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STUDENTS' FAMILY BACKGROUND AND ACADEMIC PERFORMANCE IN JUNIOR SECONDARY SCIENCES IN SECONDARY SCHOOLS IN RIVERS STATE.

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ABSTRACT

This study investigated the influence of family background on students' academic performance in junior secondary sciences among junior secondary schools in Rivers State. Despite numerous interventions to improve science education, disparities in student achievement persist, and little empirical evidence exists on how specific family factors affect performance in this context. A descriptive survey design was adopted, with 200 students sampled using stratified and simple random techniques. Data were collected using the *Family Background and Students' Academic Performance Questionnaire* and analysed with mean, standard deviation, t-test, and ANOVA at 0.05 significance. Results showed that parental education significantly influenced performance, with students whose parents held NCE ($M = 58.73$, $SD = 13.81$) and Degree ($M = 56.06$, $SD = 14.00$) outperforming those with WASC ($M = 55.71$, $SD = 12.59$) or FSLC ($M = 48.79$, $SD = 16.98$). Parental SES, gender, and marital status had no significant effects. The study recommends increased parental engagement and home learning support, highlighting the importance of informed parental involvement for improving student performance.

KEYWORDS: Students', Family Background, Academic Performance, Junior Secondary Sciences, Secondary Schools, and Rivers State.

INTRODUCTION

A variety of factors influence students' academic progress in basic science, including student, school, environmental, and familial backgrounds. While the family plays an important impact, individual student characteristics also influence how students respond to schooling and academic objectives. Recent research has shown that motivation, interest, self-efficacy, learning methodologies, and cognitive ability all influence students' engagement and performance in science topics (Schunk & DiBenedetto, 2020; OECD, 2023). Students that are highly motivated and have positive attitudes towards science are more likely to participate actively in class, persevere in difficult exercises, and achieve better results. In Rivers State, Okeke and Eze (2022) discovered that students who were very interested in science activities performed significantly better in fundamental science than those who were not. Memory, logical

reasoning, and problem-solving abilities are all necessary for comprehending scientific concepts and carrying out experiments. According to Adeyemi and Adeyinka (2021), pupils with superior analytical skills displayed a greater understanding of basic science topics and performed well on both theory and practical exams. Furthermore, self-regulated learning behaviors—such as goal setting, time management, and effective study habits—help children translate parental support into academic success (Zimmerman, 2002; Ogunleye & Oladipo, 2023). These skills enable students to take responsibility for their own learning and improve their academic performance. Schools provide a structured framework for learning, and various school-related variables have a direct impact on pupils' basic science abilities. These include instructor quality, teaching methods, classroom setting, availability of educational materials, and class size (Joseph, 2019; Ibrahim & Lawal, 2020). A supportive learning environment with adequate facilities, functional laboratories, and interactive teaching strategies promotes active learning and improves comprehension (Adeyemi & Olatoye, 2021). When kids learn in well-organised classrooms with adequate resources, they are more motivated and able to concentrate. Teacher competence is one of the most powerful predictors of student achievement. Teachers with strong topic knowledge, professional training, and positive attitudes towards science are more effective at fostering learning (Aina & Akintunde, 2022). Okeke (2024) proved that students taught by professors who employ learner-centred methodologies, practical demonstrations, and regular feedback outperform those taught just through lecture methods. Effective teacher-student communication, including encouragement and academic coaching, boosts students' confidence and enthusiasm for basic science. Environmental factors also influence students' learning experiences. These include physical conditions such as lighting, ventilation, noise level, and seating arrangement, as well as community-related factors such as access to energy, libraries, and transportation (Joseph, 2019; Anyanwu, 2023). Inadequate learning settings, such as overcrowded classrooms and inadequate amenities, diminish concentration and significantly lower academic achievement. Community effects are also important. Peer interactions, neighbourhood safety, and societal attitudes towards education can either promote or impede learning. Agi et al. (2025) discovered that students from communities with strong educational values and family involvement performed better academically than those from less supportive homes. Among familial background variables, socioeconomic status (SES) shows a persistent and significant relationship with academic ability. Parents with higher income levels are better able to provide textbooks, learning materials, private tuition, and access to digital learning tools (Anyanwu, 2023; Bello & Yusuf, 2024). Agi et al. (2025) discovered that students with financially stable parents performed better in fundamental science because they studied in more conducive home environments with enough learning tools. Similarly, Ani and Osuji (2022) demonstrated that socioeconomic determinants contribute to success differences, even among students attending the same schools. Another important factor influencing pupils' academic success is their parents' level of education. Educated parents are more likely to value education, monitor academic performance, assist with homework, and promote critical thinking (Hill & Tyson, 2009; Jeynes, 2018). According to studies in Rivers State, students whose parents completed secondary or tertiary education outperformed those whose parents

had low literacy levels (Anyanwu, 2023; Agi et al., 2025). Such parents often model good learning habits and establish beneficial academic routines at home. Parental participation, regardless of educational level, has a significant impact on pupils' achievement. Emotional support, encouragement, and homework monitoring improve motivation and self-esteem (Wori et al., 2023; Wang & Sheikh-Khalil, 2022). Attendingschool meetings, setting academic goals, and monitoring study habits are all associated with higher achievement in basic science (Bello & Yusuf, 2024).

