

Relationship between School Location and Parental Educational Status on Academic Performance of Male and Female Students in Biology in Benue State, Nigeria

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Abstract

The study determined the relationship between school location and parental educational status on academic performance of male and female students in Biology in Benue State. The study was guided by two objectives, two research questions and two hypotheses. Correlational research design was adopted. The population of the study was 11,325 senior secondary two (SS2) students of Benue State. A sample of 457 students randomly selected from ten secondary schools in education Zone B was used. Instrument for data collection was a 30-multiple choice Biology Achievement Test (BAT) developed by the researchers. The content and face validity of BAT was done by three experts. The reliability of the instrument was calculated using Kuder-Richardson 20 (K-R₂₀) formula which gave the value of 0.83. Pearson Product Moment Correlation Coefficient (PPMCC) was used for answering of research questions and also for testing of the hypotheses at 0.05 level of significance. The findings showed a low and insignificant relationship between school location and academic performance of male and female students in Biology. The findings also revealed a high and significant relationship between parental educational status and academic performance of male and female students in Biology. Based on the findings of the study, researchers' concluded that school locations do not have influence on academic performance of students; while parental educational status positively influence students' academic performance in Biology. The researchers also recommended that; teaching and learning of science should be done in a way that both students of educated and uneducated parents equally be benefited in the process in order to bridge the gap between parental educational status and students' academic performance.

Keywords: Academic, Educational Status, Parental, Relationship, School Location,

Introduction

The important of science and technology in this 21st century for sustainable national development cannot be overemphasis. Science is the body of knowledge about the universe, the structure and reactions of matter, the conservation and transfer of energy as well as the interaction between living things and their environment (Ezeudu 2011). Science is concerns with finding out about things in the environment using apparatus to observe experiment and help students to experience the richness and excitement of the natural environment. The ultimate aim of teaching and learning of science is for students to acquire holistic scientific knowledge of the world (Upu, & Okwara, 2018). In an effort to achieve this, knowledge has been categorized into subjects, with Biology as one of them.

Biology is one of the core subjects offered by science students at senior secondary school level in Nigeria educational system along-side with Physics and Chemistry. Biology is the branch of science that contributes immensely for the growth and development of the nation. It is the branch of science that deals with study of plants and animals, their structures, functions, growth and their relationship with the natural environment (Ugwuanyi, 2015). Biology is generally defines as the branch of science that deals with the study of life. Biology as subject fascinates the study of living organisms ranging from microscopic cellular organisms to the biosphere and all living organisms on the earth surface. Biology subject offered at secondary school level serves as pre-requisite and spring board for many future careers in science and technology including medicine, pharmacy, nursing, agriculture, forestry, psychology, biochemistry and biotechnology among others (Adejoh, 2007). The knowledge acquire from Biology

positioned students to understand anatomy and physiology of different parts of the body as well as how best they can conduct and interact with the natural environment.

The objectives of teaching and learning of Biology in secondary schools according to Federal Republic of Nigeria (FRN, 2013) in her national policy on education are to prepare students to acquire: adequate laboratory and field skills; meaningful and relevant knowledge; ability to apply scientific knowledge to everyday life in matters of personal and community health and agriculture; reasonable and scientific attitude. In order to attain the Biology objectives; the contents and contexts of its curriculum place emphasis on laboratory techniques, guided discovery and field studies (FRN, 2013). According to Adikwu (2013) curriculum can be described as a vehicle through which the school strives to achieve its Basic Educational objectives. Curriculum can be defined as the course of study offered in schools, colleges and other institutions. In this definition, the focus of curriculum is on the subject to be taught in the school such as Biology. Biology curriculum may simply be seen as a set of learning experiences planned to influence learners' behaviour to bring about the desired objectives of Biology as guided by the school.

Therefore the teaching and learning of Biology is expected to produce individuals that are capable of solving their problems and that of the society. The curriculum of Biology intended to provide a modern course of study in Nigerian schools irrespective of school location and gender of the students. Literatures review show that there is growing recognition of poor enrolment and performance of female students in science in general and Biology in particular which is the major stumbling block for sustainable national development and health improvement of our contemporary society.

