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Beyond the Classroom Walls: How Environment Shapes Academic Success in Kwara State

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Abstract
This study investigated the relationship between environmental factors and student academic achievement in public high schools in Kwara State, Nigeria. The background of this study is the low national exam results and the need to understand the influence of class sizes, school facilities, peer interaction, and parental involvement on learning outcomes. This study uses a correlational type descriptive survey design with a sample of 300 students from 20 schools selected in stages. The instruments used include questionnaires on environmental factors and proforma WAEC exam results in Mathematics and English subjects (2019–2023). Data analysis was carried out with descriptive statistics and Pearson correlation at a significance level of 0.05. The results showed that students' academic achievement in the two core subjects was relatively high. There is a positive and significant relationship between environmental factors—especially class sizes and school facilities—and students' academic achievement. This study emphasizes the importance of conducive learning conditions, adequate educational facilities, and optimal class sizes in supporting academic success. It is recommended that policymakers and education stakeholders give priority to improving environmental aspects to support sustainable learning outcomes.

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INTRODUCTION

The phenomenon of low academic achievement of students is still a concern in the education system in various developing countries (A. Alam & Mohanty, 2023; M. J. Alam et al., 2023; Fomba et al., 2023). The learning environment, which includes physical, social, psychological, and cultural aspects, is understood as one of the factors that determine the quality of the learning process (Baars et al., 2021; Cayubit, 2022; Rusticus et al., 2023). Some studies show a similar pattern. When the learning environment conditions are not supportive, student motivation, concentration, and engagement tend to decrease, resulting in an impact on learning outcomes. This emphasizes that efforts to improve the quality of education do not only depend on the curriculum or teacher competence, but also on the quality of the learning environment available to students. This situation is also relevant to the situation in Nigeria, where educational challenges are still encountered in the form of a high number of students

per class, limited laboratory facilities, suboptimal libraries, and uneven parental involvement in accompanying children's learning process (Ayoko et al., 2023; Eli-Chukwu et al., 2023; Rifka Alkhilyatul Ma'rifat, I Made Suraharta, 2024). The impact can be seen on the achievement of national exams, especially in core subjects. This condition shows the need to further examine the relationship between environmental factors and students' academic achievement, especially in public high schools which are the largest providers of education services in the country.

Literature review shows that the learning environment influences the learning process and outcomes through several key dimensions. The first theme has to do with class size. Study Chen et al. (2025) suggests that classes with large student numbers tend to reduce the effectiveness of pedagogical interactions and individual attention required for optimal learning. Similar findings are also reinforced by Tao et al. (2022), which indicates that large classes have an impact on low student participation and academic achievement. The second theme discusses the availability of school facilities. I don't want to et al. (2023) found that facilities such as functional laboratories, ICT resources and adequate libraries significantly improved learning motivation and academic outcomes. The above theme highlights social factors that include peer and parent involvement. Longitudinal study by Mahoney et al. (2021) affirms that family support and positive interactions with peers strengthen learning interests, learning discipline and academic success. Thus, the latest literature agrees that a multidimensional approach is needed in studying the influence of environmental factors on students' academic achievement.

Although a number of studies have addressed the relationship between environmental factors and academic achievement, there are some relevant knowledge gaps. First, most previous studies have examined environmental variables partially, such as the effect of classroom size alone or school facilities alone, so they have not provided a comprehensive picture of how these variables interact. Second, previous research tends to be conducted in the context of primary education or private schools, so that the findings are difficult to generalize to public schools that have more heterogeneous population characteristics. Third, research in regional contexts such as Kwara State is still limited, even though public examination data shows that there is a gap in educational attainment between regions. This research gap opens up space for a more contextual, systematic and empirical data-based study that represents the real condition of public schools.

This study aims to analyze the relationship between environmental factors and the academic achievement of students in public secondary schools in Kwara State with a focus on four main variables. These variables include class size, school facilities, peer interaction and parental involvement. This study seeks to examine how the physical and social dimensions of the learning environment shape the quality of the educational process and impact students' academic outcomes. In addition, this research makes an empirical contribution to strengthening the basis for more contextual education policy formulation, especially in efforts to improve the quality and equity of education at the public school level.

The main focus of this study is to systematically examine the interaction between environmental factors and academic achievement with an empirical approach based on school data. This study not only examines the linear relationships between variables, but also examines students' perceptions as active learning agents. This approach is relevant because students' perception of the learning environment is often an initial indicator of the functioning of the educational process. The results of the study are expected to

provide a comprehensive picture for policymakers, school principals and education stakeholders in improving the quality of the learning environment that supports academic achievement. The urgency of this research is even stronger considering that secondary education is a strategic phase in preparing a productive and competitive generation. Therefore, understanding environmental influences as a determinant of academic achievement is an important step for policy interventions that are empirically based and relevant to the local context.

