Influence of School Location `on Students' Academic Achievement in Junior Secondary School Basic Science in Ekiti State, Nigeria

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Abstract: The study investigated the influence of school location on students' academic achievement in Junior Secondary School Basic Science in Ekiti Stat, Nigeria. The study adopts an ex-post facto design of the survey type. The targeted population for the study was Junior Secondary III (JSS III) Basic Science students of public secondary schools in Ekiti State, Nigeria. A total of three hundred (300) Basic Science students were considered as samples for the study. The sample consisted of one hundred and fifty (150) Basic Science students that were randomly selected from public secondary schools in urban areas of the state (70 male and 80 female) and one hundred and fifty (150) Basic Science students that were also randomly selected from public secondary schools in rural areas of the state (72 male and 78 female). Computerized result sheets sent to each school by the Ekiti State ministry of Education for the Ekiti State Junior WAEC results were collected on the 2014-2017 May/June examinations for all the selected schools for the study. The scores of each candidates selected that formed the sample of this study were extracted and grouped as 'Urban scores' and 'Rural scores' and these serves as the academic achievement in Basic Science. Three research hypotheses were formulated and analysed using t-Test statistical analysis at P< 0.05 level of significant. The findings showed that there was no statistical significant difference in the academic achievement mean scores of male and female students in the urban school areas and also there was no statistical significant difference in the academic achievement mean scores of male and female students in the rural school areas. The findings further revealed that there was statistical significant difference in the achievement mean scores of students in urban and rural school located areas. Conclusion and recommendations were also made in this paper.

Key words: school location, urban area, rural area, academic achievement, Basic Science and students.

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 (Oredein, 20l6). Similarly, Joe Project store (2018) defines school as one of the institutions that is responsible for the development and training of the mind and skill of man. School is also for the preparation of man for the challenges and responsibilities in the society at large. Okorie and Ezeh (2016) defines school location as a particular place, in relation to other areas in the physical environment (rural or urban), where the school is sited. Human beings, have unlimited capacity to learn, but many however be limited by the behavior patterns and facilities that the immediate environment offers (Oredein, 2016).

Science education is an essential instrument for national development. The impact of science and technology on the society cannot be overemphasized. Modern invention and discoveries have cumulatively helped to improve man's progress in health, happiness and productivity. Omiko (2017) cited Olagunju, Adesoji, Ireogbu and Ige (2013) that the relevance of science to national goals, aspirations and economy, dictates to large, the huge commitment and support which nations make and give to science and technological development.

According to Osuafor and Okoli (2013) cited in Awodun and Oyeniyi (2018)   that in this contemporary age of scientific and technological advancement, the need to keep pace with the global trend of development demands that people should be scientifically literate. Without scientific literacy among a sizable proportion of the society, progress in achieving modernization will be difficult. Also, Christogonus, Okechukwu, Omebe and Martha (2014) asserted that knowledge in basic science is central and indispensable to the development of every nation. This is due to its crucial roles in the child's survival, adjustment and adaptation to his/her immediate and wider environments dominated by scientific activities.

Iwuji (2012) cited in Awodun and Oyeniyi (2018) that at junior secondary school level; integrated science (now Basic Science) was introduced for the purpose of giving foundation skills and knowledge for subsequent science studies at the higher level. The acquisition of appropriate skills and the development of mental, physical and social abilities and competencies for the individual to live in and contribute to the development of the society in which he lives, has been a major concern of Basic Science. The subject views nature in a holistic approach and this makes it a discipline in its own right. The above definitions show that science is not just a collection of data and facts neither is it an assembly of sterile body of knowledge but that, it involves engaging in certain activities as well (Isa , 2000 cited in Iwuji, 2012).

