

Impact of School Location on Academic Achievement of Science Students in Senior Secondary School Certificate Examination

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Abstract- The study examined the impact of school location on academic achievement of Science Students in Senior Secondary School Certificate Examination. The purpose was to determine whether the geographical location has any impact on the achievement of the students in Biology, Chemistry and Physics. The design adopted for the study was an ex-post facto of survey type. The targeted population for the study was Senior Secondary III (SS III) Physics students of public secondary schools in Ekiti West Local Government Area of Ekiti State, Nigeria. A total of one hundred and twenty (120) science students were used as samples for the study. The sample consisted of twenty (20) science students that were randomly selected from six (6) public secondary schools selected for the study. Computerized result sheets sent to each school by WAEC were collected on the 2010-2013 May/June West African Senior Secondary School Certificate Examination (WASSSCE) from all the selected schools for the study. The average of the scores of each candidates selected that formed the population of this study were computed in Biology Chemistry and Physics, these serves as the achievements in 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 achievement mean scores of male and female students in the rural school areas and also there was no statistical significant difference in the 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 rural and urban school located areas. Conclusion and recommendations were also made in this paper.

Index Terms- school location, achievement, science subjects and students.

I. INTRODUCTION

Science has become such an indispensable tool that no nation, developed or developing, wishing to progress in the socio-economic sphere will afford to relegate its learning in schools. The development of any nation, which depends on science and technology, hinges on the nation's science education. Science education is a distinct form of creative human activity which involves distinct ways of seeing, exploring and understanding reality. Science, being a fundamental part of everyday life and essential to our understanding of the world, teaches us a way of

finding out about the world (by becoming curious and seek explanations) and this helps us to develop a growing body of ideas and information about the ways things work. Science and technology play an important role in nation building and development [1]. The reason is that science can exert a dominant, if not decisive influence on the life of individual as well as on the developmental effort of a nation [2].

Despite the importance of science (Biology, Chemistry and Physics) and its education value which is relevant to the need of individual learner, economics and technological breakthrough of a nation and the effort of researchers to improve on its teaching and learning, the performance of students in the subjects is not still encouraging. This is manifested in the poor performance of students in science subjects in the West African senior school certificate examination results. Some inhibiting factors affecting science subjects learning and hence students' poor academic in science have been identified. Among these factors, according to [24] include: school location, gender inequality and others.

Location of schools could also be a factor that affects the performance of students in science subjects. [21] in his study on: "classroom environment as correlate of students' cognitive achievement in senior secondary school geography" stated that schools' location means urban and rural schools. Similarly, [19] asserts that location is a particular place in relation to other areas. [22] 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, monotonous and burden. Similarly, [18] indicated that schools in urban areas have electricity, water supply, more teachers, more learning facilities and infrastructure. In the same way, [17] in their studies on the influence of study interest and school location on the attitude of secondary school students towards Mathematics in Ekiti State, Nigeria 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. [17] further asserts that students in urban setting could have more access to libraries, laboratories, etc. than those in rural setting.

[12] in their studies on school location and academic achievement of secondary school in Ekiti state, Nigeria asserts 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. [15] in his studies on the influence of sex and location on relationship between student problem and academic performance affirms that sex and location do not affect the negative relationship between student problems and academic performance. In another development, [14] studied students' in Australia and found out that geographical location do not significantly predict outcomes in school performance. Conversely, [3] asserts that school location has been viewed as one of the factors that affect students' academic achievement. Similarly, [20] stated that sex and location of school influences students' academic achievement in some areas.

[6] contends that school location and school size influences students' performance in sciences (Physics in particular). [4] that the entire unattractive physical structure of the school building could de-motivate learners to achieve academically. This is referring to learner's environment mismatch. In the same way, [10] also found statistically significant differences in students' science achievement in favour of urban schools as compared to rural schools. The reasons for this may be varied and complex but is probably related to differential access to resources required for quality teaching and learning [5].

Moreover, [13] while looking at the effects of classroom and environmental noise on children's academic performance found out that both chronic and acute exposure to environmental and classroom noise have a detrimental effect upon children's learning and performance. Rural schools are disproportionately likely to have an inadequate pool of teachers qualified in Physics and insufficient funds to maintain up-to-date computers, instructional software, and laboratory facilities [11] and [23]. In addition, [9] and [8] in their separate studies indicated that schools in urban areas achieved more than schools in the rural areas in science subjects. Specifically, [9] observed in his study that schools in urban locations had better academic achievement than their rural counterpart in Chemistry.

