

## SOCIO – ECONOMIC STATUS OF PARENTS AND SENIOR SECONDARY SCHOOL STUDENTS’ ACHIEVEMENT IN MATHEMATICS IN RIVERS STATE, NIGERIA

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### ABSTRACT

*This research study focused on the relationship between socio-economic status (SES) of parents and students’ achievement in mathematics at the senior secondary school level in Rivers State, Nigeria. The ex-post facto research design was adopted for this study, since already conducted mathematics test scores of the students were retrieved and used for the analysis. Furthermore data were elicited through the socio-economic status (SES) and students’ achievement in mathematics questionnaire (SESASMQ). This questionnaire has twelve (12) question items related to socio-economic status (SES) and students’ achievement in mathematics. A population of 10,120 students was involved in the study out of which 4510 were chosen for the sample using the Yarrow Yamen’s formula. The data were analyzed using the Z – test static, means and simple percentage. The findings were that to a low extent socio-economic status (SES) of parents related to students’ achievement in mathematics. However, the hypothesis testing showed that there is a significant relationship between socio-economic status (SES) of parents and students’ achievement in mathematics. Based on these findings, recommendations were made.*

**Keywords:** Socio-economic status parents, students, mathematics achievements, senior secondary schools

### INTRODUCTION

This research study focused on the socio-economic status (SES) of parents and students’ achievement in mathematics at the senior secondary school level in Rivers State, Nigeria. Incidentally, there is a widespread interest in improving the levels of mathematics achievement in schools. Though economic benefits abound, it is also argued that there are also social benefits tied to improving access for larger numbers of young people to post-school education and training. The interest in raising levels of achievement in mathematics has led to a focus in identifying the range of factors that shape achievement in mathematics. Such major factor to be considered in this study is the socio-economic status (SES) of parents.

In our research context, socio-economic status (SES) is a term used to summarize a variety of factors, including parental education and occupation that influence student performance. Simich-Dudgeon and Weimstein – Shr (2004) found that other socio-economic characteristics (e.g Parents education, income, median age, home ownership, number of children) taken into consideration, students are more likely to succeed academically if their parents actively support their learning. They outlined the socio-economic roles of parents in students’ achievement as below:

1. Provide a home environment that supports children’s learning needs.
2. Volunteer in schools as aides or in other roles.

3. Monitor children's progress and communicate with school personnel.
4. Tutor children at home to reinforce work done in school.

In addition, Sticht and Weinstein – Shr (2005) found that children's achievement in school was directly correlated with the mother's level of education as mother is usually the first teacher. Furthermore, the mother's role of constructing conversations; talking about books and pictures in those books, telling bedtime stories, reading aloud, and asking questions are important steps towards developing the child's literacy skills.

Weinstein – Shr (2005) cites research that shows how parents – child interaction affects students' learning and how such interaction is especially valuable where literacy in a foreign language is new to both parent(s) and child. Arguably because the family is a crucial resource for making sense of a new life in a new setting, its basic economic, social and psychological needs should be reflected in designing ways to help learners achieve mathematical and scientific proficiency and power.

However, in PISA (2003), SES is measured by an index that includes information describing family structure, parental education and occupation. Parental labour market participation and whether a student's family has specific educational and cultural possessions at home. An earlier analysis of PISA (2000) results which focused mainly in literacy found that students from higher socio-economic families tended to show stronger literacy skills. The same result was found for PISA (2002), in which students from families with higher socio-economic status also tended to perform better in students' achievement in mathematics. Does an aggregate of these views connote the fact that the socio-economic status (SES) of parents plays a centre-stage role in the achievement of students especially in mathematics? What is the problem of low achievement in mathematics at the senior secondary school level in Rivers State, Nigeria?

## THE PROBLEM

Odubina (2001) posited that mathematics is the pivot around which the whole essence of living revolves and the basis for scientific and technological take – off. Yet, Ahiakwo (2006) found that the performance of various levels of students has decelerated over the years with that of Nigerian children quite remarkable. Furthermore, the Chief Examiners Report of results of our public examinations (WAEC, 2001-2009) had shown markedly a decline in the percentage of passes in mathematics. Earlier Ibebuikwe (1986) noted that many students even as far back as their primary school time, do not take interest in mathematics to a meaningful degree and this has led to a continuous general poor performance in the subject. Does that suggest a likely relationship between the socio-economic status of parents and students' achievement in mathematics at the senior secondary level in Rivers State, Nigeria? To what extent is this relationship? This research study is poised to investigate this phenomenon.