According to Iwuji (2012) as cited by Awodun and Oyeniyi (2018) that Integrated science (now Basic Science) was introduced to Nigerian secondary schools in 1972 at the junior secondary school level as a result of the outcome of Science Teachers Association of Nigeria (STAN) Committee set up to look into the three (3) sciences i.e. Biology, Chemistry and Physics. The program has been in existence for forty (40) years. Recently, there was a trend from integrated science to Basic science following the Nigeria Educational Research and Development Councils (2007) decision to re-structure the Basic Education Programme to the 9-year Basic Education Programme in order to attain the Millennium Development Goals (MDGs) by 2015. It became imperative that the existing curricula for primary and JSS should be reviewed, restructured and realigned to fit a 9-year basic education programme `and the upper basic education curriculum is for JSS 1-3 level. Basic Science concepts (content is almost the same except for introduction of some basic technological concepts) is generally geared towards technological development and appropriate strategy for the acquisition of relevant skills needed for meaningful learning of science concepts.

The development of Basic science and Technology as a subject area happened in Nigeria in the late 1960s, and teaching and learning have since been entrenched in schools (Opara and Etukudo, 2014).

According to Ukpai, Gabriel, Okechukwu and Ugama (2016) basic science is a basic subject that lays foundation for the take off of the sciences (biology, chemistry and physics) in the secondary classes. Basic Science is otherwise known as basic education in science which cuts across six (6) years of primary education and three (3) years of junior secondary education. According to National Policy on Education (2004), the specific goals of basic education shall be the same as the goals of the levels of education to which it applies (i.e. primary education and junior secondary education). Basic science is an introductory course to the study of sciences in senior secondary school. Basic science and technology is designed for pupils at the lower basic and middle levels of primary education.

Omiko (2016) cited National Policy of Education (FRN, 2014) that the aims of Basic Science (formally Integrated Science) should be directed at enabling students who are exposed in it, to acquire the following skills:

i.   Observe carefully and thoroughly;
ii.   Reports completely and accurately what is observed;
iii.   Organize information acquired;
iv.   Generalizing on the basis of the acquired information;
v.   Predicting as a result of the generalization;
vi.   Designing experiments (including control where necessary) to check predictions;
vii.   Using models to explain phenomena where appropriate; and
viii.   Continuing the process of inquiring when new data do not confirm to prediction.

Although the current emphasis has been on students' performance in sciences, it must be appreciated that students' achievement in any course is a function of instruction and school location. Location of schools could also be a factor that affects academic performance of students in Basic Science in Junior Secondary schools. Eznendu (2003) in his study on: "classroom environment as correlate of students' cognitive achievement in senior secondary school geography" stated that school location means urban and rural schools. Similarly, Quirk (2008) asserted that location is a particular place in relation to other areas. Ezike (2001) stated that urban areas are those with high population density, high variety and beauty while rural areas are those with low population, subsistence mode of life characterized by monotony. Similarly, Akpan (2008) indicated that schools in urban areas have electricity, water supply, more teachers, more learning facilities and infrastructure.

Owoeye and Yara (2011) in their studies on school location and academic achievement of secondary school students in Ekiti state, Nigeria asserted that the various review of literature on school location influence on academic performance is not the same. While some maintain that urban students perform better in examinations than their rural counterparts, other found that rural students (in spite of all odds) perform better. Some have submitted in their findings and concluded that no particular set up (urban or rural) can claim superiority over the other because their performances are the same.

In their studies on the influence of study interest and school location on the attitude of secondary school students towards Mathematics in Ekiti State, Adebule and Aborisade (2013) opined that students that resided in urban centres especially where there are higher institutions like polytechnics or universities are likely to have inclination for higher education than those in the rural setting. They further asserted that students in urban setting could have more access to libraries, laboratories, etc. than those in rural setting. Similarly, Bosede (2010) stated that sex and location of school influence students' academic achievement in some areas. Conversely, Considine and Zappala (2002) studied students' in Australia and found out that geographical location do not significantly predict outcomes in school performance. Alokan (2010) in his studies on the influence of sex and location on relationship between students' problem and academic performance affirmed that sex and location do not affect the negative relationship between student problems and academic performance. In addition, some other studies (Bosede, 2010; Ezeh, 1998) cited in Okorie and Ezeh (2016) showed no difference in academic achievement of students because of location. Conversely, Agbir (2004) also cited in Okorie and Ezeh (2016) showed that rural students performed better on practical skills in chemistry than their urban counterparts did. The influence of location on students' academic achievement remains controversial and inconclusive. This calls for further investigation. Okonkwo (2010) cited in Igwebuike and Ikponmwosa (2013) that secondary school Chemistry students with positive perception of their classroom environment achieved significantly better than their counterparts with negative perception.

