Gender And Peer Influence as Determinants of Junior Secondary School Students' Academic Performance in Basic Science in Afijio Local Government Area, Oyo State

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Abstract- ***There is dearth of conclusive research findings on gender and peer influence on students' academic performance in Basic Science. This paper thus investigated gender and peer influence on students' performance in Basic Science in Afijio Local Government Area of Oyo state, Nigeria. A descriptive survey research design was employed for the study. Simple random and proportionate to size sampling techniques was used to select 300 Junior Secondary School Two (JSS2) students. Data was collected using a self-designed questionnairetitled– "Gender, Peer Influence and Academic Performance in Basic Science Questionnaire (GPIAPBSQ, r = .835). Three null hypotheses were tested at 0.05 level of significance. T-test, Pearson product Moment Correlation and Multiple Regression Analysis were used to analyse the data collected. The findings revealed that gender has no significant influence on students' academic performance in Basic science. However, there was a significant but negative peer influence onstudents' academic performance in Basic science. Gender and peer influence had significant joint contribution to students' academic performance in Basic science. It was therefore recommended amongst others that parents, guardians and teachers should ensure that students have positive peer groups that can improve on their academic performance in Basic Science.***

Indexed Terms- ***Gender, Peer influence, Students' academic performance in Basic Science***

I. INTRODUCTION

Academic performance reflects the extent to which individuals in educational settings achieve their short- or long-term academic goals (Brew et al., 2021). It represents the degree to which students fulfil the objectives of their education, encompassing mastery of subject content and the development of critical skills (Senyametor et al., 2023). Academic performance involves the ability to study and retain information, connect facts to form broader knowledge patterns, think critically about information, and communicate ideas effectively (Tadese et al., 2022). Kocsis and Molnár (2025) emphasise that academic performance serves as a primary indicator of the effectiveness and success of educational institutions or programs. Schools assess academic progress through various assessments, including weekly quizzes, mid-term assessments, term examinations, and standardised tests such as the Junior Secondary Certificate Examination (JSCE) (Briones et al., 2022). In junior secondary schools, these tests evaluate students' developed skills and knowledge, particularly in subjects like Basic Science, which is critical for laying the foundation for advanced science education.

Basic Science, a core subject at the junior secondary level, introduces students to foundational concepts in physics, chemistry, and biology, preparing them for senior secondary education. Han et al. (2021) highlight that Basic Science aims to enhance students' scientific cognition, foster an understanding

of the nature of science, and develop essential scientific skills, such as observation, experimentation, and critical thinking, alongside fostering a positive attitude toward science. The subject equips students to understand the role of science in everyday life and its impact on the world (Tadese et al., 2022). Despite its importance, students' performance in Basic Science in Oyo State, particularly in Afijio Local Government Area, has been consistently poor, as evidenced by low pass rates in the JSCE. According to the Universal Basic Education Commission (UBEC, 2019), only a small percentage of candidates in Oyo State passed Basic Science between 2017 and 2019. Studies by Adewuyi (2024) confirm this trend, noting a significant decline in performance that raises concerns among educational stakeholders. Factors contributing to this decline include inadequate e-learning infrastructure, poor study habits, teacher effectiveness, and lack of instructional resources. This study focuses on examining the roles of gender and peer influence as potential contributors to students' academic performance in Basic Science.

Gender, defined as the psychological, behavioural, and socio-cultural characteristics associated with being male or female (Wrigley-Asante et al., 2023), is a critical factor in educational outcomes due to differences in socialisation and expectations for boys and girls. Research by Escolano-Pérez and Bestué (2021) found no significant gender-based differences in academic achievement in Basic Science in regions like Enugu, Rivers, and Ogun States. Similarly, Tandrayen-Ragoobur and Gokulsing (2022) observed no notable gender differences in science literacy among junior high school students in Indonesia. However, these studies suggest that socio-cultural factors, such as access to resources, parental expectations, and classroom dynamics, may influence gender-related outcomes in specific contexts. In Oyo State, particularly in Afijio Local Government Area, there is a lack of comprehensive research on how gender impacts Basic Science performance. This study addresses this gap by investigating whether gender differences affect students' academic outcomes in Basic Science, considering local socio-cultural factors such as gender stereotypes and classroom participation patterns.

