



Influence of Parental Socioeconomic Status on Academic Achievement of Biology Students in Senior Secondary Schools in Enugu State

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Abstract

The study investigated the influence of parental socioeconomic status on academic achievement of senior secondary Biology students. The research design was an ex-post factor design. The study sample comprised 333 senior secondary two Biology students, who were chosen at random. The instrument used for data collection was a 40-item multiple choice question titled Biology Achievement Test (BAT). Mean and standard deviation were the statistical tool used for data analysis. Using analysis of variance (ANOVA) each hypothesis was tested at 0.5 level of significance. The findings of the study revealed that there was a significant influence of parental educational background on students' academic achievement of SSII students in Biology while parental income, and parental occupation did not have significant influence. Based on the findings of the study, it was recommended among others that Government should take on the responsibility of improving the adult literacy programmes to educate and empower illiterate and semi-illiterate parents.

Keywords: Education, Academic Achievement and Student, Socio-economic Status

Introduction

Education is a cognizant and conscious cycle of the acquiring knowledge, skills, values and morals for social growth and development. Education is a tool that prepares individuals to be responsible and useful in life (Ovansa, 2017). The responsibility of training an individual always lies in the hands of their parents. Therefore if learners are to attain their full potential from the education system, they need the full support of their families (Gemechu, 2018). The family is the bedrock of informal education whereby the parents lays the psychosocial moral and spiritual foundation in the development of the child. Families affect children's learning behaviours and academic achievement in major ways, as they are the primary and most significant environments that children are exposed to (Zhonglu & Zeqi, 2018). Parental involvement comes in different forms such as good parenting in the home, provision of a safe and stable environment, intellectual stimulation, parent-child discussion, fulfilment and good citizenship, participation in school events and governance and communication with the school to share information (Miftahu & Melaiye, 2021). Their level of education, occupation and wealth has a significant impact on the child's personality.

Socioeconomic status (SES) is a descriptive term used to describe a person's work experience, economic access to resources and education proficiency. It is commonly conceptualized as the social status or class of an individual or group (Ovansa, 2017). A child's socio-economic status is commonly determined by

combining parents' educational level, occupational status, and income level (Jeynes, 2012). Socioeconomic status is categorised into three levels (high, middle, and low) to describe the three places & family or an individual may fall into. The High 'SES are families with influence holding high positions and ranks in the nation, they are well educated possessing various academics, degrees and certificates. The middle SES are families found between the high and low SES, they are found in positions but in lower ranks, most of them are educated but usually with one or two degrees. The low SES are families that are ranked least in society. They are usually uneducated with little or no position in the nation; they are usually petty traders and paid little or nothing. Children from low socio-economic status earn lower test scores and are more prone to drop out of school (Eamon, 2015, Hochschild, 2013), because they develop academic skills more slowly compared to children from higher socio-economic status group (Ovansa, 2017). This leads us to believe that the socioeconomic status of families influences academic achievement in a certain way.

Academic achievement is a direct reflection of a student's academic learning and mastery of knowledge. Ezeaneche, (2016) described students' academic achievement as the result acquired creditably or otherwise by students at both internal and external examinations. It is knowledge gained which is assessed by marks graded by a teacher and or educational goals

set by students and teachers to be achieved over a specific period of time (Narad & Abdullah, 2016).

Research has shown that either all or one of the levels of socioeconomic status influences academic achievement. For example Abdu, Babakura & Tela (2020); Asiegbu & Ezeugbor, (2018); Esther, Ruffina & Anastecia (2018); Odemena, Chigoziri, Ejike, Dike & Nnadozie (2013) in their study concluded that parents income, level of education and occupation influence students academic achievement to a large extent. This is contrary to Miftahu and Melaiye (2021); and Salisu, Saleh, Yusuf & Nasiru (2021) who admits that parents' educational qualification does not affect their children achievement to an extent. In disagreement, Mudassir & Abubakar (2015) revealed that parents educational qualification has effect on the children's academic achievement. Gemechu (2018) maintained that family income did not affect student's academic achievement, but studies of Omoraka, 2001; Ovansa, 2017; Esther, Ruffina & Anastecia, 2018 and Salisu, Saleh, Yusuf & Nasiru, 2021 revealed that parent income has a significant influence on student's academic achievement. On the part of parental occupations there has been inconsistency in results such as Rajitha, 2013; Owuor, Shah & Hussain, 2021; Simatwa & Ndolo, 2022, who in their various studies revealed that parental occupation has influence on academic achievement of students but Ngare, Tikoko & Sigei (2016), revealed that parental occupation did not affect student achievement.

