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AGE AND PARENTAL VARIABLES INFLUENCE ON ACADEMIC PERFORMANCE OF SENIOR SECONDARY STUDENTS IN BIOLOGY: A STUDY OF UMUAHIA EDUCATION ZONE OF ABIA STATE

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Abstract

This study investigated the influence of age and parental variables such as Parental occupation and education background on the students' academic performance in Biology in Umuahia education zone of Abia state of Nigeria. The research was ex-post facto research design. A total sample of 120 students was drawn from the population using stratified random sampling. Questionnaire on Age and Parental Variable Influence (QAPVI) developed by the researcher was used for data collection. The reliability coefficient was 0.83. Data was analyzed using chi-square analysis in the empirical testing of the three hypotheses. Research questions were analyzed using percentages. The findings showed that there is significant difference between students' ages, parental occupation status, educational background and academic performance in Biology. In line with the findings, it was also recommended that governments and other stakeholders should participate effectively and efficiently in various levels of education.

Keywords:

Influence;
Academic Performance;
Age:
Occupation;
Education.

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1. Introduction

Age and parental variables such as parental occupation and education status are ranges of demographic variables that influence the individual characteristics of any given population. They show various factors that make up individual characteristics for which can be measured in terms of how individuals are influenced by them. These factors are considered when identifying their effects toward the academic success of students.

Academic performance is the outcome of academics. Which can be viewed as the extent to which an individual or group in any academic environment has achieved their educational goals. These educational goals are evaluated through continuous assessments, examinations etc and are expressed in marks and scores especially in percentages.

There is need to improve and stabilize the teaching and learning process as to enhance student's interest, skills and abilities in different subject areas in order to encourage all round development of the

student. The cognitive, affective and psychomotor domains ought to be stimulated during the developmental learning process at all stages in the learner, hence this study.

Considering the increasing reports of high student failures and drop-out rates especially in Nigeria (Okoli, 2004), this study sought to statistically establish how age, parental occupation and educational background status becomes influential academic success and failure factors.

The quality of education is mostly assessed on the basics of academic performance and performance scores. Performance scores are considered to be the primary indicators of academic performance hence parental occupation status and educational background can be the main concern influencing the academic performance where students' age to lesser extent contribute to their academic performance. Nasir,(2012); observed that there is a need to identify and analyze the factors that can affect academic performance and the understanding of these factors can suggest some measures for improving the quality of education.
Studies have shown critically shown that there is an established relationship between academic performance of student with the students age, parental occupation and educational background.

Abubakar and Oguguo, (2011); noted that age has played a considerable part as regards to education, like entry age of students to a school; hence age could be a predicator of success.

Graetz, (2009); reported that parental occupation status is highly correlated with student's educational choices and attainment. Graetz further explained that low parental occupation status has negative influence and effect on students' school achievement; and, students having low parental occupation status face lots of barriers in transiting from one stage of education to the next.

Akinsanyo, Ajayi and Salomi, (2014) noted that 'parent' education has the highest significant influence on the academic achievement of students due to lot of opportunities to study.

Alokan, Osakinle and Onijingin, (2013); noted that illiteracy of parents could have negative effects on the academic performance and achievement of their children.

Pamela and Kean, (2010); found that students whose parents have had tertiary level of education perform average, significantly better in test of science, reading and mathematical ability than those whose parents have only basic school. Femi and Adewale, (2012); concluded that education qualification of parents and education qualification of parents and health status of students are significant factors that affect the academic performance of students.

Auwalu, Mohd and Muhammed, (2014); found that demographic factors have been observed to have high level of influence in the quality of students' performance.

1.1 Statement of the Problem

Recent results suggest that secondary school students perform below average in biology, with some not even reaching the pass grade in both internal and external exams as well as classroom assignments. This phenomenon poses a major significant question: what are the factors contributing to these negative scenarios of students' low academic performance in Biology. The researcher is of the view that certain factors such as students' age, gender parental education background etc may have significant impact on a student's academic performance in study of Biology in various secondary schools in Umuahia education zone.
Anidu, (2013) supporting this, noted that some non-scientific pre-suppositions in Biology are more common among rural students, and these non-scientific pre-suppositions have impact on student's conception of Biology as a topic. It is therefore, against these variable influences that the researcher sought to find how these factors influence students' performance in Biology.

1.2 Research Question

1. What are the performances of normal age group and higher age group of students in Biology in public secondary schools in Umuahia education zone of Abia state?
2. What are the performances of students from different parental occupation status in Biology in public secondary schools in Umuahia education zone of Abia state?
3. What are the performances of students from different parental educational backgrounds in Biology in public secondary schools in Umuahia education zone of Abia state?

1.3 Research Hypothesis

H_{01}: There is no significant difference between students' of different age groups in their academic performance in Biology in public secondary schools in Umuahia education zone of Abia state.
H_{02}: There is no significant difference between students' of different parental occupation status in their academic performance in Biology in public secondary schools in Umuahia education zone of Abia state.
H_{03}: There is no significant difference between students' of different parental educational background in their academic performance in Biology in public secondary schools in Umuahia education zone of Abia state.