## THEORETICAL BACKGROUND

The term socio-economic status (SES) of parents in relation to this study is a concept demanding utmost attention. It deals with parents' education, income, median age, home ownership, number of children etc. Furthermore, Bojuwoje (2000) noted that Nigerian parents (especially the educated ones) are known to be in the habit of dictating career choices to the students. These parents he stressed need assistance of a counselling nature in developing appropriate skills in parents-child interaction. Sjogren (2002) found that parental formal education is another factor influencing occupational choice of the student. He posited that youths from poorly educated parents are sensitive to economic incentives since they are to a greater extent attracted to occupations with high rates and high return to education.

Adesemowo and Adenuga (1998) had earlier noted that educated parents were more concerned about their children than the uneducated ones. This might be as a result of their levels of education which have exposed them to series of information about life generally.

Echeche (2000) noted that development of interest in occupation starts from the home. He stressed that the occupation of the individual's parents and other key figures in his/her family influences the occupational choice of such an individual.

Smith and Cheung (2004) conducted a study in the Philippines primary school children and found that home support for education from the parents had shaped the school attainment of their children. Several studies have explored the relationship between socio-economic status (SES) of parents and students' achievement in mathematics in China, India, Kenya, Nepal, the Philippines and Thailand.

However, comparing Canada with other countries, differences in socio-economic status had a smaller impact on students' achievement. Furthermore differences in socio-economic status among Canadian students' also were smaller than in most countries. In the same vein, parental occupation may also influence how students perceive the value of mathematics learning environment at home. Examining this further, if occupation is considered as an indicator of parental skill use it appears that students whose parents worked in occupations with greater skill requirements also performed better in mathematics.

Critically examining the PISA (2002) results, students whose parents were in professional or managerial occupations were found to have higher mathematics achievement than others. In other words, students whose parents had occupations those specifically required strong mathematical skills – that is physical mathematical and engineering science professionals tended to have highest mathematical scores than other students. It was also observed that students whose officials, executives occupational category that include legislators, senior officials, executives and managers in fact performed almost one proficiency level lower than students whose parents worked in the mathematics – intensive occupational group.

Mburza (2003) asserted that research had shown that parents of Nigerian secondary school students being largely illiterates are scarcely capable of reading well informed decisions about the future of their youths. This ever – so – often, it is the parents own misconceptions of the nature of work rather than the demand on the employment market that provides many youths with the prime stimulus to select occupation.

The programme for international student assessment PISA (2005) contended that “parents play an important role in their children's learning. Aside from being actively involved in their children's education, parents also provide a home environment that can affect learning. Furthermore, parents serve as a model for learning, determine the educational resources available in the home and hold particular attitudes and values towards education. Although it is difficult to examine the home environment of each student, the educational attainment and occupation of parents serves as an indicator of the values and resources with which parents create this environment.

PISA (2005) carried out a study on Canada as a whole and found that the average mathematics series students whose parents had high school or less were significantly lower than the average scores of students whose parents had college or university education. For example, one parent with a university degree compared to those whose parents had no more than high school education was about two-thirds of the proficiency level.

Findings revealed that there is a positive relationship between the educational level of the parents and student performance in mathematics. However, there was also a considerable

overlap in the performance of students from difficult educational backgrounds. Infact, many students whose parents had a university degree.

In the Nigerian context, Ali (2003) stated that “there is evidence to show that parents’ education has the strongest influence in students’ choice of career, thereby influencing achievement in mathematics. Corroborating this view, Sjogen (2002), Sharma (1997) and Onoyase (1996) contended that the home environment exerts a significant influence on students’ educational aspirations.

Hence, this study is poised to determine the relationship between socio-economic status (SES) of parents and students’ achievement in mathematic with a special focus on Rivers State, Nigeria. This is with the view to filling the gap in literature and contributes to requested knowledge in mathematics education.