It is therefore against this background that the present study attempts to explore the influence of parental socioeconomic status viz, parental education, monthly income and parental occupation on the academic performance of senior secondary students in Nsukka LGA in Enugu State.

Statement of the Problem

Biology is one of the largest and most important branches of science apart from Physics and Chemistry. It is a vast subject containing many subdivision topics and disciplines, its usefulness is crucial in sciences, agriculture, arts, technological activities, commerce, economics, education and humanities as it concerns living things and their relationship with the environment. Unfortunately, according to the Chief Examiner's Report from West Africa Examination Council (WAEC), National Examination Council (NECO) from the year 2014-2018, reported 70% failure of students in biology. Many factors have been attributed to the poor performances of students, such

as unqualified teachers, poor instructional materials, poor infrastructure, poor health status, environmental factors, and intellectual factors. Many research works have been carried out to proffer solution to these factors yet the problem still persist. As a result the purpose of this research is to determine if parental socioeconomic status has an influence on academic achievement of students in biology.

Objectives

The specific objectives of this study were intended to:

1. Assess the influence of parents' educational background on the academic achievement of secondary school students in Biology
2. Determine the influence of parents' income on the academic achievement of secondary school students in Biology.
3. Examine the influence of parents' occupation on the academic achievement of secondary school students in Biology.

Methods

This present research was carried out using ex-post factor design. The target population consisted of 2691 SS2 Biology students. The sample used for the study was 333 SS2 students. SS2 students were used because there seems to be scarcity of studies on the topic in the area. The sample size was drawn from 32 schools using a simple random sampling technique by balloting. The second stage was the selection of about 30 students from each of the 11 schools selected using an accidental sampling technique. The instrument used for data collection was a Biology Achievement Test (BAT). The BAT comprised 40 multiple-choice questions that assessed student achievement in Biology. The instrument had two sections: Section A which seeks parental information such as the student's parental academic background, income and occupation. Section B comprised 40 multiple-choice questions with four options A, B, C, and D. The maximum mark obtained in the BAT was 40 while the minimum was zero. To assess the reliability of Kuder-Richardson (KR-20) analysis, a pilot study was done on 30 students who represented the population characteristics but did not form the sample. The estimate of the internal consistency obtained was 0.90. This shows the instrument was fit for use. Mean and standard deviation was used to answer the research questions. The hypotheses were tested using Analysis of Variance (ANOVA) at 0.05% level of significance.

Results

The findings of the study are presented in the tables below (Table 1 to 7)

Table 1: Mean and Standard Deviation Achievement Score of Students Based on their Parental Educational Qualifications

Qualification	N	Mean	SD
FSLC	32	18.31	1.75
School Cert	96	23.30	2.30
OND/NCE	100	27.74	2.11
HND/Degree	82	31.27	2.47
Masters/Ph.D	23	35.43	0.73

Table 1 shows a mean achievement score of 18.31 and a standard deviation of 1.75 for students whose parents had FSLC as their highest qualifications. For those

whose parents had School Cert. the mean was 23.30 with a standard deviation of 2.30. For students whose parents had OND/NCE, the mean was 27.74 with a standard deviation of 2.11. For students whose parents had HND/Degree, the mean achievement score of the students was 31.27 with a standard deviation of 2.47 while students whose parents had Masters/Ph.D obtained a mean of 35.43 with a standard deviation of 0.73. The group of students whose parents hold FSLC had the least mean academic achievement in Biology while the group with Masters/Ph.D had the highest mean achievement in Biology. To determine whether qualification could be a significant factor in students' academic achievement in Biology, a hypothesis was tested.

