PARENTAL INVOLVEMENT AND SECONDARY SCHOOLS STUDENTS' ACADEMIC ACHIEVEMENT IN CHEMISTRY IN ATIBA LOCAL GOVERNMENT AREA OF OYO STATE

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Abstract

This study examined parental involvement and secondary school students' academic achievement in chemistry within the Atiba Local Government Area of Oyo State. Expo facto of survey research design was adopted for this study. A total number of 100 students participated in this study using a random sampling technique. The instruments used were Parental Involvement Questionnaire, Home Environment Questionnaire (r= 0.78) and Chemistry Achievement Test (r=0.89). Pearson's product moment correlation and Multiple regression analysis were used to analyze the data. The result of findings showed that the relationship between parental involvement and students' achievement in chemistry is significant and not very weak (r=0.429; p<0.05). The result of findings revealed that the variable used in this research was found to significantly contribute to students' achievement in chemistry ($F_{(5,499)}$ =39.237 at p<0.05. It was also found that parental involvement and home environment (β=4.41; p<.05) jointly contributed to students' achievement in chemistry. This study recommended that the government, teachers, students, parents and other stakeholders should consider parental involvement and home environment in teaching and learning process to improve learning outcomes.

Keywords: Chemistry, Achievement, Parental involvement, Home environment, Laboratory, Apparatus.

Introduction

The prominent and highly regarded status accorded to science education systems in many countries of the world, including Nigeria, is arguably well justified. Within the context of science education, chemistry has been identified as a very important school subject, and its importance in the scientific and technological development of any nation has been widely reported It is as a result of the recognition accorded to chemistry in the development of both the individual and the nation that it has become a core subject among the natural sciences and other science-related courses in the Nigerian educational system (Federal Republic of Nigeria, 2013).. Its inclusion as a core subject in science in the secondary school calls for the need to teach it effectively. This is because effective science teaching can lead to the attainment of scientific and technological greatness.

Chemistry is one of the important ingredients of technology. Chemistry has been defined by Ababio (2018) as the study of the nature and properties of matter. It is a branch of science that deals with the practical and experimental understanding of natural phenomena. Osibanjo (2016) asserts that Chemistry is introduced into the curriculum content of secondary schools because of its educational value, relevance to the needs of the individual learner and society as a whole. It was as a result of the recognition given to chemistry in the development of the individual and the nation that it became a core subject among the natural sciences and other science

related courses in the Nigerian education system (Olatunbosun, 2024).

Chemistry teaching can only be result-oriented when students are willing, and the teachers are favourably disposed, using the appropriate methods and resources in teaching the students. With the current increase in scientific knowledge in the world over, much demand is placed, and emphasis is laid on the teacher, the learner, the curriculum, and the environment in the whole process of teaching and learning of science (Olatunbosun, 2024). He further asserted that despite the importance of chemistry to mankind and the efforts of researchers to improve its teaching and learning, the achievement of students in the subject remains low in Nigeria.

In today's fast-paced society, families are finding it more difficult to stay connected with their children's education (Epstein, 2023). Increasingly, in the modern family, both parents work outside of the home, and many families are not even led by a parent, but by a grandparent, guardian, or some other adult (Benson, 2025). In what is sometimes called a traditional family environment, parents, usually including a stay-at-home mother, were able to monitor the school work of their children carefully and in turn to ensure to a much greater degree than in today's nontraditional family that student performance remained high in factors such as engagement, academic achievement, attendance and attitude toward school (Deslandes & Bertrand, 2025).

Report cards were valued and trusted in the home as an accurate reflection of academic achievement (Guskey, 2024). Parents were able to keep in touch with the school and the life of their children in the institution, and to monitor success or lack therefore when children came home from school, homework had to be completed, assignments finished, snacks eaten, more often than not at the kitchen table under the watchful eye of a parent (Deslandes & Bertrand, 2025). Just as this traditional family may have existed, it may also have been a figment of society's collective imagination. Many parents worked closely with their children, in cooperation with the school, and marked academic success occurred (Epstein, 2023). With the changes in family life and indeed in societal makeup, schools are now finding it increasingly difficult to keep parents informed of and actively engaged in the day-to-day progress of their children (Deslandes & Bertrand, 2025). Teachers and administrators are discovering that the support they once received in getting students to do their homework is not there because the parents are not home to insist that students complete their assignments. Even if parents are present, homework turns out to be a major issue within the home environment (Allen, 2024). Epstein (2023) and Allen (2024) claim that increased parent involvement will result in greater student engagement, productivity and academic success. Epstein's research, for the most part, relates to the influence of parent involvement in the lives of elementary-aged students. Very little of Epstein's research deals with the issue of parent involvement and its impact on the educational lives of high school aged children

Suleiman (2025), concluded that parents of high socio-status like doctors and lawyers, who have good jobs and earn high income, give more motivation to their children and they perform well in their academics than students with low occupational income parents. High income earner parents encourage their children to work hard in school when they are not performing up to expectations; they encourage their children to work and set ambitious educational goals like Medicine, Engineering, Lecturing, and so on, since they are financially buoyant.