Conversely, [7] in their study to determine the factors which predict performance in secondary school Physics in Ebonyi North educational Zone of Ebonyi State, asserted that the effect of school location on the performance in secondary school Physics was not significant, hence, they concluded that school location does not influence Physics achievement of students in secondary school.

Similarly, in a study of school location versus academic achievement in Physics, [24] observed that there was no significant difference in the mean achievement score of students in urban schools that were exposed to learning Physics through Computer-Assisted Instruction (CAI) and students in rural schools that were also exposed to the same treatment. In addition, [16] in their study on four Ability Process Dimension (4APD) as a function of improving teaching and learning as basic Mathematics in Ekiti State secondary schools revealed that the mean performances of students from urban and rural locations in Mathematics are not statistically different.

II. RESEARCH HYPOTHESES

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

H_{01} : There is no significant difference in the achievement mean scores of male and female students in the rural school located areas.

H_{02} : There is no significant difference in the achievement mean scores of male and female students in the urban school located areas.

H_{03} : There is no significant difference in the achievement mean scores of students in rural and urban school located areas.

III. METHODOLOGY

The design of this study was an ex-post facto of survey type. The targeted population for the study was Senior Secondary III (SS III) Physics students of public secondary schools in Ekiti West Local Government Area of Ekiti State, Nigeria.

The sample of the study consists of twenty (20) science students (i.e. students that registered and wrote WAEC examinations on Biology, Chemistry and Physics) were randomly selected from six (6) public secondary schools selected for the study. A total of one hundred and twenty (120) science students were used as samples for the study. The sample is made up of sixty (60) science students randomly selected from rural schools and sixty (60) science students that were randomly selected from urban schools. This sample comprises of sixty eight (68) male and fifty two (52) female.

The researchers made personal contact with all the selected schools for this study and collected the 2010-2013 May/June West African Senior Secondary School Certificate Examination (WASSCE) computerized result sheets sent to each school by WAEC. The average of the scores of each candidates selected that formed the population of this study were computed in Biology Chemistry and Physics, these serves as the achievements in science.

IV. RESULTS

Research Hypothesis 1

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

Table 1 : t-Test Analysis of academic performance of students in schools located in rural areas.

GROUP	N	— X	SD	df	t- Test		Remarks
					t-cal.	t- tab	
Male	34	63.87	4.54	58	1.54	1.96	* *
Female	26	62.94	3.86				

* * = 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. $t\text{-cal} = 1.54 < t\text{-table} = 1.96, df = 58; P > 0.05$). Hence, the null hypothesis is hereby accepted. That is, there is no significant difference in the achievement mean scores

(WASSSCE results) of male and female students in the rural areas.

Research Hypothesis 2

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

Table 2 : t-Test Analysis of academic performance of students in schools located in urban areas.

GROUP	N	— X	SD	df	t- Test		Remarks
					t-cal.	t- tab	
Male	32	46.65	6.54	58	1.54	1.96	* *
Female	28	45.94	5.86				

* * = 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 = 58; P > 0.05). Hence, the null hypothesis is hereby accepted. That is, there is no significant difference in the achievement mean scores (WASSSCE results) of male and female students in the school located in the rural areas.

Research Hypothesis 3

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

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

GROUP	N	— X	SD	df	t- Test		Remarks
					t-cal.	t- tab	
Rural	60	76.15	7.46	118	6.74	1.96	*
Urban	60	68.62	8.34				

* = 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 = 6.74 > t-table =1.96, df = 118; P < 0.05). Hence, the null hypothesis is hereby rejected. That is, there is significant difference in the achievement mean scores (WASSSCE results) of students in rural and urban school located areas.

V. DISCUSSION

As shown in table 1, there is no significant difference in the achievement mean scores (WASSSCE 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 [15] that sex and location do not affect the negative relationship between student problems and academic performance.

Furthermore, As also shown table 2, there is no significant difference in the achievement mean scores (WASSSCE 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 [15] that sex and location do not affect the negative relationship between student problems and academic performance.

Moreover, table 3 showed that there is significant difference in the achievement mean scores (WASSSCE 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 [9] and [8] in their separate studies indicated that schools in urban areas achieved more than schools in the rural areas in science subjects.

VI. CONCLUSION

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

VII. RECOMMENDATIONS

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

That government and 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 achievement in science subjects irrespective of the geographical school location.

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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