2. Research Method

Umuahia is the capital of Abia state in Nigeria. The population for this study is made up of co-educational public secondary school students in Umuahia education zone who are in senior secondary two (SS II). Stratified random sampling method was used to draw out the sampled schools. Twenty (20) students comprising of both sexes (10 males and 10 females) were selected from each of the two schools selected from the three (3) different sampled local government areas out of the four (4) L.G.A that make up the Umuahia education zone (i.e. Umuahia North L.G.A, Umuahia South L.G.A and Ikwuano L.G.A) all in Umuahia education zone making a total of 120 students. Questionnaire on Age and Parental Variable Influence (QAPVI) was developed by the researcher. The internal exam scores of the students who responded to the instrument administered were obtained.

For reliability, test-retest method was used by the researcher. The reliability coefficient of 0.83 was obtained after trial-testing of the instrument. Pearson Product Moment Correlation was used to establish the instrument internal consistency.

3. Results and Analysis

The scores obtained from the respondents to the questionnaire was compiled and tabulated into frequencies and percentages. The data generated was analyzed by the researcher using Chi-square analysis in the empirical testing of the three hypotheses.

The result of the data analysis is presented below based on the hypothesis and research questions.

Research Question One:

What are the performances of normal age group and higher age group of students in Biology in public secondary schools in Umuahia education zone of Abia state?

Table 1: Table of performance: normal age group and higher age group of students classified under high performers(100-55) and low performers (54-0). Total Number of students sampled is 120 (60 males and 60 females).

Age group	Population	High Performers	%	Low Performers	%
Normal age group (15-19)	80	57	71.3	23	28.8
Higher age group (20-24)	40	15	37.5	25	62.5
Total	120	72			48

The above table shows that out of the 80 students that fall into lower age group (15-19) 57 students (71.3%) where high performers while 23 students (28.8%) were low performers. Out of 40 students that fall into the higher age group that is (20-24) 15 students (37.5%) were high performers, while 25 students (62.5%) were low performers. This means, that age difference probably, influenced the students' performance in Biology as student of lower age group 15-19 years of the normal secondary school age performed better than those who were above secondary school age (20-24).

Research Question Two:

What are the performances of students from different parental occupation status in Biology in public secondary schools in Umuahia education zone of Abia state?

Table 2: Table of performance: Students from different parental occupation status classified into three (4) groups: Civil Servant, Businessman, Businesswoman and Others (i.e. representing artisans, clergy, etc)

Parental Occupation	High Performers	Percentage (%)	Low Performers	Percentage (%)
Civil servant	28	38.9	12	25.0
Businessman	25	36.1	14	29.2
Businesswoman	6	8.33	3	6.25
Others	13	16.7	19	39.6
Total	72	100	48	100

From the table above, out of 72 students who were high performers, 28 of them (38.9%) have parents who are civil servants, 25 of them (36.1%) have parent who is a businessman, 6 of them have parent who is a businesswoman, and 13 of them have parents belonging to other occupations. Therefore, we could observe that students with higher academic performance are those who have parents with high occupation status (i.e. civil servants)

Research Question Three:
What are the performances of students from different parental educational backgrounds in Biology in public secondary schools in Umuahia education zone of Abia state?
Table 3: Table of performance: Classification of parental educational backgrounds classified into tfour (4) groups: Illiterates, First School Leaver, O'level and Degree.

Parental Edu. Status.	High Performers	Percentage (%)	LowPerformers	Percentage (%)
Illiterates	8	11.1	10	20.8
School Leaver	10	13.9	15	31.3
O'level	22	30.6	13	27.1
Degree	40	44.4	10	20.8
Total	72	100	48	100

From the table above, out of 72 high performers observed from the study, 8 students (11.1%) have parents who are illiterates which is the lowest educational qualification in this study, 10 students (13.9%) have parents with School leaver, 22 students (30.6%) have parents with O'level qualifications while 32 students (44.4%) have parents with degree qualifications. This shows according to this study, those students whose parents attained the highest educational qualification (i.e. degree), performed better academically than those whose parents have first school leaver and O'level qualifications. This could be based on the fact that these parents, who attained the highest level of education according to this study, understand better the value and need for education and hence, contributes effectively to the academic development and performance of their children.

Hypothesis One:
There is no significant difference in the academic performance of biology students in different age groups in Biology in public secondary schools in Umuahia education zone of Abia state. To test this hypothesis, the researcher used Chi-square (X^2) analysis
Contingency Table (a): Chi-square (X^2) analysis of expected and observed performance of two (2) age groups (15-19) and (20-24). Percentages were used.

