

School Environmental Variables and Students Academic Performance in Agricultural Science

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Abstract

The study was designed to assess the relationship between school environmental variables and students' academic performance in Agricultural Science. The study adopted a correlational survey design. A sample size of 300 students were randomly selected and used for the study. To guide the study, two specific objectives and two null hypotheses were formulated and tested at 0.05 level of significance. Agricultural Academic Performance Test (AAPT) and Agricultural practical check-list were developed and used to gather data for the study. The instruments were validated by three research experts and the reliability coefficients of 0.82 and 0.78 were obtained using PPMC. Data were analysed and null hypotheses tested using PPMC. The findings indicated that there was significant relationship between availability of laboratory facilities and students' performance in Agricultural Science. There was also significant relationship between availability of farming facilities and academic performance of students. It was recommended that secondary schools should create more conducive environments that facilitate students' acquisition and development of cognitive, psychomotor and effective skills in their academic endeavour.

Keywords: School environment, farm facilities, utilization of facilities and students' academic performance.

Introduction

The school is a social and learning agent that provides the environment upon which a child may be formally educated in order to attain educational goals. Human beings, have unlimited capacity to learn, but may however be limited by the behaviour patterns and facilities that the immediate environment offers. According to Umoh (2006), nature only provides the raw materials in form of potentials, but it is the environment that determines the extent of development. Umoh and Etuk (2003) asserted that a child who wants to learn Agricultural Science and develop desirable attitudes, interest, appreciation, understanding, habits, abilities, knowledge and skills requires a stimulating environment. A stimulating school environment enables the teachers to teach a variety of activities with broad-base ideas about what the students are likely to learn or respond to. This makes it possible for both the teachers and the students to work cooperatively and productively towards attainment of educational goals.

School environmental variables that affect teaching and learning include the following: Science and Computer laboratories, library facilities, adequate classroom facilities, workshop facilities, farm buildings and structures, farm lands and play grounds to mention but a few. Teachers and other personnel to manage and service the physical facilities are the teaching, non-teaching and the administrative staff of the school. The availability of those resources and facilities in a given school environment influence the teaching, learning and the performance of both the teachers and the students (Nsa, et al 2012).

Conceptual Framework

School facilities and equipment are assets to a learner and it determines how and what the student should learn (Ekanem, 2005). Olaitan and Mama (2002) mentioned that lack of and inadequate school farmland and the farm structures in the school environment affect directly the teaching and learning of Agricultural Science in Senior Secondary School level. Salau (2001) observed that conducive learning environment in school plays vital roles in providing the needed motivation to enhance effective learning and better performance. Onyekwellu (2000) observed that government alone cannot provide all the resources for teaching and learning purposes, therefore, parents through the Parents Teachers Association (P.T.A.) should assist in providing infrastructural facilities, equipment, tools and instructional materials to facilitate effective teaching of Agricultural Science for better performance. Umoh (2006) observed that there is a significant difference between the performance of students with adequate and those with inadequate school environment. Umoh further stated that, where learning facilitates and teaching personnel are adequate learning and performance are positive.

Laboratory Facilities and Students Academic Performance

The best way to learn Agricultural Science and other Science subjects is to live in “nature corner”, an atmosphere of scientific inquiry. A learning environment where learners are surrounded by all the learning materials of which he/she can access readily for learning purposes. Umoh and Etuk (2003) viewed laboratory facilities as facilities where an individual or groups of students study some concepts, phenomena or processes. They further disclosed that a laboratory is a place where a supervised learning ability is carried out by the students studying a particular phenomena involving practical application of theory. Activities in the laboratories involve observation, measurements, recording, experimentation, hypothesizing, analysis, interpretations and inferences. Shannon (1989) studied the influence of laboratory facilities on students’ achievement and skills acquisition in soil concepts, the findings revealed that laboratory facilities significantly influence students’ skills acquisition in soil concepts. Udo (2008) also reported that there is significant relationship between laboratory facilities and students’ achievement in Agricultural Science in Oron Educational Zone.