Peer influence refers to the social pressure exerted by peers to encourage students to align their attitudes, values, or behaviours with group norms (Olawole & Olugbemi, 2023). In public secondary schools in Afijio Local Government Area, peer influence can shape students' academic behaviours, study habits, and motivation, positively or negatively impacting their performance (Senyametor et al., 2023). For instance, Adewuyi (2024) found that negative peer pressure, such as prioritising social activities over studies, significantly contributes to poor academic outcomes in subjects like English Language. Conversely, Liu et al. (2022) identified a positive correlation between peer group influence and academic achievement in chemistry in Taraba State, where collaborative study groups enhanced performance. Peer influence in Basic Science may manifest through group study dynamics, peer attitudes toward science, or distractions from academic focus. However, there is limited research on the specific impact of peer influence on Basic Science performance in Oyo State. This study aims to fill this gap by examining the impact of peer interactions on students' academic outcomes in Basic Science.

The problem and consequences of poor academic performance of students in Basic science cut across all and sundry as it is the foundation for science at the senior secondary school level. When students do not perform well in basic science, they would not be science oriented enough to do well in senior school science subjects such as physics, biology and chemistry. There is therefore need to address these problems in a bid to finding lasting solutions. This study was therefore carried out to find out if gender and peer influence have joint significant influence on students' academic performance in Basic science in Oyo state using Afijio local government area as a case study.

II. STATEMENT OF THE PROBLEM

Secondary education is a very critical level of any educational system. This is because it is the bedrock on which higher education is built as the foundation of whatever a child wants to become in life academically is laid here. It is sad to note that the academic performance of students in basic science at

this level is very poor in the country. The issue of poor academic performance of students in Nigeria particularly in science subjects at the secondary level has been of much concern to all and sundry. The problem is so much that it has led to the widely acclaimed fallen standard of education in Afijio Local Government Area and Oyo state at large.

The quality of education depends on so many factors likequality teachers and teaching, government, non-challant attitude towards education and science in particular, inadequate instructional materials. Consequent upon the observed deterioration in the academic performance of secondary school students in public secondary schools, the researcher wonders if gender and peer influence could play a role. Moreover, there is dearth of conclusive findings on the joint contribution of gender and peer influence on students' performance in Basic science. This study is therefore carried out to address this gap in literature.

III. AIM AND OBJECTIVES OF THE STUDY

The aim of this study is to investigate the influence of gender and peer influence on junior secondary school students' academic performance in Basic Science in Afijio Local Government Area of Oyo State, Nigeria. The objectives were to:

1. investigate the influence of gender on students' academic performance in Basic Science;
2. examine peer influence on students' academic performance in Basic Science; and
3. investigate the joint contribution of gender and peer influence onstudents' academic performance in Basic Science.

Hypotheses

Three null hypotheses tested at 0.05 level of significance guided the study, they are:

H01: There will be no significant influence of gender on students' academic performance in Basic Science;
H02: There will be no significant peer influence on students' academic performance in Basic Science; and
H03: There will be no significant joint contribution of gender and peer influence on students' academic performance in Basic Science.

IV. SIGNIFICANCE OF THE STUDY

This study would contribute immensely to teachers, students and parents/guardians. It will also provide awareness on the research topic. The findings of the study should be of benefit to the teachers in that it will help them to understand the role of gender in the place of students' performance. It will also help them avoid gender stereotype when teaching and dealing with their students. Lastly, it will make them swing into action into ensuring that positive peer groups are created for students to boost their academic performance. The students would also benefit in that the findings of the study would help them realize how their gender and peer group might be influencing their academic performance. Parents/guardians could use the findings of the study to avoid gender stereotyping among their children/wards and also ensuring that their children keep the right peer groups.The study would also contribute to knowledge upon publication.

V. SCOPE OF THE STUDY

This research was basically on the influence of gender and peer influence on the academic performance of the junior secondary school students in Basic Science. Gender, peer influence and academic performance were all studied as single variables. The geographical study area is Afijio local government area of Oyo state.

VI. METHODOLOGY

A descriptive type of survey design was employed to carry out the study. This design was considered suitable for the study in that it allows the researcher to describe the characteristics of the population without any variable manipulation. The target population used in the study consisted of all the junior secondary school two (JSS2) students in Afijio Local Government Area, Oyo State. The sample for this study consisted of 300 junior secondary school two (JSS2) students from all the four schools that were selected for this study, having ensured that they were co-educational. From the students' population, 140 were males and 160 were females. The selection procedure adopted for the participants was based on random and purposive sampling techniques.