## THE METHOD

The ex-post facto research design was adopted for this study because it seeks to investigate an existing phenomenon regarding students’ achievement in mathematics. The population of the study consisted of 10,120 senior secondary II Students in Rivers State, Nigeria. However, the sample size of 4,510 for the study was selected by using the Yarrow Yamen’s formula. The research instrument is the socio-economic status (SES) and students’ achievement in mathematics questionnaire (SESASAMQ). To elicit data from the respondents the instrument was constructed using the following scale

1. Very High Extent (VHE) = 4
2. High Extent (HE) = 3
3. Low Extent (LE) = 2
4. Very Low Extent (VLE) = 1

The respondents were free to indicate ( ) in the column against each of the items as it applied to them. A decision cut off point of 2.50 was adopted. Any item or component in which the respondents have a mean score of 2.50 and above was regarded as a high extent while a mean score below 2.50 was regarded as a low extent.

Descriptive and inferential statistics were adopted for this study. In the descriptive statistics mean ( $\bar{X}$ ) variance ( $\delta^2$ ) and standard deviations ( $\delta$ ) were computed and tables constructed. Deductions made from results on this table formed the answers to the research question. To test the hypothesis, the Z – test statistic was applied to compare the means of the SES and achievement in mathematics. The 0.05 level of significance was adopted with the degree of freedom as  $df = N_1 + N_2 - 2$ .

**Table 1. Distribution of population of 10,120 senior secondary II Students in Rivers State, Nigeria**

<i>S.No</i>	<i>Local Govt. Area</i>	<i>No. of Schools</i>	<i>Population of Students (SS2)</i>	<i>Sample of Students (SS2)</i>
1.	Abua/Odual	11	440	209
2.	Ahoada – East	12	480	218
3.	Ahoada – West	13	520	226
4.	Akuku-Toru	8	320	177
5.	Andoni	10	400	200
6.	Asari-Toru	8	320	177

7.	Bonny	13	520	226
8.	Degema	12	480	218
9.	Eleme	6	240	150
10.	Emohua	19	760	262
11.	Etche	19	760	262
12.	Gokana	12	480	218
13.	Ikwerre	13	520	226
14.	Khana	22	880	275
15.	Obio/Akpor	16	640	246
16.	Ogu/Bolo	3	120	92
17.	Okrika	6	240	150
18.	Omuma	3	120	92
19.	Ogba/Egbema/Ndoni	15	600	240
20.	Opobo/Nkoro	3	120	92
21.	Oyigbo	4	160	114
22.	Port Harcourt	15	600	240
23.	Tai	10	400	200
	<i>Total</i>	<i>253</i>	<i>10,120</i>	<i>4,510</i>

## RESULTS AND DISCUSSION

Research Question: To what extent does socio-economic status (SES) of parents relate to students' achievement in mathematics?

**Table 2. Analysis of the opinions of students on socio-economic status of parents and students' achievement in mathematics**

<i>S/N</i>	<i>Question Items</i>	<i>VHE</i> (4)	<i>HE</i> (3)	<i>LE</i> (2)	<i>VLE</i> (1)	<i>Total</i>	<i>Mean</i> $\bar{X}$	<i>Percentage</i> <i>rating (%)</i>
1.	To what extent does your fathers' position in the office influence your learning of mathematics?	451 (1804)	564 (1692)	2593 (5186)	902 (902)	4510 (9584)	2.13	53.25
2.	To what extent does your living in a government reservation area make you achieve better grades in mathematics?	226 (904)	350 (1050)	2852 (5784)	1082 (1082)	4510 (8820)	1.94	48.44
3.	To what extent does the income of your father influence your achievement in mathematics?	677 (2708)	1398 (4194)	1691 (3382)	744 (744)	4510 (9179)	2.45	61.25
4.	To what extent does the occupation of your	361 (1444)	451 (1557)	2548 (5096)	1082 (1082)	4510 (9179)	2.04	51.00