Farming Facilities and Students’ Academic Performance

Farming facilities are all the fixed and temporary facilities that are used in the course of crops and livestock production (Nsa, et al, 2012). They include; school farms/garden, farm structures and buildings, tools, equipment and other consumables that are used as productive resources. Olaitan and Mama (2001) defined school farm as field or land laboratory designed for the purpose of imparting agricultural knowledge and skills to the students through demonstration and/or observation. School farm is an area of land in the school environment earmarked for practical agricultural activities. Crops and livestock of various classes are raised in the school farm using adaptable facilities for special needs of the students. According to Etuk (1991), school farm and farming facilities provide the avenue for skill teaching and skill learning in agriculture to complement whatever background knowledge the students must have acquired through classroom discussions in order to develop the entry level skills for agricultural jobs. The Senior Secondary School Agricultural Science Curriculum covers both cognitive and psycho productive (manipulative) concepts. The contents must also be taught at both levels so that learners are exposed to agricultural knowledge and skills.

Agricultural Science requires a lot of practical activities involving demonstrations and projects to enable learners develop agricultural attitudes and skills, Udo (2008) reported that, there was a significant relationship between availability of farming facilities and students’ performance in Agricultural Science.

A few secondary schools have adequate school environment, but many other schools do not have conducive learning environment. This accounts for the poor performance of students in practical examinations in Agricultural Science paper one. Most urban schools and private secondary schools do not have farming facilities. They rely on classroom instructions. They perform well in theoretical examinations (Agricultural Science paper two), but very poorly on practical examination due to lack of exposure (WAEC, Chief examiners report, 2011 and 2012). This situation has remained like this over the years, it is seen as ignorance on the part of school administrators (government and private agencies) with respect to the relationship between students’ academic performance and adequate Agricultural learning environment. It was against the background that, this study was considered necessary to assess the relationship between students’ performance and adequate Agricultural learning environment in order to recommend the implications to appropriate quarters.

Purpose of the Study

This study was carried out to assess the relationship between the school environmental factors and students' academic performance in Agricultural Science. Specifically, the study sought to:

1. Assess the relationship between availability of laboratory facilities and students' academic performance in Agricultural Science.
2. Assess the relationship between availability of farming facilities and students' academic performance in Agricultural Science.

Hypotheses

Two null hypotheses were postulated to guide the study and were tested at 0.05 level of significance. They include the following:

1. There is no significance relationship between availability of laboratory facilities and students' academic performance in Agricultural Science.
2. There is no significant relationship between availability of farming facilities and students' academic performance in Agricultural Science.

Design of the Study

A correlational survey design was used in this study. It was adopted in order to gather information from a large group through a representative sample in order to describe the existing phenomena in the population.

Population of the Study

The population for this study consisted of 3002 senior secondary two (SS2) Students' in the thirteen public secondary schools in Oron Educational Zone of Akwa Ibom State.

Sample and Sampling Technique

Simple random sampling technique was adopted for this study. The secondary schools in Oron Educational zone were stratified into urban and rural schools. Ten schools were randomly selected for the study (five urban and five rural schools). In each of the ten sampled schools, thirty students that offered Agricultural Science were randomly selected to participate in the study. A total of 300 students were used as the sample size for the study.

Instrumentation

Two instruments were used for data collection in this study and were developed by the authors. The first instrument was called "Agricultural Academic Performance Test (AAPT). The test consisted of thirty (30) multiple-choice items on crops and livestock production skills drawn from the SS2 Agricultural Science Curriculum. The second instrument was a check-list to assess the availability of laboratory and farming facilities in the schools. This was used to correlate with the academic performance of students in Agricultural science.