Table 2: Analysis of Variance in the Mean Performance Scores of Students Based on Parental Qualification

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6912.22	4	1728.06	367.08	0.01
Within Groups	1544.10	328	4.71		
Total	8456.32	332			

Analysis of variance in Table 2 shows that there was a significant difference among the means achievement score in Biology for students whose parents had FSLC, School Cert., OND/NCE, HND/Degree, and Masters/Ph.D ($F(4,328)=367.08$, $p<0.05$). The associated probability level (0.01) is below the a priori

probability level (0.05) stated for testing the hypothesis. Hence, the null hypothesis was therefore rejected. This implies that qualification has a significant influence on the academic achievement of students in Biology. To determine the direction of the difference, a Post Hoc test was performed.

Table 3: Tukey Test for Direction of the Significance

(I) Qualification	(J) Qualification	Mean Difference (I-J)	Std. Error	Sig.
FSLC	School Cert	-4.98958*	0.44	0.00
	OND/NCE	-9.42750*	0.44	0.00
	HND/Degree	-12.95579*	0.45	0.00
	Masters/Ph.D	-17.12228*	0.59	0.00
School Cert	FSLC	4.98958*	0.44	0.00
	OND/NCE	-4.43792*	0.31	0.00
	HND/Degree	-7.96621*	0.33	0.00
	Masters/Ph.D	-12.13270*	0.50	0.00
OND/NCE	FSLC	9.42750*	0.44	0.00
	School Cert	4.43792*	0.31	0.00
	HND/Degree	-3.52829*	0.32	0.00
	Masters/Ph.D	-7.69478*	0.50	0.00
HND/Degree	FSLC	12.95579*	0.45	0.00
	School Cert	7.96621*	0.33	0.00
	OND/NCE	3.52829*	0.32	0.00
	Masters/Ph.D	-4.16649*	0.51	0.00
Masters/Ph.D	FSLC	17.12228*	0.59	0.00

School Cert	12.13270*	0.50	0.00
OND/NCE	7.69478*	0.50	0.00
HND/Degree	4.16649*	0.51	0.00

* The mean difference is significant at the 0.05 level.

Turkey test on Table 3 showed statistical differences between the means performance score of Biology students whose parents hold FSLC and School Cert (Mean difference=4.98958, $P=0.00<0.05$), FSLC and OND/NCE (Mean difference=-9.42750, $P=0.00<0.05$), FSLC and HND/Degree (Mean difference=-12.95579, $P=0.00<0.05$), and FSLC and Masters/Ph.D (Mean difference=-17.12228, $P=0.00<0.05$). Significant difference was also obtained between means performance for School Cert and HND/Degree (Mean difference=-4.43792, $P=0.00<0.05$), School Cert and HND/ Degree (Mean difference=-7.96621, $P=0.00<0.05$), School Cert and Masters/Ph.D (Mean difference=-12.13270, $P=0.00<0.05$). Significant difference also occurred between OND/NCE and HND/Degree (Mean difference=3.52829, $P=0.00<0.05$), and OND/NCE and Masters/PH.D (Mean difference=-7.69478, $P=0.00<0.05$).

Table 4: Mean and Standard Deviation Performance Scores of Students Based on their Parental Economic Status

Parental Income in Naira	N	Mean	SD
Less than ₦20,0000	43	25.72	6.83
Between ₦20,000–₦40,000	117	27.23	5.20
Between ₦41,000–₦60,000	140	26.92	4.57
Between ₦61,000–₦150,000	24	27.83	3.14
Above ₦1500,000	9	26.67	5.78

Table 4 shows that students whose parental income was less than ₦20, 0000 had a mean achievement score of 25.72 with a standard deviation of 6.83, for those whose parental income was Between ₦20, 000–₦40, 000; their mean achievement was 27.23 with a standard deviation of 5.20. on the other hand, students whose parental income was Between ₦41,000–₦60,000 had a mean achievement of 26.92 with a standard deviation of 4.12, Similarly, the group with parental income Between ₦61,000–₦150,000 had a mean of 27.83 while those with parental income Above ₦1500,000 had the mean achievement of 26.67 and standard deviation of 5.78.