5.	father influence your achievement in mathematics? To what extent does the occupation of your mother influence your achievement in mathematics?	316 (1264)	451 (1353)	2650 (5300)	1093 (1093)	4510 (9010)	1.99	49.75
6.	To what extent does your father's qualification influence your achievement in mathematics?	259 (1036)	406 (1218)	2706 (412)	1139 (1139)	4510 (8805)	1.95	48.75
7.	To what extent does your mother's qualification influence your achievement in mathematics?	282 (1128)	530 (1590)	2402 (4804)	1226 (1296)	1139 (1139)	1.95	48.75
8.	To what extent does the medium age of your parents influence your achievement in mathematics?	203 (812)	361 (1083)	2740 (5480)	1206 (1206)	4510 (8581)	1.90	47.50
9.	To what extent does your father's ownership of a home influence your achievement in mathematics?	237 (948)	338 (1014)	2796 (5592)	1139 (1139)	4510 (8693)	1.92	48.00
10.	To what extent does the number of children at home influence your achievement in mathematics?	169 (676)	203 (609)	2672 (5344)	1466 (1466)	4510 (8095)	1.79	44.75
11.	To what extent does the culture of your parents influence your achievement in mathematics?	710 (2840)	857 (2571)	2526 (5052)	417 (417)	4510 (10880)	2.41	60.25
12.	To what extent does your father driving you to school in an official car influence your achievement in mathematics?	136 (544)	180 (540)	2706 (5412)	1488 (1488)	4510 (7984)	1.77	44.25
<i>Group mean rating (x) =</i>							2.02	50.5

Table 2 above, revealed that the summary result of the total opinion of students on the relationship between socio-economic status of parents and students' achievement in mathematics was 2.02 indicating a percentage of 50.5. However, the decision rule says that the mean of the scale used is 2.50, making any score below 2.50 to show "a low extent". Therefore the score 2.02 with a percentage rating of 50.5 shows to "a low extent socio-economic status (SES) of parents relate to students' achievement in mathematics.

## Hypothesis Testing

**H<sub>0</sub>: There is no significant relationship between the socio-economic status of parents and students' achievement in mathematics.**

**Table 3. Z-Ratio Test of Significant Relationship between the Socio-Economic Status of Parents and Students Achievement in Mathematics**

<i>Variables</i>	$\bar{X}$	<i>Sd</i>	<i>N</i>	<i>df</i>	<i>P</i>	<i>S. Error</i>	<i>Z-cal</i>	<i>Z-Crit</i>	<i>Decision</i>
Socio-economic status (SES)	50.50	4.89	4510			0.084		Z>1.96	Reject
Students' Achievement in Mathematics	54.09	14.79	4510	9018	0.05		-17.34	Or Z<-1.96	H <sub>0</sub>

The result on table 3 showed that the calculated values of Z are – 17.34 which are outside the acceptance region of 1.96 and -1.96, at the degree of freedom 9018 at the 0.5 level of significance. Since the calculated values of Z falls outside the acceptance region, we reject the null hypothesis that there is no significance relationship between the socio-economic status of parents and students' achievement in mathematics. Hence there is a significant relationship between the socio-economic status of parents and students' achievement in mathematics.

## CONCLUSION

From the analysis of data and the discussion of findings the following conclusions were made:

1. There is a significant relationship between socio-economic status (SES) of parents and students achievement in mathematics.
2. Parents who possess an occupation with greater skill requirement like engineering are likely to influence their children to learn mathematics. However, these results were corroborated with earlier results from Canada, the Philippines, and Nepal as indicated in the recent literature reviewed.

## RECOMMENDATIONS

Considering the findings, discussions and conclusions, the following recommendations were made:

1. Since, the problem of study was the poor performance of students in mathematics at the senior secondary school level in Rivers state, Nigeria, parents should not blame government, teacher of mathematics and WAEC personnel alone, but look inward at home by helping students provide textbooks, workbooks, and ensure home task are properly done by the students.
2. Since socio-economic status of parent (SES) was significantly related to students' achievement in mathematics, the researcher recommends that parents should actively support the learning of their children, in such ways as monitoring children's progress and communicating with school personnel, tutor children at home to reinforce work done in school and acting as volunteer in schools as aides or in other roles.

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