Influence of Environment On Rural Secondary School Students' Academic Performance In Chemistry In Ekiti State, Nigeria

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Abstract

The study was carried out to investigate the effects of environment on students' academic performance in Chemistry in Secondary schools in rural areas of Ekiti State, Nigeria. The descriptive design was used for the study. The sample size for the study was 100 respondents and the instrument used for data collection was self-developed questionnaire. The validation of the instrument was done by three experts and a Cronbach Alpha reliability coefficient method was employed to ensure the reliability of the instrument. Four research questions and four research hypotheses guided the study; while student Pearson correlation coefficient was used to test the hypotheses at 0.05 level of significant. A review of empirical studies was carried out to guide the researcher into previous studies in the area and also to provide the researcher with the theoretical base. A 20-item questionnaire was used to get information from the respondents and the data collected was analyzed. The finding of this study revealed that there was significant relationship between school environment and students' academic performance in schools. Conducive or friendly environment encourage teaching and learning and promote students understanding of the language used. Recommendations were made, which include: school environment should be made conducive enough for both students and teachers for effective teaching and learning of chemistry to improve students' academic performance and government should provide relevant and adequate teaching facilities for schools use, also further suggestion was postulated to guide the study. The researcher encourages those who are interested in carrying out further research on the study to do so by extending the scope of the study to other subjects in the state to confirm if similar results would be obtained.

Keywords: Environment, Academic performance, Rural Area,

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Introduction

The school environment remains an important area that should be studied and well managed to enhance students' academic performance in all areas of educational studies in order to make teaching and learning effective. The school environment, which include the classrooms, libraries, technical workshops, laboratories, Teachers' quality, school management, teaching methods, peers, etc. are variables that affect students' academic achievement. The issue of poor academic performance of students in Nigeria has been of much concern to the government, parents, teachers and even student themselves. The quality of education that will be delivered by the teacher and received by the students did not only depends on the teacher's performance of their duties, but also on the effective coordination of the school environment. School environment which include instructional spaces planning, administrative places planning, circulation spaces planning, spaces for conveniences planning, accessories planning, though, the teachers as well as the students themselves are essential in teaching-learning process.

Curriculum and educational planning consider school environment as an important aspect of educational planning, hence, the schools should have well suited buildings, adequately constructed, well equipped and the facilities well utilized and maintained for much teaching and learning to effectively take place in the classrooms. Researcher's Personal visits to some schools have shown that the school physical facilities have not been in good shape. In some cases, students sit on the ground to receive lessons. Many of the classrooms, laboratories, libraries, playing grounds are in a terrible state of despair. It can be inferred from the literature that schools' facilities have a positive relationship with school effectiveness. It was against this backdrop that the present study found out the relationship between school facilities and students' achievement in the affective and psychomotor domains of learning.

The extent to which student learning could be enhanced depends on their location within the community, the structure of their classrooms, availability of instructional facilities and accessories. It is believed that a well-planned school will gear up expected outcomes of education that will facilitate good social, political and economic emancipation, effective teaching and learning process and academic performance of the students. Relating this study to international occurrences are the assertions of Williams, et al (2008), quoting Marsden (2005), which reported that safe and orderly classroom environment (aspect of instructional space), School facilities (accessories) were significantly related to students' academic performance in schools. Ahunanya and Ubabudu (2006) also reiterated the provision of adequate facilities for effective teaching and learning to take place. This is a considerable support that a variety of sustainable designs a significant influence on student's behaviour and academic achievement. To this extent, physical characteristics of classroom like lighting and an appropriate visual environment for learning task deserves careful consideration. Harton's (2012) suggest that the ability of individuals in school to concentrate on instructions was strongly influenced by factors such as lighting. Classroom lighting plays a particularly critical role because of the direct relationship between good lighting and students' performance. Students cannot study unless lighting is adequate.

