and conceptualization of the nitty – gritty of the subject.

As stated in the National Policy of Education by Federal Republic of Nigeria (FRN) (2013), education is an instruments as well as investment that can be used to achieve a more rapid economic, social, political, technological, scientific and cultural development. It also explains why the federal government has been devoting a relatively significant proportion of its annual budget to the development of the educational sector over the years. A number of educational researchers

in Nigeria were of the very strong view that education must be treated as a matter of national emergency and must move with the momentum of revolution (Asuru, 2010). Odiba (2007) holds the view that the school is essentially a social system consisting of well-defined boundaries within which individuals inter-relate in the performance of activities for the purpose of attaining educational goals. Therefore in order to determine the effectiveness of these attainment the learner must be assessed. Ukwuije and Opara (2013) defined assessment as a systematic process of determining the extent to which instructional objectives are met. Onunkwo (2002) defined assessment as a process of collecting information for the purpose of specifying and verifying problems as well as for making decision about students. Ukwuije (2012) defined assessment as the procedure of assigning value to the learning achieved during and at the end of a course, it can attempt by the teacher to gain knowledge of his/her students' competencies. Therefore, assessment is a process of determining how the learners have mastered the stated instructional objectives which will be used for decision making on the student.

Assessment is classified into two types; school based assessment (SBA) and Externally Based Assessment (EBA) or External Examinations (EEs). School Based Assessment (SBA): This assessment could be administered at the school level. School based assessment is a comprehensive systematic, continuous, diagnostic and integrative teacher directed assessment procedure. This originated from classroom situation requiring active participation and involvement of pupils/students with emphasis on learning rather than though not minimizing the importance of scores and grades (Oviawe & Ojo 2008). Education Commission (2000) defined school based assessment (SBA) as assessment administered in schools with students being assessed by their teachers with the aim that the assessment results will be included as part of the public assessment. This means that school based assessment (SBA) within the educational context comprised of continuous and final assessment carried out in the schools.

Griffith (2005) defined school-based assessment as the process where students, as candidates, undertake specified assignment during the course of the school year under the guidance of the teacher as part of a subject examination. According to Olakunle (2002) SBA is a method of finding out what the students/pupils have gained from learning activities in terms of knowledge, thinking and reasoning, character development and industry. In school based assessment, students are assessed several times and at intervals in the three domains of learning-cognitive, affective and psychomotor using any of the following techniques-tests, projects, assignments, observation, interviews, questionnaires and so on. School based assessment could also be seen as assessment that is going to take teachers' grade as part of students' official grade after completing specific school levels. SBA need to be continuous and integrated naturally into every stage of the teaching and learning cycle not just at the end (Ukwuije & Opara, 2013).

School based assessment therefore is the day to day assessment used to measure student performance in the classroom. Assessment whether SBA or EE can be divided into, formative and summative assessment. Formative assessment carried out during the lesson or project. Summative assessment carried out at the end of the course or project; Performance based assessment and internal assessment; Performance Assessment: It is similar to summative assessment as it focus on achievement; Internal assessment: Is an assessment which is set and marked by the school teacher. School based assessment can be used to serve so many important purposes or functions. It is used as instructional function, guidance function, administrative function and research functions.

The Externally based examination (EBA) Or External Examinations (EEs) is the second type of assessment. In Nigeria and West African Countries, external examination is always conducted by public examination bodies, like the West African examinations Council (WAEC), National Examinations Council (NECO), as well as Ministry of Education. The Junior Secondary Certificate Examination (JSCE) is one form of EEs in Nigeria. It is conducted by each state of the Federation through their respective Ministries of Education for the final year students of state owned Junior Secondary Schools, at the end of the third year of upper basic education system. Private schools may also register their pupils for the JSCE conducted by the State Ministries of Education (Orubu, 2013). The different state ministries develop, administer, mark and award grades and certificates to students under their jurisdiction (Falaye & Afolabi, 2005).

More so, the responsibility to conduct the JSCE for Federal Government Colleges (Unity Schools) located in all states of the Federation, including the Federal Capital Territory (Abuja) and some interested private schools is vested in NECO. Many educational researchers in Nigeria have found out that external examinations as presently conducted have some flaws. Egbule (2002), Nwanna (2007), Okpala, Onocha and Oyedeji, (1993) opined that the EES including the JSCE only assess the cognitive aspects of students' behavior domain. They also lack cumulative marks and student guidance approach thereby neglecting the role and relevance of the teacher in contributing to students' final assessment. Researchers have come up with the view that the undue emphasis on certificate awarded, based on the performance in these final examinations to a large extent, has been the major cause of most examination malpractices in Nigeria (Omole, 2006; Owolabi, 2004). In order to find out the solution to the above problems and the high rate of failure that characterizes EEs in Nigeria, SBA are now being given more emphasis. Therefore, this work intends to find out the extent to which SBA can predict students' performance in JSCE results in Agricultural science.