RESEARCH METHOD

This study employed a descriptive survey design of correlational type, chosen to obtain accurate, systematic and objective information on the relationships among the variables investigated (Duckett, 2021; Hadi-Moghaddam et al., 2021; Krieglstein et al., 2022). The approach enabled the researcher to describe existing conditions in public senior secondary schools in Kwara State without manipulating any variables, thereby allowing a realistic assessment of how environmental factors relate to students' academic achievement. The study population comprised all students enrolled in the State's public senior secondary schools, and a multi-stage sampling technique was adopted to draw a representative sample (Shi et al., 2023; Verkerken et al., 2023; Zhou et al., 2022). Through stratified, purposive, cluster and simple random sampling procedures, 20 public senior secondary schools and 300 students were selected for participation.

Data were collected using two primary instruments: the Environmental Factors Questionnaire (EFQ) and the Students' Academic Achievement Proforma. The EFQ, structured on a 4-point Likert scale, was used to obtain information on class size, school facilities, peer interaction and parental involvement as perceived by students. The academic achievement proforma was used to extract WAEC results in Mathematics and English Language from 2019 to 2023 for the sampled students. Both instruments were validated by four experts in Educational Management and Counselling, and the reliability of the EFQ was confirmed through a test–retest procedure that yielded a correlation coefficient of 0.72, indicating satisfactory stability of the instrument over time.

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS). Descriptive statistics—frequency, percentage, mean and standard deviation—were used to answer the research questions and provide a clear summary of the patterns observed (Carrière-Swallow et al., 2023; Fulk, 2023; Soneson et al., 2023). Inferential statistics, specifically the Pearson Product-Moment Correlation (PPMC), were applied to test the three hypotheses formulated for the study at the 0.05 significance level. This statistical approach was suitable for determining the strength and direction of relationships between environmental factors and students' academic achievement, thereby aligning with the correlational nature of the study design.

RESULT AND DISCUSSION

Result

Research Question 1: What environmental factors influence students' academic achievement in public senior secondary schools in Kwara State?

Table 1. Environmental factors influencing students' academic achievement

S/N	Statement	SA	A	D	SD	Mean	Std.

							Dev.
1	I learn more in a class with a low or moderate population (below 40 students)	85(28.3)	110(36.7)	75(25)	30(10)	3.29	0.60
2	The population of the students in the class determines my performance in tests or examinations	90(30)	120(40)	60(20)	30(10)	3.17	0.63
3	In larger classes (above 40 students), I find it difficult to participate in discussions	100(33.3)	95(31.7)	70(23.3)	35(11.7)	3.44	0.62
4	Larger class sizes negatively affect my academic performance	80(26.5)	105(35)	85(28.3)	30(10)	2.74	0.83
5	In smaller classes (below 40 students), I receive more feedback from my teachers	96(32)	104(34.7)	60(20)	40(13.3)	3.18	0.56
6	The school has a functional library for student use	89(29.7)	109(36.3)	65(21.7)	37(12.3)	3.12	0.65
7	The school has alternative power sources during electricity outages	93(31)	112(37.3)	60(20)	35(11.7)	2.80	0.82
8	There are working fans in the classrooms for comfortable learning	91(30.3)	111(37)	62(20.7)	36(12)	2.87	0.80
9	The school has computers for teaching relevant subjects	88(29.3)	110(36.7)	68(22.4)	34(11.6)	2.94	0.67
10	The school laboratory is functional and equipped for practical use	75(25)	115(38.3)	80(26.7)	30(10)	3.38	0.56
11	My peers positively influence my academic performance	90(30)	100(33.3)	80(26.7)	30(10)	3.17	0.62
12	Group study sessions help me understand subjects better	100(33.3)	100(33.3)	65(21.7)	35(11.7)	3.31	0.57
13	I complete assignments on time when studying with peers	88(29.3)	110(36.7)	67(22.3)	35(11.7)	2.93	0.71
14	I seek academic help from peers when needed	105(35)	90(30)	35(11.7)	70(23.3)	2.77	0.72
15	I feel more confident when collaborating with peers	110(36.7)	95(31.7)	60(20)	35(11.7)	2.92	0.82
16	My parents are actively involved in my academic life	80(26.7)	120(40)	70(23.3)	30(10)	3.35	0.52
17	My parents help with homework or study materials	93(31)	105(35)	35(11.7)	65(21.7)	3.12	0.62
18	My parents attend school activities to support my education	115(38.3)	85(28.3)	65(21.7)	35(11.7)	3.17	0.63
19	I regularly communicate with my parents about my schoolwork	108(36)	68(22.7)	92(30.7)	32(10.7)	3.29	0.56
20	Parental involvement helps me manage academic responsibilities	91(30.3)	111(37)	62(20.7)	36(12)	2.34	0.88
Grand Red = 3.07							

