INFLUENCE OF FAMILY VARIABLES ON IN-SCHOOL ADOLESCENTS' ACADEMIC ACHIEVEMENT IN MATHEMATICS IN SECONDARY SCHOOL IN PORT HARCOURT LGA OF RIVERS STATE

BY

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ABSTRACT

The study investigated the influence of family variables on in-school adolescents' academic achievement in mathematics in secondary schools in Port Harcourt LGA of Rivers State. Three research questions were answered while three hypotheses were tested at 0.05 level of significance. The study adopted an ex-post facto research design. The population of the study was 6,500 SS II students from 15 secondary schools in Port Harcourt LGA of Rivers State. The sample size of the study was 200 SS II students drawn using simple random sampling technique. A self-designed instrument titled Students Mathematics Test (SMT) was used for data collection. The SMT was content validated through table of specification as well as the help of classroom Mathematics teacher. Mean and standard deviation were used to answer the research questions while t-test and ANOVA were used to test the hypotheses at 0.05 level of significance. The study revealed that parental educational status is not a significant determinant of students' academic achievement in mathematics while their occupational level and marital status are significant determinants of in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State. Based on the findings of this study, it was recommended among other that parents with lower educational status should step up on their level of engagement and support towards in-school adolescents' achievement in Mathematics in secondary schools in Port Harcourt LGA.

Keywords: Family variables (parental education level, occupation and marital status) and academic achievement in mathematics

INTRODUCTION

There is unprecedented worrisome increase in the rate of failure in mathematics achievement which may be necessitated by so many factors including family background. Academic achievement can be seen as the level of actualization on academic activities in the school system. More so, academic achievement is the degree to which students have achieved their academic goals for individual growth, improvement and global competitiveness in respect to the learning outcomes (Nwideeduh & Nwabueze, 2016). It is also student's academic career need to be evaluated in order to foster improvement and make full use of the learning process (Olanipekun & Aina, 2014). Academic achievement can also be the measure of how students have achieved their academic success or failure in an educational setting. Furthermore, academic achievement is a student's accomplishment of immediate or long-term educational goals (Bossaert, Doumen, Buyse & Verschueren, 2011). These educational goals could be accomplished in different subject areas, including mathematics.

Mathematics is one of the core subjects. Mathematics according to Dharmendra (2017), as the scientific study of quantities, including their relationship, operations and measurements expressed in numbers and symbols. Also, James and James (2001) defined mathematics as the logical study of numbers, shape, arrangement, quantity, measure and many related concepts. From the above, one can infer that mathematics is an outlet through which academic performance of in-school adolescents could be measured. Personal experience showed that high achievement in mathematics helps students gain mastery of other subjects and also serves as a requirement for gaining admission into tertiary institutions in Nigeria and many other parts of the world. Supporting the view above, Lipnevich, Preckel, and Krumm (2016) observe that success in mathematics is strongly linked with well-being, satisfaction with life, health, income, employability, and longevity.

In spite of the innumerable importance of high mathematics achievements, it is sad that the academic achievement of secondary school students in mathematics has over the years been a source of great concern to many stakeholders of education in Nigeria, due to poor performance. Supporting the

above, Kolawole and Dele (2012) opined that the academic achievement of students has continued to decrease, and it requires urgent attention. It is observed that there is loud outcry on the overall poor academic achievements of students who participate in mathematics in Senior Secondary Certificate Examinations (SSCE) (West African Senior School Certificate Examination (WASCE) and National Examination Council (NECO) which Port Harcourt Local Government Area of Rivers State is not left out. Also, the researcher, through series of interactions and interviews with parents and in-school adolescents in Port Harcourt Local Government Area of Rivers State gathered that the mathematics achievement of in-school adolescents in the area seem not to be encouraging.

The researcher gathered through series of personal observation that many in-school adolescents within Port Harcourt Local Government Area of Rivers State have cultivated the habits of chatting with mobile phones while in class, which may have affected their academic achievement negatively. Others gamble within the school premises and scale through school fence whenever school authorities want to discipline them. All these antisocial acts may negatively affect the academic achievement of in-school adolescents in Port Harcourt Local Government Area of Rivers State. Poor academic achievement in mathematics can be associated to family variables. Some of the likely family variables that can influence adolescents' academic achievement are; family size, parental income level, parental occupation, marital status and parental education. This study focused on education level, occupation and marital status of parents as the most likely causative factors of students' achievement.