Rural areas are the categories of communities with low population, poor or no social amenities, poor school environment including problems with Student-Teacher ratio, poor school location, school population, classroom ventilation, poor lighting in classrooms, and inconsistent temperatures in the classroom with student health problems. In Ekiti state, majority of the communities still fall under towns and villages with Poor lighting, noisy, none or decayed infrastructures, and inconsistent temperatures making teaching and learning

difficult. Poor maintenance and ineffective ventilation systems which can lead to poor health among students as well as Teachers, and invariably which leads to poor performance and higher absentee rates. These factors can adversely affect student behavior and lead to higher levels of frustration among Teachers, and poor learning attitude among students. Beyond the direct effects that poor facilities have on students' ability to learn, the combination of poor facilities, which create an uncomfortable and uninviting workplace for Teachers, combined with frustrating behavior by students including poor concentration and hyperactivity, lethargy, or apathy. It is possible that the aforementioned characteristics of school facilities have an effect upon the academic performance of students. Alokan (2010) found out that students' problems are strongly associated with poor performance and that sex and location do not affect the negative relationship between student problems and academic performance. Previous studies have investigated the relationship of poor school environment including problems with Student-Teacher ratio, school location, school population, classroom ventilation, poor lighting in classrooms, and inconsistent temperatures in the classroom with student health problems, Akiri and Ugborugbo (2008) have found that there is a significant relationship between Teachers' gender and students' academic achievement. This is contrary to what Akiri and Ugborugbo (2008) says. Yala and Wanjohi (2011) and Adeyemi (2010), Popoola and Olofin (2020), Olofin and Kolawole (2020) and Olofin (2020) have found that Teachers' experience and educational qualifications are the prime predictors of students' academic achievement. However, Rivkin et al. (2005) have found that Teachers' teaching experience and educational qualifications are not significantly related to students' achievement. Perkins (2013) indicates that Teacher's attitude contributes significantly to student's attention in classrooms whereas Adesoji and Olatunbosun (2008) illustrate that student's attitude is related to Teacher characteristics. The implication is that Teacher's attitude directly affect students' attitude. On the contrary, Kara and Russell (2001) comment that there has been no consensus on the importance of specific Teacher factors, leading to the common conclusion that the existing empirical evidence does not find a strong role for Teachers in the determination of academic achievement. Shield and Dockrell (2008) while looking at the effects of classroom and environmental noise on children's academic performance found out that both cronic and acute exposure to environmental and classroom noise have a detrimental effect upon children's learning and performance.

Ezekiel (2015) conducted a study on influence of classroom size on student academic achievement in Chemistry in Abak Education Zone of Akwa lbom State. In order to achieve this, three hypotheses were formulated and tested at 0.05 alpha level. The design adopted for the study was the ex-post facto. The sample for the study consisted of 200 students randomly selected in Abak Education Zone of Akwa lbom State. The results obtained amongst others, revealed that there is a significant influence of class size on students' academic achievement in Biology in Abak Education Zone of Akwa lbom State. The results obtained amongst others, revealed that there is a significant influence of class size on students' academic performance in Biology.

Kingley (2014) examine the classroom learning environment and students' academic performance in River State. A sample of 500 students were randomly selected from population of 56438 students in public secondary schools for the study. The design adopted for the study was a causal comparative design. The major instrument used in this study was student and teacher questionnaires and revealed that class size has effects on students' academic achievement

Papo (1999) opined that the size of the class does not have any impact on teaching effectiveness and students' performance. Etim (2016) examine the effect class size on students' academic performance in Chemistry in Akamkpa Local Government Area of Cross River State. The study was carried out in 5 randomly selected public secondary schools in Akamkpa Local Government Area. A sample 200 students were randomly selected from 2832 students in public secondary schools for the study. The results obtained amongst others, revealed that there is a significant influence of class size on students' academic performance. In relation to this study, class size be its overcrowded or small will affect the students' performance. Students in small classes do better in academics than over crowded classroom. Students in small classes behaved better than students from larger classes. To complement these studies, the present research will examine the aforementioned areas of school environment as it affect students' performance in Nigerian schools and in particular, the rural areas of Ekiti State.

Most of the public secondary schools, teaching and learning take place under terrible and uncomfortable environment. Students' academic performance may not also be guaranteed where instructional space such as classrooms, library, laboratory, technical workshops and others are not structurally in good condition or lacking. The high levels of students' academic performance may not be guaranteed where instructional space such as classrooms, libraries, technical workshops and laboratories are structurally defective and this is the situation in most of the secondary schools in the rural areas of Ekiti State in Nigeria. However, little is known on the impact of school environment on students' academic performance in public secondary school in the rural areas of Ekiti State as most researches centered on the secondary schools in the urban areas, hence the need for this study.