Family structure has also been linked to academic outcomes, though evidence are mixed. Anyanwu (2023) found that students from two-parent families performed better due to more monitoring and emotional support. However, Effiong and Igiri (2015) discovered that family structure had no significant effect in some cases, implying that school quality, community support, and peer influence can all mitigate family effects. The birth order and number of siblings have also had varying consequences. While first-born children may receive more parental attention (Sulloway, 2001; Chukwudi & Ahmed, 2021), cooperative learning among siblings can also improve achievement when parents encourage education (Agi et al., 2025).

Recent research have emphasised the emotional and psychological environment of the household. Parental warmth, encouragement, and praise of work increase students' confidence, tenacity, and engagement in learning (Wori et al., 2023; Jeynes, 2018). Supportive parent-child relationships reduce anxiety and foster greater problem-solving abilities, particularly in difficult subjects such as fundamental science (Wang & Sheikh-Khalil, 2022).

Family background is embedded in broader cultural and social contexts. In many Nigerian communities, extended family members help children with their education by mentoring and providing material support. Cultural ideas about education, gender roles, and science-related employment also influence students' attitudes towards basic science. Where science and STEM vocations are respected, students are more likely to take the issue seriously, regardless of home SES or structure (Okeke and Eze, 2022). Despite ongoing revisions to curriculum, facilities, and teacher development, pupils' performance in fundamental science in Nigerian secondary schools remains variable. Much emphasis has been placed on school-related concerns, whereas the impact of family history has received less empirical scrutiny. Existing research produces contradictory results, and there is little context-specific evidence from Rivers State. This gap emphasises the importance of doing focused study on how parental education, socioeconomic status, family structure, and home environment affect students' growth in basic science in order to lead successful policies and targeted interventions.

RESEARCH QUESTIONS

1. How does the level of parental education influence students' academic performance in junior secondary Sciences?
2. What is the influence of parents' socio-economic status on students' performance in junior secondary Sciences?
3. What is the mean difference in students' academic performance in junior secondary sciences based on parents' gender?

4. What is the influence of parent marital status on students' performance in junior secondary sciences?

HYPOTHESES

Ho_1: There is no significant difference between parental education and students' academic performance in junior secondary Sciences

Ho_2: There is no significant difference in students' academic performance in junior secondary sciences based on parents SES in secondary schools.

Ho_3: There is no significant difference in students' academic performance in junior secondary sciences based on parents' gender.

Ho_4: There is no significant difference in students' academic performance in junior secondary sciences based on parents' marital status

METHODOLOGY

This study used a descriptive survey research design to examine the influence of students' family background on their academic performance in junior secondary sciences. The design was considered appropriate because it allowed the researcher to collect factual information on existing conditions as they occur naturally. The population of the study consisted of all Junior Secondary School students in public secondary schools across Rivers State. A sample of 200 students was selected using a stratified sampling technique to ensure adequate representation. Five Local Government Areas were purposively chosen to reflect both urban and rural settings. From each LGA, four public secondary schools were randomly selected, and 20 students were further chosen from each school through simple random sampling. This process ensured fair representation across gender and different family background characteristics. Data were collected using a structured questionnaire titled *Family Background and Students' Academic Performance Questionnaire*. The instrument gathered information on students' demographic characteristics, family structure, parental education, socio-economic status, and academic performance in Basic Science. Responses were measured on a four-point Likert scale ranging from Strongly Agree to Strongly Disagree. The questionnaire was validated test yielded a Cronbach Alpha reliability coefficient of 0.82, indicating high reliability. The questionnaires were administered personally by the researcher with the help of trained assistants after obtaining permission from school authorities. Data collection lasted two weeks, and confidentiality was assured. Collected data were analyzed using the mean and standard deviation to answer the research questions, while t-test, and ANOVA were used to test hypotheses at the 0.05 level of significance using SPSS version 26.

RESULTS

Research Question 1. How does the level of parental education influence students' academic performance in junior secondary Sciences?