Educational qualification means the degrees or certificates that an individual has acquired from a degree awarding institution. Educational qualification can be seen as the degree gotten whether by full-time study, part-time study or private study, whether conferred in the home country or abroad and whether conferred by educational authorities, special examining bodies or professional bodies (United Nations, 2003). The acquisition of an educational qualification therefore implies the successful completion of a course of study or training programme. FRN (2014) classified forms of education as formal education, informal education and non-formal education. Contextually, the study hinges on formal and non-formal parental education. Parental formal education is education acquired in the formal school settings with the award of certificates such as First School Leaving Certificate (FSLC), Senior School Certificate (SSC), National Certificate in Education (NCE) and Bachelors of Science or Arts (B.Sc.) or (B.A.) in Education, among others. These qualifications are obtained from primary, secondary, colleges of education and universities, respectively. Parents with first degree and above are those parents who had their educational attainment from universities.

In this study, formal education is operationally seen as education got in formal classroom settings with an organized structure such as curriculum, professional facilitators, and uniform code of dressing and award of degrees or certificates on graduation. More so, parental education has a role to play in the child's educational pursuit. According to Federal Republic of Nigeria (2014) education is the inculcation of what is worthwhile to those who are committed to it. Parents' educational level is important in the determination of the level of exposure and confidence their children can display in order to achieve the required academic orientation and success. Expectedly, parents with higher educational status are believed to be more disposed in understanding the educational needs and aptitudes of their children than those with low educational status (Ogunshola & Adewale, 2012). There is the likelihood that some educated parents do not possess the knowledge, communication skills and other prerequisite child rearing skills. This scenario will not in any way be of help to the children. Therefore, parental educational status without the commensurable level of commitment may not play a significant role in the academic exposure, orientation and achievement of their wards. The need to support or supervise the children's home and class work may not be fully carried out when educational skills are not properly appropriated, hence may lower their children's academic activities (Aremu & Sokan, 2003). It is empirically proven that parental educational qualification significantly determined students' academic achievement (Pamela & Kean, 2010).

Occupation can be seen as an individual's regular work, profession or job. In the same vain, parental occupation refers to the field or industry you are a part of or the work you are interested in (Herrity, 2023). Occupation in this concept depicts parental job, profession or regular work activity. Students whose parents' work closes late or are always away on long journeys showed lower performance than those whose parents are always available at home Atolagbe, Umaru & Oparinde 2019). Furthermore, Atolagbe, Umaru and Oparinde reported no significant difference in academic achievement of students whose parents and employed and those not employed. Julians (2002) reported that the nature of parents' occupation can affect students' performance. On the other hand, Saifullahi (2011) found a significant relationship between parental occupation and students' achievement. In the

same vain, Akinbola (2006) opined that parent's occupation can affect their children's academic achievement. Another family variable is the marital status of the parents.

Marriage can be seen as the legal union between a man and woman who tend to live their life together. Marital status is one's marriage standing (Ene, 2023). Marital status is also defined as a state of being married or not (Ewurum, 2023). Marital status is the state of being married or not married. It could be state of being married, single, divorced, or widowed. It was found that marital status does not significantly relate to academic performance (Beard, 2018). In the same vain, it was reported that parental marital status cannot significantly predict students' academic activities (Akinbola, 2006). From the forgoing, it is very uncertain whether marital status can be an influencing family variable on the academic achievement of in-school adolescents in mathematics. This is particularly so because some of the authors are in agreement while some of them are in disagreement as there were no much visible studies of this kind done in the area of the study. This necessitated this study to establish a clinch on the influence of family variables on in-school adolescents' academic achievement in mathematics in secondary schools in Port Harcourt.

Statement of the Problem

Researchers and personal experience have shown that students often record poor academic achievement in mathematics. Some of the observations and findings of the researcher shows that most of the students with poor performance in Mathematics include; children of broken homes/ single parents, children from poor economic background, and mostly children whose parents are not interested in their academic pursuit. This poor achievement in mathematics is more in their external examinations. This poor achievement is irrespective of the quality of teachers, infrastructural facilities available, the administrative styles in the schools and the students' level of commitment to school activities. Some factors may be responsible for this abysmal performance in mathematics. Some of the suggested factors are students' intelligence level, school environmental factors, teachers' job satisfaction and family variables. It is not certain whether these factors are causative factors of poor academic achievement of students in mathematics. Therefore, the researcher is inquisitive and investigated the influence of family variables on in-school adolescents' academic achievement in mathematics in secondary schools in Port Harcourt.

Research questions

The following research questions were answered in this study

1. What is the influence of parental education level on in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State?
2. What is the influence of parental occupational status on in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State?
3. What is the influence of parental marital status on in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance

1. Parental education level does not significantly influence in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.
2. Parental occupational status does not significantly influence in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.
3. Parental marital status does not significantly influence in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.