### **Research questions**

The following research question guided the study.

1. What is the extent to which scores in Agricultural Science from SBA at JSS I level predict students' grade in Agricultural Science at JSCE level?
2. What is the extent to which scores in Agricultural Science from SBA at JSS II level predict students' grades in Agricultural Science at JSCE level?

### **Hypotheses**

The following null hypotheses testable at 0.05 alpha level guided the study.

1. SBA at JSSI scores in agricultural science does not significantly predict students cores in agricultural science at JSCE level.
2. SBA at JSS II scores in Agricultural Science does not significantly predict students scores in Agricultural Science at JSCE level.

### **Methods**

The research design used for this study is correlational research design. According to Kpolovie (2010) correlational research design is adopted for investigation of the magnitude and direction or nature (positive or negative) of relationship that exists between a dependent variable (criterion variable) and one or more independent variables (predictor variables). When variables under investigation are very complex and/or do not lend themselves to experimental controlled manipulation, correlational research can suitably be employed to simultaneously measure interrelationships that exist among several variables. The population of all students who took the

JSCE Agricultural science in 2014/2015 academic session in Obio/Akpor Local Government Area of Rivers State was used for this study. As at the time of this study, there are 6621 students who wrote JSCE agricultural science (2014/2015) comprising 2689 male and 3932 females in the 20 public schools in Obio/Akpor Local Government Area of Rivers State (source: Rivers State Ministry of Education 2016). A sample size of 400 students was used. Simple random sampling technique via balloting was used in drawing 5 schools out of the twenty (20) public junior secondary school in Obio/Akpor Local Government Area. Simple random sampling technique was used also to draw 80 students from each of the five (5) schools. Giving a total sample size of 400 students. The study will be restricted to only students' scores in SBA and JSCE grades in Agricultural Science. The dependent variable is final grades in JSCE, while the independent variables are the SBA scores obtained by the students in JSSI and JSS2 respectively.

No instrument was administered by the researcher because the researcher did not develop any instrument for this study, rather an existing raw scores and grades is being used for the study. A proforma "Student Academic Record Inventory" (SARI) was used for the purpose of scoring JSCE grades of A,C, P and F, A = 100-60, C=59-50, P=49-40 and F= 39-0. A is alpha, C-Credit, P is pass and F is failure. The average of each of the different levels (A, C, P and F) was used for the study. While the SBA scores of JSS I and JSS II respectively were used also. Simple regression was used to answer research question 1 and 2. While hypotheses 1 and 2 were tested at 0.05 alpha level using t-test and analysis of variance (ANOVA) associated with regression analysis.

## Results

The result of the analyzed data f each research questions and hypotheses are presented on tables below

**Research Question One:** What is the extent to which scores in agricultural science from SBA at JSS1 level predict students' grade in Agricultural Science at JSCE level?

**Hypothesis one:** SBA at JSS1 scores in agricultural science does not significantly predicts students' scores in agricultural science at JSCE level.

**Table 1:** Shows simple linear regression of the prediction of SBA on JSCE.

R	R <sup>2</sup>	Adj. R <sup>2</sup>	Std. Error	Unstandardized B.			
0.173	0.030	0.027	7.623	0.097			
ANOVA							
	Sum of sq.	d.f	Mean sq.	F.	∞	Sig.	Result
Regression	709.400	1	709.400				Significant
Residual	23129.600	398	58.115	12.207		0.001	(Reject Ho)
Total	23839.00	399				0.05	

From the analysis in table 1 above, R= 0.173, R<sup>2</sup> = 0.030, Adjusted R<sup>2</sup> = 0.027, standard error = 7.623 while unstandardized B = 0.097. From the R<sup>2</sup> value it could be seen that school based assessment scores predicts only about 3.0% of students' junior school certificate examination. From the unstandardized B value, it indicates that for every additional unit increase in school-based assessment scores, there is a corresponding 0.09 percent increase in junior certificate scores. The analysis of variance also reveals sum of square for regression and residual to be 709.400, and 23129.600 respectively. Calculated F is 12.207, sig-value is 0.001. Hence, the sig

value ( $p=0.001 < 0.05$ ) which is less than the chosen alpha of 0.05, the null hypothesis is rejected meaning that school based assessment at JSS1 level significantly predicts students JSCE results.