Validation of the Instrument

The instruments were validated by three experts in vocational education (Agriculture) for both face and contents validity. Reliability of the Agricultural academic performance test (AAPT) and the checklist were carried out using test re-test method. The data collected were analyzed using Pearson's Product Moment Correlation (PPMC). The (r) value of 0.82 and 0.78 were used as the index of consistency of the instruments.

Data Collection Technique

The AAPT and the checklist were administered by the researchers to the 300 sampled students in the ten schools selected for the study. The data collected were analysed using the Pearson's Product Moment Correlation(s) and the two null hypotheses were tested at 0.05 level of significance.

Data Presentation and Interpretation

The data collected are presented on the basis of null hypotheses formulated as follows:

Table 1: Correlation between availability of Laboratory Facilities and Students' Performance in Agricultural Science

Sources of variance	N	df	$\sum x \sum y$	$\sum x^2 \sum y^2$	r-cal	r-crit	decision
Laboratory Facilities	300						
Students' Performance	300	298	4318	32551	0.80	0.13	*

• = Significant at $P > 0.05$ level of significance

Table 1 shows that the calculated r-value of 0.80 at df of 298 is greater than the critical r-value of 0.13. This indicates that there was a significant relationship between availability of laboratory facilities and students' academic performance in Agricultural Science, hence the null hypothesis that, there is no significant relationship was rejected.

Table 2: Correlation between availability of School Farm Facilities and Students' Academic Performance in Agricultural Science

Sources of variance	N	df	$\sum x \sum y$	$\sum x^2 \sum y^2$	r-cal	r-crit	decision
School farm Facilities	300						
Students' Performance	300	298	2803	33042	0.78	0.13	*

* = Significant at $P > 0.05$ level of significance

As shown in table 2, the calculated r-value of 0.78 is greater than the critical r-value of 0.13 at df of 298. This means that, there was a significant relationship between availability of farm facilities and students academic performance in Agricultural science. Therefore, null hypothesis of no significant relationship was rejected.

Discussion of Findings

The findings of this study showed significant relationship between Agricultural facilities and students' performance in Agricultural Science. Considering the fact that these were secondary school students, these findings are of pedagogical interest because they are not in line with the commonly held views that secondary school graduands are lacking or inadequate in academic achievements and in employable skills. The findings in null hypothesis one showed that there was significant relationship between availability and utilization of laboratory facilities in teaching and the students' academic performance in Agricultural Science. (Olaitan and Mama, 2002; Ekanem, 2005). The finding was so because students participated actively and that had influenced the learning outcomes positively.

Null hypothesis two tested showed a significant correlation between availability and utilization of school farm facilities and students' academic performance in Agricultural Science. Learning outcomes are increased by practice and where teaching and learning process involves hands on experience. The significant correlation shown was as a result of the high level of students' involvement in the learning process (Udo, 2008; Nsa, et al 2012).

Conclusion

Promotion of vocational skills in academic endeavour for national growth and development is the priority of nations. The schools, educators, industrialists and researchers are now very concerned with the relevance and contributions of learning environments to the students' cognitive, psychomotor and effective skills to the world of work. This study sought to assess the correlation between school environmental variables and students' academic performance in Agricultural Science. The study found out a significant relationship between the availability and use of laboratories, farming facilities and students' academic performance. Therefore, the teaching of Agricultural Science should aim at motivating students' through active participation in the teaching and learning process so that agricultural knowledge, skills and attitudes could be acquired.

Recommendations

The study makes the following recommendations:

1. Secondary Schools should create environments that facilitate students' acquisition and development of cognitive, psychomotor and affective skills.
2. Agricultural Science Teachers should provide practical-oriented activities to develop the students' competency in problem-solving.
3. Teachers of Agriculture should be retrained on the practical strategies of teaching so that the learners could acquire Agricultural skills.
4. In addition to exposure to contents, students should be made to be actively involved in Practical Agriculture.
5. Teachers of Agriculture should develop positive attitudes towards agricultural practicals.

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