Methods

The study adopted an ex post facto research design. The population of the study was 6,500 SS II students from 15 secondary schools in Port Harcourt LGA of Rivers State. The sample size of the study was 200 SS II students, using simple random sampling technique. Ten schools were simple randomly drawn from the 15 schools in the first stage. Secondly, 20 students were simple randomly drawn from each of the ten schools making a total of 200 SS II students. A self-designed instrument titled Students Mathematics Test (SMT) was used for data collection. The SMT has two parts of A and B, part A was used to elicit the demographic information of the respondents such as the educational status of the parents, occupation of the parents and parental marital status. The part B has 30 questions on Mathematics with one correct answer and three distracters. The SMT was content validated through table of specification as well as the help of classroom Mathematics teacher. Mean and standard deviation

were used to answer the research questions while t-test and ANOVA were used to test the hypotheses at 0.05 level of significance.

Results

Research question 1: What is the influence of parental education level on in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State?

Table 1: mean and standard deviation scores on the influence of parental education level on in-school adolescents' academic achievement in mathematics

Parental educational level	Students' Mathematics Achievement		
	N	Mean	Std
Educated parents	129	30.01	9.10
Uneducated parents	71	29.21	10.21

Data on table 1 revealed that educated parents have mean and standard deviation scores of 30.01 and 9.10 while uneducated parents have mean and standard deviation scores of 29.21 and 10.21 respectively. This showed that students from educated parents achieved in mathematics slightly above those from uneducated parents in secondary school in Port Harcourt LGA of Rivers State.

Hypothesis 1: Parental education level does not significantly influence in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.

Table 2: t-test statistics on the influence of parental education level on in-school adolescents' academic achievement in mathematics

Variables	N	Mean	Std	Df	t-val.	Sig. val.	Alpha val.	Decision
Educated parents	129	3.01	0.10					Not
Uneducated parents	71	2.92	1.02	198	0.55	0.69	0.05	significant

Data on table 2 showed that educated parents have mean and standard deviation scores of 3.01 and 0.10 while uneducated parents have mean and standard deviation scores of 2.92 and 1.02 respectively. With a degree of freedom of 198, the t-value of 0.55 is accepted because the significant value of 0.69 is greater than the alpha value of 0.05. Therefore, parental education level does not significantly influence in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.

Research question 2: What is the influence of parental occupational status on in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State?

Table 3: mean and standard deviation scores on the influence of parental occupational status on in-school adolescents' academic achievement in mathematics

Parental occupational status	Students' Mathematics Achievement		
	N	Mean	Std
Publicly employed	80	14.30	9.99
Self employed	71	18.22	10.33
Unemployed	49	13.66	9.97

Data on table 3 revealed that publicly-employed parents have mean and standard deviation scores of 14.30 and 9.88, self-employed parents have mean and standard deviation scores of 18.22 and 10.33 while unemployed parents have mean and standard deviation scores of 13.66 and 9.97 respectively. This showed that students from self-employed parents achieved higher in mathematics slightly above those from publicly employed parents and finally from unemployed parents in secondary school in Port Harcourt LGA of Rivers State.

Hypothesis 2: Parental occupational status does not significantly influence in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.

Table 4: ANOVA score of the influence of parental occupational status on in-school adolescents' academic achievement in mathematics

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7470.368	3	1867.592	34744.327	.000[b]
	Residual	12.632	195	.054		
	Total	7483.000	199			

Data on table 4 revealed that the F value is 34744.327 with degree of freedoms of 3 and 195. The hypothesis is rejected because the significant value of 0.00 is less than the alpha value of 0.05. Therefore, parental occupational status significantly influences in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.

Research question 3: What is the influence of parental marital status on in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State?

Table 5: mean and standard deviation scores on the influence of parental marital status on in-school adolescents' academic achievement in mathematics

Parental marital status	Students' Mathematics Achievement		
	N	Mean	Std
Intact Marriages	165	28.23	15.19
Single	16	27.10	16.03
Divorced	19	26.34	14.56

Data on table 5 revealed that intact marriages have mean and standard deviation scores of 28.23 and 15.19, single parents have mean and standard deviation scores of 27.10 and 16.03 while divorced parents have mean and standard deviation scores of 26.34 and 14.56 respectively. This showed that students from intact marriages achieved higher in mathematics slightly above those from single parents and finally from divorced parents in secondary school in Port Harcourt LGA of Rivers State.

Hypothesis 3: Parental marital status does not significantly influence in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.