The study investigated the relationship between school environment and chemistry students' academic performance in secondary schools in the rural areas of Ekiti State. Specifically, the study:

1. examined the impact of school facilities on the teaching and learning of chemistry in secondary schools in the rural areas of Ekiti State;
2. explored factors such as class size that have been perceived to promote or inhibit chemistry students learning in the academic process of students in secondary schools in Ekiti State;
3. investigated the extent to which school location affects the academic performance of chemistry in secondary schools in Ekiti State

Research Questions

The following research questions were raised to guide the study

1. What influence does environment has on the academic performance of chemistry students in secondary schools in Ekiti State?
2. To what extent do school facilities affect teaching and learning of chemistry in secondary schools in the rural areas of Ekiti State?
3. What influence does class size has on the academic performance of chemistry students in secondary schools in Ekiti State?
4. What is the influence of school location on the academic performance of chemistry students in secondary schools Ekiti State?

Research Hypotheses

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

1. There is no significant relationship between academic performance of students in chemistry with good environment and those without good environment in secondary schools Ekiti State.
2. There is no significant relationship between performance of students with good school facilities for teaching and learning of chemistry and the students in secondary schools in rural areas of Ekiti State.
3. There is no significant relationship between class size and academic performance of chemistry students in secondary schools in rural areas of Ekiti State
4. There is no significant relationship between school location and academic performance of chemistry students in secondary schools in Ekiti State.

Methodology

The research design adopted for this study is a descriptive research design; questionnaire was used as research instrument to collect data from the respondents. This study was carried out in Ekiti West local government area of Ekiti State. The population of the study consisted of SS1, SSII and SS III Secondary schools Chemistry students in Ekiti West Local Government area of Ekiti State. The sample of the study consisted of 100 chemistry students from SS 1, SS II, SS III from the selected secondary schools using simple random sampling techniques.

The instrument used for this study was a self-structured questionnaire. The questionnaire consists of two sections: A and B. Section A consists of items designed to seek information about the personal data while section B contains or questions to be answered by the respondents. The questions was given a 4 Likert Scale which are Strongly Agree (SA), Agree (A), Strongly Disagree (SD), Disagree (D). The questions therein required respondent to indicate their degree of agreement or disagreement in them. The questionnaires were made up of 16 items. The researcher visited all the selected secondary schools in Ekiti West local government area of Ekiti State. Copies of the questionnaire were distributed to the respondents (students) of chemistry directly by the researcher and the students were given enough time to complete it while the researcher waited and collected from students all the completed questionnaires.

The face and content validity of the instrument was accessed by an expert in education, test and measurement, comments and corrections made and the corrected version was administered. Reliability of the instrument was ascertained by using a Cronbach Alpha reliability coefficient method and reliability coefficient of 0.87 was obtained at 0.05 level of significant which was considered significant enough for the work

The data collected was analyzed using statistical method of simple percentage to answer the research questions and inferential statistical was used for the hypothesis raised in the study.

Results

Question 1: What influence does environment has on the academic performance of chemistry students in secondary schools in Ekiti State?

Table 1: Environment and Chemistry Students' Academic performance in secondary schools in the rural areas of Ekiti State

S/N	Items	SA	A	D	SD	Mean	Decision
1.	The school environment is conducive for teaching and learning	36 (36%)	54 (54%)	10 (10%)	0 (0)	3.26	Agreed
2.	Students' perform better in an educational environment that	52 (52%)	36 (36%)	8 (8%)	4 (4%)	3.36	Agreed

S/N	Items						
	is friendly to teaching and learning						
3.	Conducive environment encourage the students teaching and learning	30 (30%)	64 (64%)	6 (6%)	0 (0)	3.24	Agreed
4.	Students understand the language used in a school environment	44 (44%)	56 (56%)	0 (0)	0 (0)	3.44	Agreed

Mean Cut-off: 2.50

The result of data analysis presented in table 1 revealed that 90% of the respondents agreed that school environment is conducive for teaching and learning, 88% indicated that students' perform better in an educational environment that is friendly to teaching and learning, 94% agreed that conducive environment encourage students teaching and learning and 100% of the respondents agreed that students understand the language used in a school environment. The mean responses in the table are greater than 2.50. This implies that there is relationship between school environment and students' academic performance.

Question 2: To what extent do school facilities affect chemistry students' academic performance in secondary schools in the rural areas of Ekiti State?