Academic performance according to Mwaniki (2012) refers to the ability of students to study, remember facts and be able to communicate their knowledge verbally or through writing. It can also be seen as the outcome of education, which is the extent students have achieved their educational objectives (Ehiane, 2014; Wadi & Nenman, 2018). Academic performance of students is measured using cognitive and non-cognitive instruments. Cognitive instruments include; achievement test, aptitude test and diagnostic test among others, which measure intelligent quotient (IQ) of students. Non-cognitive instruments are inventory, observation, checklist and rating scales among others. Afsheen, Rabia and Sajid (2011) identified test scores or marks assigned by teachers as the indices of academic performance of students. The authors maintain that these marks or scores and grades assigned by teacher could either be high or low. The high scores indicate that an academic performance of student is good while low scores show poor academic performance of the student. The academic performance of students in Biology has been a major concern to school administrators, educators, educational researchers, teachers and parents. This is because Biology is very important subject that links to so many career developments in science and technology. The academic performance of students in Biology could depend largely on the interaction of the learners' environmental variables like school location, parental educational status and gender. This necessitated the researchers to carry out this study to determine male and female students' academic performance in the rural and urban areas of Benue State.

Gender issues in science and technology education raise where an instance of inequality in academic performance of male and female students is identified and recognized as undesirable or a problem. The consequence of gender stereotype which has classified different roles for male and female in the society results to low enrolment of female students in science, technology and mathematics (Nwosu 2001). Observation had shown that there are indications at all levels of education in Nigeria that females are grossly underrepresented in terms of enrolment, participation and performance in science, technology and mathematics education. The reports on difference in male and female students' academic performance in science in general Biology in particular have been debated over the years. The studies of some researchers clearly show the affairs at the secondary school education level in Nigeria that a greater proportion of male students perform better than their female counterparts in science subjects. It has been reported by researchers like Agwagah (2008), Kolawole (2007) and Ariyo (2011), in their various studies that male students performed significantly better than female students in both science and mathematics subjects. Adeniran (2013) posits that female students view science as a very demanding course which requires high intelligence and critical thinking. The implication is that female students view science primarily as a male activity.

Ajaja (2010) argued that gender has no effect on students' academic performance in science. Oludipe (2012) also disagree with the reports on the differences in academic performance among Nigeria students with male students performing better than female students in science subjects Biology inclusive. The question now is how does gender affect academic performance of students in urban and rural area schools?

School location is the residence or area where school is situated; this can be urban or rural area. School location could influence both male and female students' attitudes, motivation and academic performance. This is because in a situation whereby the school is situated in a swampy area where classrooms are over flooded with water or noisy area like in the heart of the city or town, near construction sites or near industries/factories where activities disrupting the teaching-learning process is much; students cannot concentrate and do well academically (Upu & Okwara, 2018). For the purpose of this study rural area schools are schools that situated far from major towns in a given local government area, while urban area schools are schools that are within and close to the major towns of a given local government. School location has been a contentious issue in the determination of students' performance in biology in particular and science in general over the years. Ndukwu (2002) maintains that schools located in urban areas are better positioned to attract more quality students and teachers who exhibit the readiness to take academic business seriously which will invariably impact on students' performance. Onah (2011) supports this empirically by finding out that students in urban schools achieved high than students in rural schools in science subjects. On the contrary, Bosede (2010) shows that school location has no effect on students' academic performance in science and technology. The inconsistency in the findings of the researchers on school location require a more research work on the variable on both male and female students performance in science. This situation motivated the researchers to carry out this study to determine the relationship between school location and academic performance of male and female students in Biology.