Table1. Mean and SD of the influence of parents' educational qualification on students' performance in junior secondary sciences

Parental Education	N	Mean	SD
FSLC	52.00	48.79	16.98
WASC	45.00	55.71	12.59
NCE	49.00	58.73	13.81
DEGREE	54.00	56.06	14.00
Total	200.00	54.75	14.86

Table1. Results indicate clear variations in students' junior Science achievement based on parental education level. Students whose parents possessed an NCE recorded the highest mean score (M = 58.73, SD = 13.81), followed by those whose parents held a university degree (M = 56.06, SD = 14.00). Students from WASC-certified parental backgrounds also performed moderately well (M = 55.71, SD = 12.59). In contrast, students whose parents had only First School Leaving Certificate (FSLC) recorded the lowest mean achievement (M = 48.79, SD = 16.98). The grand mean score of 54.75 (SD = 14.86) suggests an average level of performance across the sample.

HO1 There is no significant difference between parental education and students' academic performance in junior secondary Sciences.

Table 2: Summary of ANOVA on the influence parental educational qualification on the performance **of students in junior secondary sciences.**

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2759.693	3	919.898	4.375	0.005
Within Groups	41212.302	196	210.267		
Total	43971.995	199			

Table 2. Shows the results of the one-way ANOVA. The result revealed a statistically significant difference in students' junior Science achievement based on parental education level. The analysis revealed that the between-groups variation was significant, $F(3, 196) = 4.375$, $p = 0.005$. This indicates that the mean achievement scores of students differ significantly across the four categories of parental education. Since the p-value is less than the 0.05 level of significance, the null hypothesis is rejected. The finding suggests that parental education level has a significant influence on students' academic performance in Basic Science.

Table 3. Mean and SD of the influence of parents SES on students' performance in junior secondary sciences

PARENTAL SES	N	Mean	SD
Employed	92	54.00	15.42
Unemployed	52	56.06	15.00
Business	56	54.75	13.97
Total	200	54.75	14.86

The results show slight variations in students' Basic Science achievement based on parental socio-economic status. Students whose parents were unemployed recorded the highest mean score ($M = 56.06$, $SD = 15.00$), followed by those whose parents were engaged in business activities ($M = 54.75$, $SD = 13.97$). Students whose parents were employed recorded a slightly lower mean score ($M = 54.00$, $SD = 15.42$). The overall mean score of 54.75 ($SD = 14.86$) indicates an average level of academic performance across the sample

HO2: There is no significant difference in students' academic performance in junior secondary sciences based on parents SES in secondary schools.

Table 4: Summary of ANOVA on the influence parental SES on the performance **of students in junior secondary sciences.**

Parental SES	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	140.67	2.	70.33	0.32	0.73
Within Groups	43831.33	197	222.49		
Total	43972.00	199			

Table 4 presents the one-way ANOVA result showing the influence of parental socioeconomic status on students' academic performance. The result indicates no significant difference in students' academic performance based on their parents' socioeconomic status Since the p-value is greater than 0.05. This implies that SES of parents does not influence students' performance.

Research Question 3. What is the mean difference in students' academic performance in junior secondary sciences based on parents' gender?

Table 5. Mean and SD of the gender influence on students' academic performance in junior secondary sciences

Parental Gender	N	Mean	SD
Male	131	55.63	14.22
Female	69	53.07	15.99

Table 5 shows the mean and standard deviation of students' academic performance based on parental gender. The result indicates that students from male parents (N = 131) had a mean score of 55.63 $\pm$ 14.22, while those from female parents had a mean score of 53.07 $\pm$ 15.99. Although, mean difference is very small, the table showed that parental gender has minimal influence on students' academic performance.

HO3 There is no significant difference in students' academic performance in junior secondary sciences based on parents' gender

Table 6: Summary of the independent sample t-test on the influence parents' gender on the performance of students in junior secondary sciences

Parental Gender	N	Mean	SD	Df	T	p	s
Male	131.00	55.63	14.22	198	1.156	.249	NS
Female	69.00	53.07	15.99				

Table 6 presents the t-test result comparing students' academic performance based on parental gender. The result shows a mean score of 55.63 $\pm$ 14.22 for students with male parents and **53.07** $\pm$ 15.99 for those with female parents. The computed t-value is 1.156 with 198 degrees of freedom and a p-value of 0.249. Since the p-value is greater than 0.05, the difference is not statistically significant. This implies that parental gender does not significantly influence students' academic performance in this study.

Research Question 4: What is the influence of parent marital status on students' performance in junior secondary sciences?