In addition, Adebule and Aborisade (2013) posited that lack of social amenities in rural areas impinges on the education services, such amenities are electricity, pipe borne water, technical resources, safe and secure facilities that are essential to successful educational programmes. Similarly, Ogunleye and Adepoju (2011) contended that the location of a school has an important role to play in the educational attainment of students in the school. Most studies on school location have being carried out with the focus on urban and rural location (NCERT, 2006). However, some areas where schools are located are neither urban nor rural. A peri-urban area is the transition zone or interaction zone where urban and rural activities are juxtaposed and landscape features are subjected to rapid modifications, induced by human activities.

In Nigeria, in spite of the enormous role that basic science plays in human existence and nation development, academic achievement of students in junior secondary school basic science is nothing to write home about. Some of the problems identified as responsible for this ugly trend includes; school location and gender inequalities among others. It is against this background that this study examined the Influence of school location on Students' academic achievement of basic science students in Ekiti State Junior Secondary School Certificate Examination (ESJSSCE).

Research Hypotheses

The following research Hypotheses were formulated and tested at $p < 0.05$:

Ho_1 : There is no significant difference in the academic achievement mean scores of male and female students in the urban school located areas.

Ho_2: There is no significant difference in the academic achievement mean scores of male and female students in the rural school located areas.

Ho_3 : There is no significant difference in the academic achievement mean scores of students in urban and rural school located areas.

Methodology

The design of this study was an ex-post facto of survey type. The targeted population for the study was Junior Secondary III (JSS III) Basic Science students of public secondary schools in Ekiti State, Nigeria. A total of three hundred (300) Basic Science students were considered as samples for the study. The sample consisted of one hundred and fifty (150) Basic Science students that were randomly selected

from public secondary schools in urban areas of the state (70 male and 80 female) and one hundred and fifty (150) Basic Science students that were also randomly selected from public secondary schools in rural areas of the state (72 male and 78 female). Computerized result sheets sent to each school by the Ekiti State ministry of Education for the Ekiti State Junior WAEC results were collected on the 2014-2017 May/June examinations for all the selected schools for the study. The scores of each candidates selected that formed the sample of this study were extracted and grouped as 'Urban Scores' and 'Rural Scores' and these serves as the academic achievement in Basic Science. Three research hypotheses were formulated and analysed using t-Test statistical analysis at $P < 0.05$ level of significant.

Results
Research Hypothesis 1
There is no significant difference in the academic achievement mean scores of male and female students in the urban school located areas.

Table 1 : t-Test Analysis of academic performance of male and female students in schools located in urban areas.

GROUP	N	$\overline{X}$	SD	Df	t- Test value		Remarks
					t-cal.	t- tab	
Male	70	57.65	6.12	148	0.72	1.96	* *
Female	80	56.94	5.86				

* *   =   Not Significant at $P > 0.05$

The table 1 above revealed that the calculated t–value (t-cal) is less than the tabulated t-value (t-table) at 0.05 level of significant (i.e. t-cal = 0.72 < t-table =1.96, df = 148; P > 0.05). Hence, the null hypothesis is hereby accepted. That is, there is no significant difference in the academic achievement mean scores (Ekiti State Junior WAEC results) of male and female students in the school located in the urban areas.

Research Hypothesis 2
There is no significant difference in the academic achievement mean scores of male and female students in the rural areas.

Table 2 : t-Test Analysis of academic achievement of male and female students in schools located in rural areas.