Variables	Observed	Expected	Difference (D)	Difference^2 (D)^2	Difference/Expected (D)^2 /E) = X
15-19	971.3	54.4	16.92	85.6	5.25
20-24	437.5	54.4	-16.92	85.6	5.25
Total					10.5

Chi square (X^2) statistics = 10.5 df= 1 level of significance 0.05 = 3.841
Since X^2 cal 10.5 > X^2 tab 3.841, there is significant difference. This is because those that are in the lower age group perform significantly higher than those in higher age group. The researcher therefore rejects the null hypothesis.

Hypothesis Two:
There is no significant difference between students' academic performance in biology and parental occupation status in Biology study in public secondary schools in Umuahia education zone of Abia state.
Contingency Table (b): Chi-square (X^2) analysis of expected and observed students' performance and parental occupation status.

Variables	Observed	Expected	Difference (D)	Difference^2 (D)^2	Difference/Expected (D)^2 /E) = X
Civil servant	28	18	10	100	5.6
Businessman	25	18	7	49	2.7
Businesswoman	6	18	-12	144	8.0
Others	13	18	-5	25	1.4
Total	72				17.7

Chi square (X^2) statistics = 17.7 df = 3 level of significance 0.05 = 7.815

Since X^2 cal 17.7 > X^2 tab 7.815, there is a significant difference between students' academic performance and parental occupation status. The researcher therefore, rejects the null hypothesis.

Hypothesis Three:
There is no significant difference between students' academic performance and parental educational background status in Biology study in public secondary schools in Umuahia education zone of Abia state.
Contingency Table (c): Chi square (X^2) analysis of expected and observed students' performance and parental educational background.

Variables	Observed	Expected	Difference (D)	Difference^2 (D)^2	Difference/Expected (D)^2 /E) = X
Illiterates	8	18	-10	100	5.6
First school Leaving	10	18	8	64	3.6
O'level	22	18	4	16	0.9
Degree	32	18	14	196	10.9
Total	72				21.0

Chi square (X^2) statistics = 21.0 df = 3 level of significance 0.05 = 7.815

Since X^2 cal 21.0 > X^2 tab 7.815, there is a significant difference between students' academic performance and parental educational background. The researcher therefore, rejects the null hypothesis.

3.1 Discussion

The result of these findings showed influence of age on the students' academic performance. From the findings, there exist significant differences between different learner's age groups. The younger students' age bracket 15-19 (71.3%) had higher achievers in academic performance than the older students. Therefore, students' age influences academic performance.
The study investigated the parental occupation influence on students' academic performance. Findings showed that parents' occupation significantly influences students' academic performance; as students (38.9%) with better parental occupation performed better. This therefore shows that parent's occupation influences students academic performance.Akinsanyo et al (2011) agreed with this finding.
Findings from the study; showed that parental educational background exerts a high level of influence on student' academic performance. This therefore shows that parent's education status influences student's academic performance. Femi and Adewale (2012) agreed with this finding.

4 Conclusions

1. Students with normal age group (15-19) perform better academically than those of higher age group (20 and above) in Biology; and their existed significant difference
2. Parental occupation status influenced students' academic performance. Students from low parental occupation status families performed poorly than those from higher occupation status families.
3. Parental educational status influenced students' academic performance. Students from uneducated, poorly or average literate homes performed poorly than those from educated families.

5 Recommendations

1. That government and other stakeholders should participate effectively and efficiently in various levels of education.
2. Teaching, learning and working materials be provided and other stakeholders within and outside the education sector; so as to encourage conducive academic environment with equal gender opportunities to perform better academically.
3. Students on their own must endeavour to study, if they are to achieve academic success.
4. Early child schooling should be encouraged since students tend to learn better at younger ages.

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APPENDIX A

LIST OF SAMPLED SCHOOLS, SAMPLED POPULATION AND THEIR LOCAL GOVERNMENT AREAS

SAMPLED PUBLIC SCHOOLS	L.G.As	POPULATION SAMPLED
Awom-Nebo Sec. Technical School.	Ikwuano	20
Ihim-Ibere Community Secondary School.	Ikwuano	20
Ibeku High School	Umuahia South	20
Ndume Otuka Community Secondary School.	Umuahia South	20
Ossah Community Secondary School.	Umuahia North	20
Umuokpara Secondary School	Umuahia North	20

APPENDIX B
ORDER OF ACADEMIC PERFORMANCE AND PARENTAL VARIABLES

Scores		**Range**	**Students**
	High Performers	100-55	72
	Low Performers	54-0	48
Age Range		**Students**	
	15-19	72	
	20-24	48	
	Total	**120**	
Parents Occupation		**Students**	
		High Performers	**Low Performers**
	Civil servant	28	12
	Businessman	25	14
	Businessman	6	3
	Others	13	19
	Total	**72**	**48**
Parents Education Status		**Students**	
		High Performers	**Low Performers**
	Illiterate	8	10
	School–leaver	10	15
	O'level	22	13
	Degree	32	10
	Total	**72**	**48**