Table 2: Effect of School Facilities on Chemistry Students' academic performance in secondary schools in the rural areas of Ekiti State

S/N	Items	SA	A	D	SD	Mean	Decision
1.	Students perform better when instructional materials are provided and well utilized	52 (52%)	36 (36%)	8 (8%)	4 (4%)	3.36	Agreed
2.	If instructional facilities and equipment such as calculators, ruler and computers are provided for students' it facilitate effective teaching and learning to take place	40 (40%)	32 (32%)	20 (20%)	8 (8%)	3.08	Agreed
3.	The problem encountered by school without school facilities affect students' academic performance	30 (30%)	64 (64%)	6 (6%)	0 (0)	3.24	Agreed
4.	Teaching facilities enhance students' academic performance	60 (60%)	32 (32%)	8 (8%)	0 (0)	3.52	Agreed

Mean Cut-off: 2.50

Table 2 above revealed the extent school facilities affect chemistry students' performance in secondary schools in the rural areas of Ekiti State. It was revealed that 88% of the respondents agreed that students perform better when instructional materials are provided and well utilized and (72%) of the respondents believed that if instructional facilities and equipment such as calculators, ruler and computers are provided, it facilitates students' effective teaching and learning to take place. Majority (94%) of the respondents indicated

that the problem encountered by school without school facilities affect chemistry students' academic performance and teaching facilities enhance students' academic performance (92%). The mean responses in the table are greater than 2.50. This implies that school facilities highly affect chemistry education students' performance in secondary schools in the rural areas of Ekiti State

Question 3: What influence does class size has on the academic performance in secondary schools in the rural areas of Ekiti State?

Table 3: Influence of class size on the academic performance in secondary schools in the rural areas of Ekiti State

S/N	Items	SA	A	D	SD	Mean	Decision
1.	Large class distort teaching and learning	44 (44%)	56 (56%)	0 (0)	0 (0)	3.44	Agreed
2.	There is significant difference between the quality of output of students in school having an average small class size and those having an average large class size	40 (40%)	32 (32%)	20 (20%)	8 (8%)	3.08	Agreed
3.	Effective learning take place in small class size more than large size	30 (30%)	64 (64%)	6 (6%)	0 (0)	3.24	Agreed
4.	Teaching and learning is more effective in a class within small size	44 (44%)	56 (56%)	0 (0)	0 (0)	3.44	Agreed

Mean Cut-off: 2.50

The result of data analysis presented in table 3 revealed that 100% of the respondents agreed that large class distort teaching and learning, 72% indicated that there is significant difference between the quality of output of students in school having an average small class size and those having an average large class size, 94% agreed that effective learning take place in small class size more than large size and teaching and learning is more effective in a class within small size (100%). The mean responses in the table are greater than 2.5. This implies that class size has effect on the academic performance in secondary schools in Ekiti West local government area of Ekiti State

Question 4: What is the influence of school location on the academic performance in secondary schools in Ekiti State?

Table 4: Influence of School Location on the Academic performance in secondary schools in Ekiti State

S/N	Items	SA	A	D	SD	Mean	Decision
1.	Nearness of school to students' home affect students' academic performance	44 (44%)	56 (56%)	0 (0)	0 (0)	3.44	Agreed
2.	Students in urban school are academically better than those in rural school	40 (40%)	32 (32%)	20 (20%)	8 (8%)	3.08	Agreed

| 3. | There are more qualified teachers in urban school than rural school | 36 (36%) | 54 (54%) | 10 (10%) | 0 (0) | 3.26 | Agreed |
| 4. | Students in urban school perform better in external examination than their counterparts in rural areas. | 52 (52%) | 36 (36%) | 8 (8%) | 4 (4%) | 3.36 | Agreed |

Mean Cut-off: 2.50

The result of data analysis presented in table 4 revealed that 100% of the respondents agreed that nearness of school to students' home affect students' academic performance, 72% indicated that students in urban school are academically better than those in rural school. Also 90% agreed that there are more qualified teachers in urban school than rural school and 88% indicated that students in urban school perform better in external examination than their counterparts in rural areas. The mean responses in the table are greater than 2.5. This implies that there is effect of school location on the academic performance in secondary schools in Ekiti State

Test of Hypotheses

The following hypotheses are tested at 0.05 level of significance.

Ho1: There is no significant relationship between environment and chemistry students' performance in secondary schools in rural areas of Ekiti State

Table 5: Chi-Square Statistics on environment and academic performance in secondary schools in rural areas of Ekiti State

Variables	N	X^2-Cal	X^2-Table
Environment			
Academic Performance	100	25.90	3.87

$P < 0.05$

The result presented in table 5 showed that X^2-Calculated (25.90) was greater than X^2-table (3.87) at 0.05 level of significance. The result led to the rejection of null hypothesis one. Hence, environment has significant relationship with academic performance in secondary schools in rural areas of Ekiti State.