Primary data was obtained through the use of a self-constructed questionnaire. The questionnaire which was titled – "Gender, Peer Influence and Academic Performance in Basic ScienceQuestionnaire (GPIAPBSQ)" was used to collect data for the study. The questionnaire consisted of ten (10) items. Section one which has to do with the demographic data consisted of three (3) items (gender, age and last term result in Basic Science). Section two which has to do with peer influence of the students consisted of seven (7) structured items on the rating scale of strongly disagree (1) to strongly agree (4). The questionnaire was subjected to reliability test using Cronbach's alpha and a value of .835 was obtained. This value meant that the instrument is reliable.

The questionnaire was mass produced and administered to the three hundred (300) sampled students in junior secondary schools in the local government area of the state and were collected instantly. The data collected were analysed using descriptive statistics to present the demographic data in tables of frequency counts and percentages. However, inferential statistics such as t-test and multiple regression analysis were used to test the hypotheses at 0.05 level of significance.

VII. RESULTS

Table 1: Respondents' Demography (n = 300)

Variables	Frequency	Percentage (%)
Gender		
Male	140	46.7
Female	160	53.3
Total	300	100.0
Age group		
11-13 Years	217	72.3
14-16 Years	59	19.7
17-19 Years	24	8.0
Total	300	100.0
Last Term Result in Basic Science		
Pass (70-100)	51	17.0
Average (50-69)	87	29.0
Fail (below 50)	162	54.0
Total	300	100.0

Source: Fieldwork, 2022

Table 1 reveals that 140 (46.7%) are males, 160 (53.33%) are females. This shows a high dominance of female to male students. About 217 (72.3%) of the students are within 11-13 years of age, 59 (19.7%) are within 14-16 years of age while the remaining 24 (8%) are within 17-19 years of age. This also implies that majority of the male and female students in the local government area are young. Lastly, the last term result of the students in Basic science confirms the trend of poor academic performance of students in the subject in the local government area and the state at large. The results shows that only 51 (17%) of the students had pass (scores of 70 and above) in Basic science in their last term examination. About 87 (29%) of the students had average scores (50-69) in the subject while a large portion of the students, 162 (54%) failed the subject. This suggests that majority of the students are not finding their feet in the subject.

Test of Hypotheses

Ho1: There will be no significant influence of gender on students' academic performance in science

Table 2: T-test Analysis of Influence of Gender on Students' Performance in Basic Science

Student's gender	N	X	SD	Df	t-cal	Sig.	Decision
Male	140	11.50	9.41	298	2.01	.18	Not Significant
Female	160	12.00	5.88				

Source: Fieldwork, 2022

Table 2 shows the t-test analysis of the influence of gender on students' academic performance in Basic Science. The table shows that there is no significant influence of gender on students' performance in Basic science (t-cal = 2.01., Df = 298, p >.05). The null hypothesis which states that there is no significant influence of gender on students' performance in Basic science was therefore accepted.

Ho2: "There is no significant peer influence on students' performance in science".

Table 3: Pearson Product Moment Correlation Showing the Significant Peer Influence on Students' Academic Performancein Basic Science

N = 300
Students' academic performance in Basic Science
Peer Influence Pearson (r) = -.171**
Significance
.007
**Critical value highly significant at P<0.05 and P<0.01
Source: Fieldwork, 2022

The data in table 3 reveals a high statistical significant correlation (relationship) between peer influence and students' academic performance in Basic science (P<0.05). It is an indication peer influence has a major impact on the academic performance of students in basic science in the study area. However, the negative value of r shows that peer influence has a negative correlation or relationship with students' academic performance in the subject.

The rcalculated = 0.171
Degree of freedom (Df) = n – 2 (i.e. 300 - 2 =298), because one df goes for X and one df goes for Y variable.
Checking the correlation coefficient table, rtabulated or rcritical = r0.05(2), 298 = 0.142.

Decision: Since the p-value (0.007) of the Pearson Product Moment Correlation is far less than 0.05 or since the r calculated value of 0.171 is greater than the r tabulated value of 0.142, the null hypothesis (H0) is therefore rejected.

Conclusion: There is therefore a significant negative impact of peer influence on students' academic performance in Basic science in the Afijio Local government area of Oyo state.