Another factor probably might be influencing students' academic performance in science subjects and Biology in particular is the parental educational status. Parental educational status is the degree of the measure of the level of education attainment of the parents in a given society (Fassasi (2017). Sirin (2005) asserts that parental educational status is considered as one of the most stable aspects of socio-economic status because it is typically established to students at an early age and tends to remain the same over time. Researches evidences show that parental educational backgrounds have most influence on educational aspirations and performance of both male and female students in science subjects. This prompted the researchers to determine the relationship between parental educational status and academic performance of male and female students in Biology.

Statement of the Problem

Continue poor performance of students in science has posed concern to parents, teachers, school administrators and the government as well as educational researchers. For example academic performance of students in Biology had made it difficult for many students to pursuit carer in science-technology related fields at higher level of learning in recent times. This trend is threat to nation development. To address this issue many efforts have been made both by the federal government of Nigeria and educational researchers in the areas of instructional methods, instructional facilities, students' attitude, and teachers' characteristics; little or nothing is yet to done in the areas of school location and parental educational status on the academic performance of students in Biology particularly in Benue State. This necessitated the researchers to carry out this study to determine the relationship between school location and parental educational status on male and female students' academic performance in Biology in Benue State.

Purpose of the Study

The purpose of this study is to determine the relationship between school location and parental educational status on academic performance of male and female students in Biology. Specifically the study determined:

1. The relationship between school location and academic performance of male and female students in Biology.

2. The relationship between parental educational status and academic performance of male and female students in Biology.

Research Questions

The following research questions were raised to guide the study:

1. What is the relationship between school location and academic performance of male and female students in Biology?
2. What is the relationship between parental educational status and academic performance of male and female students in Biology?

Null Hypotheses

The following null hypotheses were formulated to guide the study and tested at 0.05 level of significant.

1. There is no significant difference in the relationship between school location and academic performance of male and female students in Biology.
2. There is no significant difference in the relationship between parental educational status and academic performance of male and female students in Biology.

Methodology

Correlational research design was adopted for the study. This design was considered suitable for the study because it enable the researchers to determine the relationship between school location and parental educational status on academic performance of male and female students in Biology. The population of the study was 11,325 senior secondary two (SS2) students of Benue State. A sample of 457 students drawn from ten selected secondary schools in education Zone B of Benue State was used for the study. Education Zone B was randomly chosen out of three education Zones of Benue State by simple random sampling technique of balloting.

The instrument for data collection was Biology Achievement Test (BAT) developed by the researchers. BAT consisted of 30 multiple choice items drawn from curriculum of SS2 Biology on the basis of second term topics. The content and face validity of BAT was done by three experts in the Department of Curriculum and Teaching Benue State University. The reliability of the instrument was determined using Kuder-Richardson 20 (K-R₂₀) formula which gave the value of 0.83. The value shows positive relationship within the test items which means that instrument is both internally consistent and reliable.

To ensure uniformity for the ten sampled schools in the treatment and administration of BAT, the researchers prepared lesson notes to cover all the topics to be taught in the second term driven from SS2 Biology curriculum and gave to regular Biology teachers (research assistants). The regular Biology teachers were encouraged to adhere to researchers' lesson notes to teach and administer the BAT at the end of the term. The researchers collected the scores obtained from BAT and analyzed.

Pearson Product Moment Correlation Coefficient (PPMCC) was used to answer research questions and also for testing of the hypotheses at 0.05 level of significance. The value correlation coefficient (r) from 0.10-0.49 was considered low relationship; r-value from 0.50-0.69 was considered moderate relationship, while r-value from 0.70-1.0 is considered high relationship. On the other hand in testing of the hypotheses, any hypothesis with a significant value less than P-value of 0.05 was rejected while a hypothesis that had significant value greater than p-value (0.05) was withheld. Data were analyzed using 23-version of Statistical Package for Social Science (SPSS).

Results

Research Question 1: What is the relationship between school location and academic performance of male and female students in Biology?

Table 1: Correlational Analysis between School Location and Academic Performance of Male and Female Students in Biology

Variables	N	r
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Male and female students Academic performance	457	.42
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Result in Table 1; show a Pearson’s coefficient (r) of .42 which indicates a positive low relationship between school location and academic performance of male and female students in Biology. This means that school locations have little influence on the academic performance of male and female student in Biology in Benue State with the r-value less than 0.50. This result is further investigated by testing hypothesis one in the Table 2.