GROUP	N	$\overline{X}$	SD	Df	t- Test value		Remarks
					t-cal.	t- tab	
Male	72	67.43	6.21	148	1.54	1.96	* *
Female	78	65.94	5.65				

* *   =   Not Significant at $P > 0.05$

The table 2 above revealed that the calculated t–value (t-cal) is less than the tabulated t-value (t-table) at 0.05 level of significant (i.e. t-cal = 1.54 < t-table =1.96, df = 148; P > 0.05). Hence, the null hypothesis is hereby accepted. That is, there is no significant difference in the academic achievement mean scores (Ekiti State Junior WAEC results) of male and female students in the rural areas.

Research Hypothesis 3
There is no significant difference in the academic achievement mean scores of students in urban and rural school located areas.

Table 3 : t-Test Analysis of academic achievement of students in schools located in urban and rural areas.

GROUP	N	$\overline{X}$	SD	Df	t- Test value		Remarks
					t-cal.	t- tab	
Rural	150	58.56	5.76	298	10.48	1.96	*
Urban	150	65.96	6.45				

    *   =   Significant at P < 0.05

The table 3 above revealed that the calculated t–value (t-cal) is greater than the tabulated t-value (t-table) at 0.05 level of significant (i.e. t-cal = 10.48 > t-table =1.96, df = 298; P < 0.05). Hence, the null hypothesis is hereby rejected. That is, there is significant difference in the academic achievement mean scores (Ekiti State Junior WAEC results) of students in urban and rural school located areas. The performance is in favour of students from schools located in urban areas (mean achievement score is 65.96).

Discussion

As shown in table 1, there is no significant difference in the academic achievement scores (Ekiti State Junior WAEC results) of male and female students in the urban areas. The findings further established the homogeneity of male and female students in terms of academic achievement irrespective of school location. In order words, it could be said that the knowledge baseline for the two groups (male and female) are equal. Similarly, the finding also still in line with that of Considine and Zappala (2002) that geographical location do not significantly predict outcomes in school performance and Alokan (2010) Alokan (2010) in his studies on the influence of sex and location on relationship between students' problem and academic performance affirmed that sex and location do not affect the negative relationship between student problems and academic performance. But, at variance with the findings of Bosede (2010) that sex and location of school influence students' academic achievement in some areas.

Furthermore, As also shown table 2, there is no significant difference in the academic achievement mean scores (Ekiti State Junior WAEC results) of male and female students in the rural areas. The findings established the homogeneity of male and female students in terms of academic achievement irrespective of school location. In order words, it could be said that the knowledge baseline for the two groups (male and female) are equal. This finding agreed with that of Considine and Zappala (2002) that geographical location does not significantly predict outcomes in school performance and Alokan (2010) in his studies on the influence of sex and location on relationship between students' problem and academic performance affirmed that sex and location do not affect the negative relationship between student problems and academic performance. But, at variance with the findings of Bosede (2010) that sex and location of school influence students' academic achievement in some areas.

Moreover, table 3 showed that there is significant difference in the academic achievement mean scores (Ekiti State Junior WAEC results) of students in rural and urban school located areas. This means that geographical location of schools has influence on the academic achievement of students. This finding agreed with that of Ogunleye and Adepoju (2011) that the location of a school has an important role to play in the educational attainment of students in the school.

Conclusion

The findings revealed that there was no statistical significant difference in the academic achievement mean scores (Ekiti State Junior WAEC results) of male and female students in the urban school areas and also there was no statistical significant difference in the academic achievement mean scores (Ekiti State Junior WAEC results) of male and female students in the rural school areas. The findings also revealed that there was statistical significant difference in the academic achievement mean scores (Ekiti State Junior WAEC results) of students in urban and rural school located areas.

Recommendations

The following recommendations based on the findings of this study were made:

That government and Basic Science educators should focus more attention in terms of necessary facilities and pedagogy on the schools located in rural areas for them to have the same opportunity like their counterpart in the urban school location areas, and to enhance student's academic achievement in Basic Science subjects irrespective of the geographical school location.

Basic Science educator and other stake holders should discourage gender stereotype in teaching and learning of science subjects irrespective of the geographical school location

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