Table 1 illustrates the influence of environmental variables on the academic performance of public senior secondary school students in Kwara State. The data indicate that class size, learning facilities, peer interaction, and parental involvement contribute to variations in student academic achievement. Statements 1, 2, and 3 highlight the role of class size, with relatively high mean scores of 3.29, 3.17, and 3.44. Students respond clearly to this trend. The values suggest that learners perform better in classrooms with fewer than 40 students and perceive larger class sizes as limiting participation and learning outcomes.

Statements 6–10 assess the availability and quality of facilities such as libraries, electricity, ventilation, computers, and laboratories. A functional library (mean = 3.12) and laboratory (mean = 3.38) positively support the learning process. However, fan availability (mean = 2.87) and access to alternative power supply (mean = 2.80) scored lower, indicating the need for improvement to ensure a more conducive learning environment. Statements 11–15 focus on peer interaction, yielding mean scores of approximately 3.17. This pattern is consistent. Study groups, peer support, and collaborative completion of assignments appear to contribute meaningfully to student academic progress. Meanwhile, Statements 16–20 show consistently strong parental involvement ratings, ranging from 3.12 to 3.35, which suggests that parental support reinforces learners' academic responsibilities. Even so, Statement 20, which examines parental support in time management, received a lower mean of 2.34, indicating an area requiring further development.

Research Question 2: What is the level of student academic achievement in public senior secondary schools in Kwara State?

Table 2. Students' academic achievement in public senior secondary schools in Kwara State

S/N	Statement	2019	2020	2021	2022	2023	Mean	Remarks
1	Mathematics	3.8	3.6	3.7	3.5	3.6	3.64	High
2	English	3.2	3.3	3.1	3.4	3.3	3.26	High

Table 2 presents the mean scores of students' academic performance in Mathematics and English Language, recorded at 3.64 and 3.26, respectively. The results indicate that both subjects fall within a high achievement category, with Mathematics slightly outperforming English. This finding suggests that students demonstrate a relatively strong mastery of core subjects. The pattern appears consistent. Overall, the data reflect a generally high level of academic performance among public senior secondary school students in Kwara State.

Hypotheses Testing

HO1: There is no significant relationship between environmental factors and students' academic achievement in Kwara State public secondary schools.

Table 3. Pearson correlation between environmental factors and students' academic achievement

Variable	N	Mean	Std. Dev.	Df	r	p-value	Decision
Environmental factors	300	54.3	6.52	298	0.720	0.001	H_o Rejected
Students' academic achievement	300	24.7	3.35	—	—	—	—

Table 3 shows that the calculated P-value obtained was 0.001, less than the alpha value of 0.05, which is a significance level with 298 degrees of freedom. Findings indicated a positive correlation between the two variables, which was statistically significant (r 0.72). Therefore, the null hypothesis of no significant relationship between environmental factors and students' academic achievement in public senior secondary schools in Kwara State was rejected, and the alternative hypothesis was upheld. Thus, there was a significant relationship between environmental factors and students' academic achievement in public senior secondary schools in Kwara State.

H02: There is no significant relationship between class size and students' academic achievement in public senior secondary schools in Kwara State.

Table 4. Pearson correlation between class size and students' academic achievement

Variable	N	Mean	Std. Dev.	Df	r	p-value	Decision
Class size	300	28.2	3.21	298	0.780	0.001	H_o Rejected
Students' academic achievement	300	24.7	3.35	—	—	—	—

Table 4 shows that the calculated p-value of 0.001 is lower than the alpha threshold of 0.05 at 298 degrees of freedom. This result indicates a statistically significant positive relationship between the two variables, supported by a correlation coefficient of r = 0.780. This value indicates a strong relationship. Based on the statistical outcome, the null hypothesis stating that there is no significant relationship between class size and students' academic achievement in public senior secondary schools in Kwara State is rejected. The alternative hypothesis is accepted. These findings confirm that class size has a significant influence on students' academic achievement in public senior secondary schools in Kwara State.

H03: There is no significant relationship between school facilities and students' academic achievement in public senior secondary schools in Kwara State.