Statement of the Problem

Chemistry is a very vital subject for science and technological development,

and still, it's teaching and learning, as well as students' poor academic achievement, have become a source of concern to all stakeholders. Several attempts have been made to improve students' achievement in chemistry by carrying out investigations on various factors that influence learning outcomes. Therefore, this study aims to examine the influence of parental involvement on secondary school students' academic achievement in chemistry. The influence of parental involvement, which has not been extensively researched upon was examined in this study.

Significance of the Study

The research should help to clarify the perception of the general public to ascertain the influences of parental involvement on the academic achievement of students in chemistry and how they can be eliminated. The outcome of this research work will enable the state government to be more enlightened on the improvement of academic achievement of students and use it in school curriculum planning and implementation. By virtue of parents contributing to the academic nature of their children, the study will persuade the parents to improve the academic nature of their children. The individual differences of students will be accurately taken into consideration by the teachers, and students will benefit from higher achievement in their studies.

Scope of the Study

The scope of this research examined the impact of parental involvement on secondary school students' academic achievement in chemistry, which was carried out in five schools of the Atiba Local Government area, Oyo State. It was delimited to only chemistry as a school subject. The sample selections were drawn from public and private schools.

Hypotheses

The following hypotheses were considered in the study.

H_{01}: There is no significant relationship between parental involvement and students' academic achievement in chemistry.

H_{02}: There is no significant relationship between students' home environment and academic achievement in chemistry.

H_{03}: There is no significant joint contribution of parental involvement and students' home environment on their academic achievement in chemistry.

Methodology

Research Design

The study was conducted using an ex post facto investigation utilizing a survey research approach. It adopted a descriptive research design to systematically examine existing conditions without manipulating variables. A sample survey method was employed, given the impracticality of studying the entire population. This approach is widely regarded as suitable in the fields of education, arts, and social sciences, particularly for gathering data from large and diverse populations efficiently and objectively. The variables used in the study include parental involvement, student home environment and students' academic achievement in chemistry.

Population

The population for this study comprised both male and female senior secondary school students (SS2 and SS3 students) selected from five schools offering chemistry as one of their subjects in the Atiba local government area of Oyo state.

Sampling Techniques and Sample

The sample for this study comprised fifty chemistry students in senior secondary schools in the Atiba local government area

of Oyo state, using random sampling techniques.

Research Instruments

The three instruments used for this study were Parental Involvement Questionnaire (PIQ), Home Environment Questionnaire (HEQ) and Chemistry Achievement Test (CAT).

The first part of the questionnaire had information on personal data and the other section had ten items on PIQ and ten items on HEQ, eliciting responses on parental involvement and students' home environment respectively. The items on both PIQ and LEQ were measured on a four-point scale ranging from Strongly Agree, Agree, Disagree and Strongly Disagree format.

Chemistry Achievement Test (CAT) was constructed by the researcher based on some selected SS2 and SS3 Chemistry topics which the students must have been taught previously by their teachers. The instrument consists of twenty multiple choice questions with four alternatives, one correct response, and three distractors. The students were required to provide just an answer to each of the questions

Table 1. Table of Specification for CAT

S/N	Topics	Knowledge	Understanding	Application	Total
1.	Separation Techniques	2	1	1	4
2.	Chemical combination	2	1	1	4
3.	Acid, Base, and Salt	1	2	2	5
4.	Rate of reaction	2	1	1	4
5.	Chemical Equilibrium	1	1	1	3
	Total	8	6	6	20

Scoring of PIQ and HEQ

Both PIQ and HEQ contain items structured based on the 4-point Likert scale of SA= Strongly Agree, A= Agree, D= Disagree and SD =Strongly Disagree. The value of, (4) was assigned to SA, (3) to Agree, (2) to Disagree and (1) to Strongly Disagree CAT was scored by awarding one mark (point) to each correct response made by the students and zero for wrong responses.

Validity and Reliability of Instruments

For research to be meaningful and dependable, the instrument must be properly structured, comprehensive, and constructed in the least ambiguous ways. According to Araoye (2003), validity is the degree to which an instrument measures what it is supposed to measure.

Validation of the questionnaire, both PIQ and LEQ, were done by presenting it to experts in the field of psychology, and CAT was presented to some chemistry teachers for face and content validity. Irrelevant items were discarded and others were restructured and modified.

The reliability was obtained by administering the questionnaire and achievement test on 30 students who were not part of the study. The scores were used to determine the reliability using Cronbach's alpha and Kuder-Richardson formula 20 (KR-20). The reliability values of 0.78 and 0.89 were obtained respectively.

Procedure for data collection

The researcher personally collected the data with the assistance and cooperation of the sampled schools' Chemistry teachers. The administration of the instrument was made during the school periods and the instruments were collected at the spot on each days of administration.

Procedure for data analysis

The data collected were analysed using descriptive and inferential statistics.