**Research Question Two:** What is the extent to which scores in agricultural science from school based assessment at JSS II level predicts students' grade in agricultural science at JSCE level?

**Hypothesis Two:** School Base Assessment at JSS II scores in agricultural science does not significantly predicts students' scores in agricultural science at JSCE level.

**Table 4.2:** Shows simple linear regression of prediction of school base assessment scores on students JSCE.

R	R <sup>2</sup>	Adj. R <sup>2</sup>	Std. Error	Unstandardized B.			
0.236	0.056	0.053	7.521	0.165			
ANOVA							
	Sum of sq.	d.f	Mean sq.	F.	$\alpha$	Sig.	Result
Regression	1326.657	1	1226.657				Significan
Residual	22512.343	398	56.564	23.454		0.000	t (Reject
Total	23839.000	399			0.05		Ho)

From Table 4.2 above,  $R = 0.236$ ,  $R^2 = 0.056$ , Adjusted  $R^2 = 0.053$ , Standard error = 7.521 and unstandardized B value = 0.165. From the  $R^2$  value, this indicate that school based assessment of JSS II explains only about 5.6% of students scores in JSCE. The unstandardized B value also explains that for every one unit increase or decrease in students school based assessment scores in agricultural science, there is a corresponding 0.165% increase or decrease in JSCE scores. The ANOVA reveals sum of squares for regression and residual to be 1326.657 and 22512.343 respectively. Calculated F is 23.454 and sig value is 0.000. Therefore since sig ( $p=0.000 < 0.05$ ) is less than 0.05 alpha, the null hypothesis is rejected meaning that school based assessment scores in agricultural science significantly predicts students scores on junior school certificate examination.

### Discussion of Results

From research question one, it is revealed that school based assessment scores predicts students JSCE scores in agricultural science. This results means that students who perform well in school based assessment at the classroom level through teacher made test will actually perform well in their junior school certificate examination. On the other hand, those who record poor performance in their agricultural science assessment will equally record poor performance in their junior certificate examination. This result is true, because all the classroom teachers have been following the outlined curriculum in teaching their students which account that if they perform well in school based assessment they as well will have a corresponding performance in JSCE. The finding is however not surprising at all because the researcher knows that students who are fully thought and really understands will certainly perform at any level with similar examination characteristics. This result agrees with that of Orubu (2013) in his study which reported that school based assessment scores positively predicts the performance of students in JSCE examinations in mathematics.

Research question two reveals that JSS II students school based assessment scores significantly predicts their scores in junior school certificate examination in agricultural science. This result

equally signifies that at the JSS II level especially as shown in their  $R^2$  value, there is a strong predictive power of students' school based assessment scores on JSCE scores. This may be explained by the fact that at the JSS II level the student are well settled. They have overcome or adjusted fully to the secondary school life. It is possible for them to perform so well which eventually shows in their performance at the JSCE level. The results of this findings is equally not surprising because just like the first one, students who perform well in a particular area will equally do the same when exposed to similar examination situations. This findings could be traceable to that reported by Imo (2013) who reported that SS2 students who perform better in class test do such in their external examination. The findings also agrees with that of Opara, Onyekuru and Njoku (2015) whose result revealed that the combination of the school based assessment scores significantly predicts students achievement in English and mathematics.

### Conclusion

This study intends to find out the extent in which school based assessment scores of JSSI and II can predict their performance in Junior School Certificate Agricultural Science Examination. Both research questions one and two shows that students who perform well in school based assessment will also do well in JSCE, and those who perform poorly in school based assessment will as well perform poor in the External Examination (JSCE). Therefore, JSSI and II school based assessment scores predicts significantly students JSCE scores.

### Recommendation

Based on the findings of the study, the researcher recommends that;

- adequate attention should be given to students especially in their first year (JSS1) of secondary education because if they do well, it will show in their JSCE scores and if equally they do badly, it will still reflects in their JSCE scores. At the JSS II level, students should be encouraged further in order to be able to put maximum performance. This could make a whole lot of difference to them as they can rely on this to optimize their academic performance.
- Governments, teachers, parents and other significant bodies should ensure that students are not carried away by their notion of getting into the senior class at the detriment of their academics as revealed by their  $R^2$  value in comparism with other years. They should be well mentored, monitored, tutored and encouraged.
- Students should also be made to know through the various government agencies, organizations, NGO's that the way they start their academic pursuit whether on a positive or negative mode can determine how they perform all through their secondary education. Hence, regular career days, academic talks etc should be organized for them in order to adjust fully academic.

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