Table 6: ANOVA of the influence of parental marital status on in-school adolescents' academic achievement in mathematics

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3334.423	3	1222.009	223.008	.000[b]
	Residual	15.453	195	.034		
	Total	3349.876	199			

Data on table 6 revealed that the F value is 1222.009 with degree of freedoms of 3 and 195. The hypothesis is rejected because the significant value of 0.00 is less than the alpha value of 0.05. Therefore, parental marital status significantly influences in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.

Summary of Findings

The findings of the study are summarized as shown below

1. The study showed that mathematics achievement scores of students from educated parents is slightly above those from uneducated parents in secondary school in Port Harcourt LGA of Rivers State. The hypothesis revealed that parental education level does not significantly influence in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.
2. The study revealed that mathematics achievement scores of students from self-employed parents is slightly above those from publicly employed parents and unemployed parents in secondary school in Port Harcourt LGA of Rivers State. The hypothesis showed that parental occupational status significantly influences in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.
3. It was found that mathematics achievement scores of students from intact marriages is slightly above those from single parents and divorced parents in secondary school in Port Harcourt LGA of Rivers State. The hypothesis showed that parental marital status significantly influences in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.

Discussion of Findings

The study showed that mathematics achievement scores of in-students adolescents from educated parents is slightly above those from uneducated parents in secondary school in Port Harcourt LGA of Rivers State. The hypothesis revealed that parental education level does not significantly influence in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State. The finding of this study may be due to the fact that in-school adolescents from educated parents may be seeing their parents engaging in academic activities which may likely develop their achievement motivation. There is the likelihood that some educated parents do not possess the knowledge, communication skills and other prerequisite child rearing skills. This

scenario will not in any way be of help to the children. Therefore, parental educational status without the commensurable level of commitment may not play a significant role in the academic exposure, orientation and achievement of their wards. This finding is in tandem with the report that parents with higher educational status are believed to be more disposed in understanding the educational needs and aptitudes of their children than those with low educational status (Ogunshola & Adewale, 2012). Furthermore, in corroboration with the finding of Aremu and Sokan (2003), the needed support or supervision in the children's home and class work may not be fully carried out when educational skills are not properly appropriated, hence may lower their children's academic activities. On the contrary, the finding of this study did not support the submission of Pamela & Kean (2010) that parental educational qualification significantly determined students' academic achievement. In the same vain, the finding did not concur with that of Odoh, Odoh and Odigbo (2017) which reported that parental educational status is a factor of academic achievement.

The study also revealed that mathematics achievement scores of students from self-employed parents is slightly above those from publicly employed parents and unemployed parents in secondary school in Port Harcourt LGA of Rivers State. The hypothesis showed that parental occupational status significantly influences in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State. It was found that parents' occupation is necessary for students' academic achievement. This is made clear in the report that students whose parents' work closes late or are always away on long journeys showed lower performance than those whose parents are always available at home (Atolagbe, Umaru & Oparinde 2019). In the same vain, the finding of this study was in tandem with that of Akinbola (2006) which reported that parents' occupation can affect their children's academic achievement. Another family variable is the marital status of the parents.

The study found that mathematics achievement scores of students from intact marriages is slightly above those from single parents and divorced parents in secondary school in Port Harcourt LGA of Rivers State. The hypothesis showed that parental marital status significantly influences in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State. Since one of the products of marriage is recreation, it is acceptable when there is investment in the children. Marriage is one of the family variables that can enhance in-school adolescents' academic achievement. To this end, the finding of this study did not support that of Beard (2018) which found that marital status does not significantly relate to academic performance (Beard, 2018). In the same vain, it was reported that parental marital status cannot significantly predict students' academic activities (Akinbola, 2006).

Conclusion

Based on the findings of this study, it was concluded that parental educational status is not a significant determinant of students' academic achievement in mathematics while their occupational level and marital status are significant determinants of in-school adolescents' academic achievement in mathematics in secondary school in Port Harcourt LGA of Rivers State.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. Parents with lower educational status should step up on their level of engagement and support towards in-school adolescents' achievement in Mathematics in secondary schools in Port Harcourt LGA.
2. The study proved that parental occupation is a significant determinant of in-schools adolescents' academic achievement, therefore, parents irrespective of their occupational status should show commitment in the in-school adolescents' achievement in Mathematics in secondary schools in Port Harcourt LGA.
3. The study showed that parental marital factor is a significant determinant of in-schools adolescents' academic achievement, therefore, parents within any category of marital status should demonstrate reasonable amount of attention in the in-school adolescents' academic achievement in Mathematics.

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