Pearson product moment correlation and multiple regression analysis were adopted in answering the research questions.

H_{01}: There is no significant relationship between parental involvement and students' academic achievement in chemistry.

Results

Table 2: Relationship between parental involvement and students' academic achievement in chemistry.

	Mean	Standard Deviation	N	r	Sig
Chemistry achievement	15.67	1.557	500	0.429	0.000*
Parental involvement	10.4	2.388			

Table 2 showed the relationship between students' academic achievement and parental involvement in children's education. The table revealed that the relationship between parental involvement and students' achievement is significant and not very weak ($r=0.429$; $p<0.05$).

H_{02}: There is no significant relationship between students' home environment and their academic achievement in chemistry.

Table 3: Relationship between students' home environment and students' academic achievement in chemistry.

	Mean	Standard Deviation	N	r	Sig
Chemistry achievement	15.67	1.557	500	0.304	0.000*
Home environment	1.34	0.534			

Table 3 showed that the relationship between student/ home environment and students' academic achievement is significant and it is negative ($r= 0.304$; $p<0.05$).

H_{03}: There is no significant joint contribution of parental involvement and home environment on students' academic achievement in chemistry.

Table 4: Joint contribution of parental involvement and students' home environment on academic achievement in chemistry

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5177.940	2	1035.588	39.237	.000(a)
	Residual	13038.242	494	26.393		
	Total	18216.182	499			

R= 0.553
R square= 0.284
Adjusted R Square= 0.277
Std. Error of the Estimate 5.13743
a Predictors: (Constant), Parental involvement, students' home environment
b Dependent Variable: achievement

Table 4 showed that r value 0.533 in the table above is significant ($F_{(5,499)}=39.237$; $p<0.05$). With these results, there is a significant joint contribution of parental involvement and home

environment to students' achievement in Chemistry

Discussion

The result of this finding from Table 2. revealed that there is a significant positive relationship between students' achievement in chemistry and parental involvement. This aligned with Epstein (2023) and Allen (2024) claiming that increased parent involvement will result in greater student engagement, productivity and academic success. This was in agreement with Durant (2021), who writes that parental involvement in children's schooling is an important component of their early school success. It was also in consonance with the view of Nye (2025) who supports the use of parental involvement to improve children's academic achievement.

The result of this finding from Table 3 revealed that there is a significant positive relationship between students' achievement in chemistry and home environment. This agrees with the view of Farombi (2010). The home environment or family background of students affects their academic performance (Ajila and Olutola 2023). The home environment sharpens the child's initial view of learning. Parents' beliefs, expectations and attitudes about education have a profound early impact on students' conceptions of the place of education in their lives. Children in poverty often face problems at home and at school that compromise their learning (Cabello and McLoyd, 2020, Evans and English, 2002). At home, they might have parents who do not set high educational standards for them, who are incapable of reading to them and who do not have enough money to pay for educational materials and experiences such as books and trips to zoos and museums. Direct academic support and establishment of supportive home environments as well as educational expectations encourage learning and school engagement (Claudia *et al.*, 2024)

With the results from Table 4, there was a significant joint contribution of parental involvement and home environment to students' achievement in Chemistry. This implies that home environment and parent involvement jointly contribute to student achievement in chemistry. It was in consonance with the view of Nye (2025) who supports the use of parental involvement to improve children's academic achievement.. This was in line with the view of Afolabi (2024), who investigated school factors and learner variables as correlates of senior secondary chemistry achievement in Ibadan found a significant contribution of home facilities on students' learning outcomes. Contemporary comparative studies indicate that, on average, private schools tend to demonstrate *higher student performance outcomes* than public schools—often attributed to differences in resources, learning environments, and school management structures that support academic success (Ali & Raza, 2024). Research has also found that private schooling is associated with higher achievement in core subjects such as mathematics and sciences, with advantages especially visible among students from lower socioeconomic backgrounds, although the sources of these effects are complex and involve both school composition and family support factors (Lin, 2025)

Conclusion and Recommendations

Parental involvement and home environment are parts of major determinants of students' achievement in chemistry. The variables examined in this study revealed the influence of parental involvement and home environment on students' achievement in chemistry. It was discovered that parental involvement in children's education influences students' achievement in chemistry and students whose parents are involved in child education have greater advantages. The

home environment has a significant influence on student achievement in chemistry and students in homes where facilities are sufficient have higher advantages.

Therefore, government and non-governmental agencies should make policies that will mandate parental involvement in children's education. Parents should be encouraged to spend more time with their children at home, especially in their education. Family planning education should be given to concerned individuals to reduce the size of families in order to foster the academic achievement of students. Government and other concerned authorities should provide accommodation for all science students in the schools and boarding should be made compulsory for science students. Parents should also comply with the government to make boarding compulsory for science students. Students should also make use of available materials at home to enhance their achievement in chemistry. Teachers should also make use of instructional materials to foster the teaching and learning process. More facilities should be provided by the government and concerned authorities to foster teaching and learning outcomes.

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