Table 5. Pearson correlation between school facilities and students' academic achievement

Variable	N	Mean	Std. Dev.	Df	r	p-value	Decision
School facilities	300	29.7	3.02	298	0.743	0.001	H_o Rejected
Students' academic achievement	300	24.7	3.35	—	—	—	—

Table 5 shows that the calculated P-value obtained was 0.001, less than the alpha value of 0.05, which is a significance level with 298 degrees of freedom. Findings indicated a positive correlation between the two variables, which was statistically significant (r 0.743). Therefore, the null hypothesis of no significant relationship between school facilities and students' academic achievement in public senior secondary schools in Kwara State was rejected, and the alternative hypothesis was upheld. Thus, there was a significant relationship between school facilities and students' academic achievement in public senior secondary schools in Kwara State.

Discussion

The results of the study show that environmental factors have a significant relationship with students' academic achievement in public high schools in Kwara State. These findings are in line with the objectives of a study that examined the relationship between class size, school facilities, peer interaction, and parental involvement with learning outcomes. The relevance of these findings is even stronger as the region has reported low academic performance in external assessments such as WAEC. Thus, this study provides empirical evidence showing that the learning environment is an important determinant of academic success. The following discussion sections are prepared based on the main themes of the research results and critically analyzed with relevant theories and literature.

Class sizes have been shown to have a significant effect on student participation, interaction quality, and learning outcomes, especially when the number of students is below 40. These findings are consistent with Vygotsky's theory of social learning which emphasizes the role of interpersonal interaction in learning (Haglund et al., 2021). Demszky et al. (2024) reports that smaller classes allow for more personalized feedback, in line with the study's findings. Herman et al. (2021) It also notes that large classrooms can interfere with discipline and learning effectiveness. Even so, Aidoo (2023) affirms that the impact of large classrooms can be minimized when competent teachers and adequate resources are available. This difference suggests that the influence of class size can be strengthened or weakened by the quality of pedagogy and classroom management.

Adequate school facilities, such as libraries, laboratories, and access to electricity, increase student motivation and learning relevance. These findings are in line with Bronfenbrenner's ecological approach that places the physical environment as a factor that plays a direct role in individual development and learning (Crandon et al., 2022; El Zaatari & Maalouf, 2022; Martín-Rodríguez et al., 2024). Study Shah et al. (2022) demonstrate a consistent pattern where adequate facilities encourage the emergence of innovative learning methods and more active student engagement. Therefore, improving the quality of school facilities and infrastructure is a strategic priority in improving the quality of learning.

Peer interaction also makes a real contribution to academic engagement. The cooperative learning approach is relevant in these findings because it places group work and discussion as components of learning. The results of this study support the principle of Vygotsky's proximal development zone, and are reinforced by the research Xu et al. (2023) which shows that peer influence can increase students' motivation and learning attitudes. However, the influence of peer groups can also be negative if the evolving norms do not support the learning culture, so teachers need to manage group dynamics strategically.

In addition, parental involvement has a positive relationship with academic achievement. These findings support the theory of planned behavior Hagger et al. (2022) which underlines the role of social support in achieving goals. Li & Ding (2025) It shows that parental involvement improves students' self-efficacy and time management, although in the findings of this study the time management aspect still needs attention. Study by Hadi (2021) also shows a consistent pattern that parental involvement contributes to students' academic motivation and confidence.

Practically, this study provides direction for policymakers and school principals in developing a strategy to improve quality through the management of environmental

factors. Optimizing class sizes, improving facilities, strengthening positive peer interactions, and increasing parental involvement are strategic interventions that can be carried out. Theoretically, these findings enrich the educational literature in Sub-Saharan Africa and affirm that the learning environment is a key element in the framework of educational ecology and social constructivism. This research as a whole shows that environmental factors are interconnected in influencing students' academic achievement, so education reform needs to be carried out through a systemic approach. Further research directions may include exploration of interactions between environmental variables and cross-regional comparative studies to broaden the scope and strengthen the relevance of findings.

CONCLUSION

This study revealed that environmental factors have a significant relationship with students' academic achievement in public high schools in Kwara State. The findings show that smaller class sizes, the availability of adequate school facilities, parental involvement, and positive interactions with peers consistently contribute to improved student learning outcomes, particularly in core subjects such as Mathematics and English. The quality of a conducive learning environment is reflected in students' perception of ease of participation in small classes, the availability of functional laboratories and libraries, and emotional and academic support from parents. These results confirm the direct relationship between the condition of the educational environment and academic success, in line with the purpose of the research that wants to examine environmental factors as determinants of learning outcomes. Therefore, improving the educational environment is an important foundation in designing a strategy to improve the quality of sustainable learning in the context of public schools.

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