Table 5: Analysis of Variance in the Mean Performance Scores of Students Based on Parental Economic Status

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	96.61	3	32.20	1.27	0.29
Within Groups	8359.72	329	25.41		
Total	8456.32	332			

Analysis of variance in Table 5 found that there was a significant difference among the means achievement score in Biology for students based on the level of their parental income $F(3,332)=1.27$, $p=0.29$. The associated probability level (0.29) was above the a priori probability level (0.05) stated for testing the hypothesis. Hence, the null hypothesis is not rejected. This implies that economic status has no significant influence on the academic performance of students in Biology.

Table 6: Mean and Standard Deviation Performance Scores of Students Based on their Parental Occupation

Parental Occupation	N	Mean	SD
Farmer	8	27.20	5.18
Trader	157	26.62	5.05
Artisan	33	26.73	4.89
Civil/Public Servant	138	30.36	5.05

Table 6 shows that students whose parents are farmers had a mean achievement of 27.20 and a standard deviation of 5.18, for Traders, the mean was 26.62 with a standard deviation of 5.05, for Artisans, the mean was 26.73 with a standard deviation of 4.89, and for Civil/Public Servant, the mean was 30.36 and standard deviation of 5.05. Students whose parents are Civil/Public Servants had the highest mean achievement scores (30.36) while those whose parents are Traders had the lowest mean achievement (26.62). Therefore it appears occupation was not a significant factor in students' academic achievement.

Table 7: Analysis of Variance in the Mean Performance Scores of Students Based on Parental Occupation

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	113.85	3	37.95	1.50	0.22
Within Groups	8342.47	329	25.36		
Total	8456.32	332			

Analysis of variance in Table 7 shows that there was no significant difference among the mean achievement score in Biology for students based on the level of their parental occupation $F(3,329)=1.50, p=0.22$. The associated probability level (0.22) is above the a priori probability level (0.05) stated for testing the hypothesis. Hence, the null hypothesis is not rejected. This implies that parental occupation has no significant influence on the academic achievement of students in Biology.

Discussion

The discussion was based on the major findings of this research

In this study, it was found that the qualification of parents had an influence on the academic achievement of the student. That is, the more educated the parents the greater their encouragement in their child's education. This maybe as a result of parents with a higher level of education putting in more interest and effort by personally giving the child extra tutoring or by engaging teachers, also by providing all the necessary learning materials and environment. Parents with lower qualification maybe more interested in making money than in education. This has a way of influencing the child's academic achievement in school. This finding is in agreement with Mudassir and Abubakar (2015), but in disagreement with Miftahu and Melaiye (2021)

The findings also revealed that parental income had no influence on the academic achievement of the student. This could be a result of the parents from both high and low income levels going all out to ensure that finance would not be a hindrance to the child's attainment to academic success, also the zeal in the child to change the status of the parent can motivate them to have high achievement in academics. The finding is in confirmation with the study of Gemechu, 2018, who maintained that family income did not bring anything new to student's academic achievement, but contradicts the study of Omoraka, 2001; Ovansa, 2017; Esther, Ruffina & Anastecia, 2018; Abdu, Babakura & Tela, 2020; Salisu, Saleh,

Yusuf & Nasiru, 2021. Their studies revealed that parent income influences students' academic performance.

Finally the result of the study revealed that parental occupation has no significant influence on academic achievement of secondary school Biology students. That is, parental occupation type cannot be relied upon to predict student academic achievement. This could be as a result of the parents either in high or low earning occupation trying their best to provide the educational needs of the children so that it does not affect their input in their academics. The result of this study is in agreement with Ngare, Tikoko & Sigei (2016), but in disagreement with studies from Rajitha, 2013; Owuor, Shah & Hussain, 2021; Simatwa & Ndolo, 2022, who in their various studies revealed that parental occupation has an influence on academic achievement of students.

Conclusion

The study concluded that parental education qualification significantly influenced academic achievement of SS II Biology students, while parental income and occupation had no significant influence.

Recommendations

The following recommendations were made

1. Government and educational stakeholders should endeavour to provide students with scholarships, free teaching and writing materials build good infrastructure such as Libraries, laboratories, ultra-modern classrooms and offices etc.
2. Government should embark on the responsibility of improving the adult literacy programmes to educate and empower illiterate and semi-illiterate parents.

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