Null Hypothesis 1: There is no significant difference in the relationship between school location and academic performance of male and female students in Biology

Table 2: Correlation Coefficient of the relationship between School Location and Academic Performance of Male and Female Students in Biology

Variables	N	r	p-value	Significant value	Remark
Male and female students Academic performance	457	.42	.050	.067	No significant

Table 2 results reveal that the correlational analysis between school locations and academic performance of male and female students in Biology have a p-value of 0.05 and significant value of 0.067. This significant value of 0.067 is greater than p-value of 0.050 (i.e $p=0.05 < 0.067$). With this result, the null hypothesis one which stated that there is no significant difference in the relationship between school location and academic performance of male and female students in Biology is not rejected. This implies that there is no significant relationship between school location and the academic performance of male female students in Biology.

Research Question 2: What is the relationship between parental educational status and academic performance of male and female students in Biology?

Table 3: Correlational Analysis between School Location and Academic Performance of Male and Female Students in Biology

Variables	N	r
Male and female students Academic performance	457	.89

Result in Table 3; shows a Pearson’s coefficient (r) of 0.89 which indicates a high positive relationship between parental educational status and academic performance of male and female students in Biology. This means that parental educational status have high influence on the academic performance of male and female student in Biology in Benue State since the r-value of 0.89 is greater than 0.50. This result is further investigated by testing hypothesis two in the Table 4.

Null Hypothesis 2: There is no significant difference in the relationship between parental educational status and academic performance of male and female students in Biology

Table 4: Correlation Coefficient of the relationship between Parental Educational Status and Academic Performance of Male and Female Students in Biology

Variables	N	r	p-value	Significant value	Remark
Male and female students	457	.89	.050	.023	Significant

Academic performance

Table 4 results indicates that the correlational analysis between parental educational status and academic performance of male and female students in Biology have a p-value of 0.05 and significant value of 0.023. This significant value of 0.023 is less than p-value of 0.050 (i.e $p=0.05 > 0.023$). With this result, the null hypothesis two which stated that there is no significant difference in the relationship between parental educational status and academic performance of male and female students in Biology is rejected. This implies that there is significant relationship between parental educational status and the academic performance of male and female students in Biology.

Major Findings

1. The study reveals that there is no significant difference in the relationship between school location and academic performance of male and female students in Biology.
2. The study reveals that there is significant difference in the relationship between parental educational status and academic performance of male and female students in Biology.

Discussion of Findings

Findings of the study revealed a low relationship between school location and students' academic performance in Biology. The study also showed that there is no significant difference in the relationship between school location and academic performance of male and female students in Biology in Benue. This finding is in consonance with that of Bosede (2010) who revealed that school location has no effect on students' academic performance in science. The finding of the study disagreed with that of Nduku (2002) and Onah (2010) who reported that school location have signification relationship with academic performance of both male and female students in science.

Findings of the study showed that there is high positive relationship between parental educational status and academic performance of students in Biology. This finding concurs with that of Sirin (2005) who showed that there is significant relationship between parental educational status and academic performance of students in science. This means that parental educational status have positive effect on both male female performance in Biology. In agreement Fasasi (2017) disclosed that a significant relationship exists between parental educational status and academic performance of male female students in science.

Conclusion

Based on the findings of the study the researchers concluded that: school location has little or insignificant relationship on academic performance of students in Biology. This means that location of school is not important for academic performance of students in science; parental educational status has high significant relationship on academic performance of students in Biology. This shows that parental educational attainment influence academic performance of their students in science.

Recommendations

Based on the findings of the study the researchers recommended that;

1. Uneducated parents both from rural and urban areas should be encourage by school administrators to take education of their children serious through seminars and conferences.
2. Teaching and learning of science should be done in a way that the gap between parental educational attainment and students' academic performance should be eliminated.

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