H03: There will be no significant joint contribution of gender and peer influence on students' academic performance in Basic Science

Table 4: Multiple Regression Analysis Showing the Joint Contribution of Gender and Peer Influence on Students' Academic Performance in Basic Science

Model		Sum of Squares	Df	Mean Square	F	Sig.	Remark
1	Regression	4.396	3	1.465	3.291	0.021	Significant
	Residual	107.302	296	.445			
	Total	111.698	299				

R = 0.654
R square = 0.428
Adjusted R Square = 0.406
Standard Error of the Estimate = 0.00054
Source: Fieldwork, 2022

Table 4 shows a significantjoint contribution of gender and peer influence on students' academic performance in Basic Science in public secondary schools in Afijio local government Area of Oyo State (F3, 296 = 3.291 is significant (.021) at P<0.05 which means that the regression model is a good fit of the data. This results imply that gender and peer influencejointly influence students' academic performance in Basic Science.The model summary shows the R value to be 0.654; R2 = .428; Adjusted R2 = .406 and Standard Error of the Estimate = 0.00054. The adjusted R2 value which gives a more accurate or true prediction shows that 40.6% (.406) of the variation in students' academic performance in Basic science is explained only by the independent variables (gender and peer influence) which are to keep in the model. The remaining 59.5% are due to errors or indices not included in the model. Lastly, the low standard error value shows that the model is more precise. The amount is also small enough to be easily ignored.

VIII. DISCUSSION OF FINDINGS

Analysis of the collected data indicates that gender does not significantly influence the academic performance of secondary school students in Basic Science in Afijio Local Government Area, Oyo State.

This finding may be attributed to increased awareness and sensitisation efforts that emphasise the importance of both genders in Science, Technology, Engineering, and Mathematics (STEM) fields. These initiatives appear to have significantly empowered female students, enabling them to perform comparably to their male counterparts. Similar findings were reported by Wrigley-Asante et al. (2023), who found no significant gender-based differences in academic performance in STEM subjects among students in Enugu, Rivers, and Ogun States.

Additionally, Escolano-Pérez and Bestué (2021) observed no significant difference in the mean achievement scores of male and female primary three pupils taught Basic Science using demonstration, play-way, and traditional instructional methods in Aguata Local Government Area, Anambra State, Nigeria. These consistent results across Nigerian contexts suggest that gender disparities in Basic Science performance may be diminishing due to targeted educational interventions.

The study also revealed a significant but negative peer influence on students' academic performance in Basic Science. This suggests that peer groups in the Afijio Local Government Area are adversely affecting students' performance in the subject, possibly through distractions, negative attitudes toward science, or prioritisation of social activities over academic efforts. Adewuyi (2024) reported similar findings, noting that peer group influence significantly and negatively impacts the performance of secondary school students in the English Language in Nigeria. Likewise, Senyametor et al. (2023) found that peer influence can negatively impact students' behaviour and academic outcomes in a private boarding school in Ghana. In contrast, Han et al. (2021) suggest that peer influence can foster positive outcomes, such as friendly competition and cooperation, which enhance students' science self-concepts, academic self-efficacy, and performance in Basic Science. These conflicting findings highlight the dual nature of peer influence, which can either support or hinder academic success depending on the context and nature of peer interactions.

Finally, the study identified a significant joint contribution of gender and peer influence on students' academic performance in Basic Science. This finding aligns with Liu et al. (2022), who reported significant combined effects of gender and peer influence on students' academic and non-cognitive outcomes in science subjects in China. The interplay of these factors underscores the need for educational strategies that address both gender dynamics and peer interactions to improve academic outcomes in Basic Science.

CONCLUSION

From the findings of the study, it suffices to note that while peer influence is germane to students' performance in Basic Science in Afijio Local Government Area of Oyo state, Nigeria, gender influences little in determining students' performance on the subject.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are given:

1. Parental and guardian's watchdog roles should be encouraged to forestall influence of bad peer associations on students' performance in Basic Science;
2. Teachers should continuously expose students to Basic Science irrespective of gender though the construct is non-determinants of students' academic performance in the subject;
3. Since peer influence exerted greater impact on students' academic performance in Basic Science, proven instructional strategies to sustain cooperative and collaborative approach to teaching and learning should be interjected into the teaching-learning process.

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