Ho2: There is no significant relationship between school facilities and chemistry students' academic performance in secondary schools in the rural areas of Ekiti State.

Table 6: Chi-Square Statistics on school facilities and Chemistry education Students' academic performance in secondary schools in rural areas of Ekiti State.

Variables	N	X^2-Cal	X^2-Table
School facilities			
Students' academic Performance	100	22.09	3.87

$P < 0.05$

The result presented in table 6 showed that X^2-Calculated (22.09) was greater than X^2-table (3.87) at 0.05 level of significance. The result led to the rejection of null hypothesis two. Hence, there was significant relationship between school facilities and chemistry education students' academic performance in secondary schools in the rural areas of Ekiti State.

Ho3: There is no significant relationship between class size and chemistry students' academic performance in secondary schools in the rural areas of Ekiti State.

Table 7: Chi-Square Statistics on class size and chemistry students' academic Performance in Secondary schools in the rural areas of Ekiti State

Variables	N	X^2-Cal	X^2-Table
Class Size			
Students' academic Performance	100	20.65	3.87

$P < 0.05$

The result presented in table 7 showed that X^2-Calculated (20.65) was greater than X^2-table (3.87) at 0.05 level of significance. The result led to the rejection of null hypothesis three. Hence, there was significant relationship between class size and chemistry students' academic performance in secondary schools in the rural areas of Ekiti State

Ho4: There is no significant relationship between school location and chemistry students' academic performance in secondary schools in rural areas of Ekiti State

Table 8: Chi-Square Statistics on school location and chemistry students' academic performance in secondary schools in the rural areas of Ekiti State

Variables	N	X^2-Cal	X^2-Table
School facilities			
Students' academic Performance	100	18.70	3.87

$P < 0.05$

The result presented in table 8 showed that X^2-Calculated (18.70) was greater than X^2-table (3.87) at 0.05 level of significance. The result led to the rejection of null hypothesis four. Hence, there was significant relationship between school facilities and chemistry students' academic performance in secondary schools in the rural areas of Ekiti State.

Discussion of Results

The finding of this study revealed that there was significant relationship between environment and chemistry students' academic performance in secondary schools in the rural areas of Ekiti State using Ekiti West local government areas as a case study. This finding conformed with Fantuzzo (2000), who posited that environment is considered as a powerful influence on the child and that the academic performance of students cannot be separated from the school environment. This finding is similar to the study of Adu and Olatundun (2007) that environment is highly imperative for promoting students' academic performance. The study also revealed that school facilities highly affect students' performance in secondary schools in the rural areas of Ekiti State. Students' performance in chemistry improve when instructional materials are provided and well utilized in the schools. This finding corroborated with the findings of Adeboyeje, (1984), Adedeji (1998), Ahunanya and Ubabudu (2006) and Ajayi (2002) that there is positive relationship between school facilities and school effectiveness.

Another finding of the study revealed that class size has effect on the academic performance in secondary schools in the rural areas of Ekiti State. Large class distort teaching and learning and effective learning take place in small class size. This finding contradicted the finding of Papo (1999) that the size of the class does not have any impact on teaching effectiveness and students' performance. However, Etim (2016) revealed that there is a significant influence of class size on students' academic performance. He stressed that large class size is not conducive for serious academic work. Students in small classes do better in academics than over crowded classroom. The finding is similar to the finding of Ezekiel (2015), Alokan

(2010) posited that students' academic problems are strongly associated with their school location relationship existed between class size and students' learning outcome.

The study also revealed that there is effect of school location on the academic performance in secondary schools in the rural areas of Ekiti State. Students in urban school are academically better than those in rural school and there are more qualified teachers in urban school than rural school.

Conclusion

Based on the findings of this study, it was concluded that environment, school facilities, class size and school location have significant effect on students' academic performance in chemistry in secondary schools in the rural areas of Ekiti State.

Recommendations

Based on the findings of this study, it was recommended that:

1. School environment should be made conducive enough for both students and teachers for effective teaching and learning of chemistry education to improve students' academic performance.
2. Government should provide qualified and adequate teachers with relevant and adequate teaching facilities for school use
3. Dilapidated buildings in the schools should be reconstructed and building of more class room to solve the problem of overcrowding in the class
4. School authorities should encourage small class size in line with the during chemistry education teaching and learning to enhance students' academic performance.
5. Schools in rural areas should be focused by government and all educational stakeholders to provide solutions to the problems encountered in such environment, thereby improving students' performance in chemistry education.

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