Table 7. Mean and SD of the influence of parents' marital status on students' performance in junior secondary sciences

Parent Marital status	N	Mean	SD
Married	88.	54.15	14.82
Not Married	112	55.21	14.95

Table7 shows the mean and standard deviation of students' academic scores based on the marital status of their parents. Students whose parents are married had a mean score of 54.15 $\pm$ 14.82, while those whose parents are not married recorded a slightly higher mean score of 55.21 $\pm$ 14.95. The difference in the mean scores between the two groups is very small indicating that parental marital status may not have a substantial influence on students' academic performance in this sample.

Ho4. There is no significant difference in students' academic performance in junior secondary sciences based on parents' marital status

Table 8: Summary of the independent sample t-test on the influence teachers' marital status on the performance of students in junior secondary sciences

Marital status	N	Mean	SD	df	T	p	s
Married	88	54.15	14.82	198	-.503	.616	NS
Not Married	112	55.21	14.95				

Table 8 shows the t-test result comparing students' academic performance based on parental marital status. Students whose parents are married had a mean score of 54.15 $\pm$ 14.82, while those whose parents are not married had a mean score of 55.21 $\pm$ 14.95. The computed t-value is -0.503 with 198 degrees of freedom and a p-value of 0.616. Since the p-value is greater than 0.05, the result is not statistically significant. This means that parental marital status has no significant effect on students' academic performance.

DISCUSSION

The result demonstrated that students whose parents had greater educational qualifications outperformed those with lower educational achievement. Students whose parents had NCE or university degrees performed better on average than those whose parents had FSLC or WASC. This shows that parental education is significant in

determining students' academic performance. Educated parents are better able to grasp school expectations, guide their children intellectually, and foster a helpful learning environment at home. The findings are consistent with Chen (2024), who showed that parents with higher education are more actively involved in their children's learning and provide intellectual stimulation, which improves academic achievement. Similarly, Rakesh et al. (2024) discovered that parental education has a considerable influence on students' language development, reasoning skills, and overall accomplishment. These data suggest that parental education improves students' motivation, study habits, and favourable attitudes towards basic science. In terms of parental SES, the findings revealed no statistically significant difference in student performance based on whether parents were employed, unemployed, or involved in business. Although some variances in mean scores were discovered, these differences were minor. This suggests that parental career or income category may not be the most important factor influencing pupils' performance in junior secondary sciences. Osaro Martins et al. (2024) discovered that socioeconomic class did not significantly predict children' achievement when family participation and school support were taken into account. Kim et al. (2024) also stated that SES effects learning mostly through mediating factors such as home learning resources and parental expectations. This means that even low-income families can help their children achieve high academic achievement by encouraging and monitoring their learning. The data revealed no significant difference in performance between pupils from male-parent and female-parent families. This demonstrates that the gender of the parent does not have an independent influence on students' achievement. What matters most is the quality of parental participation. Alter (2025) reported that parental participation, rather than parental gender, is the most important factor determining academic performance. Similarly, Mapanje (2024) found that when both parents share educational obligations, students do better regardless of gender. Finally, the study found no significant difference in academic achievement between students from married and unmarried parents. This implies that marital status does not predict academic performance. Recent research confirms that the quality of parental support and home learning environment is more essential than family structure (Amadi, 2023; Aremu & Alabi, 2024). In Nigeria, extended family support and community networks may also assist mitigate the impact of family structure on learning outcomes (Odom et al., 2024).

CONCLUSION

This study examined the influence of family background variables on students' academic performance in basic science among junior secondary school students in Rivers State. The findings revealed that parental education significantly influenced students' achievement, as students whose parents possessed higher educational qualifications performed better than those whose parents had lower levels of education. This suggests that educated parents are more likely to provide academic guidance, learning support, and positive attitudes toward schooling. However, the results showed that parental socio-economic status, parental gender, and parental marital status did not have a significant influence on students' academic performance. Although slight

differences in mean scores were observed across these variables, such differences were not statistically significant. This indicates that background characteristics alone do not automatically determine academic success. Rather, the quality of parental involvement, emotional support, and the home learning environment appears to be more important than family structure or occupation. The study concludes that while parental education is a key predictor of academic performance, active parental engagement and supportive learning conditions are critical for improving students' achievement in basic science.

RECOMMENDATIONS

- Enhance parental education programs to equip parents with skills to support their children's learning at home.
- Promote parental involvement initiatives in schools, ensuring all parents actively participate in their children's academic development.
- Focus on equitable school resources to mitigate the limited influence of socioeconomic differences among students.
- Implement home-based learning support strategies for students irrespective of parental gender or marital status to improve academic outcomes.

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