PARENTAL INVOLVEMENT AND INTEREST ON SENIOR SECONDARY SCHOOL STUDENTS’ MATHEMATICS ACHIEVEMENT IN KEBBI STATE, NIGERIA

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ABSTRACT
The education of an individual begins from home and continues in school. In fact, the importance of the home in education of a child has long been recognized worldwide through research. The knowledge of mathematics education is an indispensable tool. Parents are very important instrument for an effective communication of any knowledge, mathematics in particular. In the effort to improve students cognition and affective outcomes in mathematics and/or school learning, educational psychologists and mathematics educators, have continued to search for variables (personal and environmental) that could be manipulated in favour of academic gains. To achieve this, the paper therefore investigated the parental involvement and interest on senior secondary school students’ mathematics achievement. Four research hypotheses were formulated to guide the study. An ex-post facto design was used as the design for the study. The population consisted of 84,573 senior secondary school students out of which 382 students were sampled. Results were analyzed using t-test, Pearson product moment correlation, regression analysis and ANOVA all at 5% level of significance. From the findings, it was observed that parental involvement and interest have a significant influence on students’ and are also important predictors of mathematics achievement. The study recommended among others that parents should make sure they complement teachers’ efforts in school by monitoring and supervising their children’s academic activities in order to enhance mathematics achievement.

Key words: Parental involvement, interest, mathematics achievement and senior secondary school students.
1 INTRODUCTION

The differential scholastic achievement of students in Nigeria has been and is still a source of concern and research interest to educators, government and parents as well. This is so because of the great importance that education has on the national development of the country. All over the country, there is a consensus of opinion about the fallen standard of education in Nigeria Adebule [1]. Parents and government are in total agreement that their huge investment on education is not yielding the desired dividend. Teachers also complain of students’ low performance at both internal and external examination. The annual releases of Senior Secondary Certificate Examination results (SSCE) conducted by West African Examination Council (WAEC) justified the problematic nature and generalization of poor secondary school students’ performance in different school subjects. For instance, the percentage of failure compared with students who passed mathematics from 2007 to 2010 is shown below.

Table 1: Mathematics West African Examinations Council (WAEC) Performance in the Senior School Certificate Examinations in May/June, 2009-2012.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOTAL NO OF CANDIDATE</th>
<th>CREDIT A1-C6 (%)</th>
<th>PASS P7-P8 (%)</th>
<th>FAIL F9 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>1,019,524</td>
<td>33.97</td>
<td>28.16</td>
<td>34.47</td>
</tr>
<tr>
<td>2008</td>
<td>1,054,853</td>
<td>38.20</td>
<td>25.36</td>
<td>34.41</td>
</tr>
<tr>
<td>2009</td>
<td>1,149,277</td>
<td>41.12</td>
<td>31.09</td>
<td>24.95</td>
</tr>
<tr>
<td>2010</td>
<td>1,249,028</td>
<td>46.75</td>
<td>26.72</td>
<td>24.24</td>
</tr>
</tbody>
</table>


Education at secondary school level is supposed to be the bedrock and the foundation towards higher knowledge in tertiary institutions. It is an investment as well as an instrument that can be used to achieve a more rapid economic, social, political, technological, scientific and cultural development in the country. The
National Policy on Education [2] stipulated that secondary education is an instrument for national development that fosters the worth and development of the individual for further education and development, general development of the society and equality of educational opportunities to all Nigerian children, irrespective of any real or marginal disabilities.

Parental involvement in education included contribution to their children’s home-based activities (helping with home-work, encouraging children to read, and promoting school attendance) and school-based activities attending Parent-Teachers’ Association meetings, parent-teacher conferences, and participating in fund raising activities). Hixson [3] explained that involvement of parents and families is often cited as one of the most important ways to improve public schools. Parental involvement makes an enormous impact on the student’s attitude, attendance, and academic achievement and it promotes better cooperation between parents and school. It also allows parents and teachers to combine efforts to help the children succeed in school. Also parental involvement has effect on gender as Paulson [4] examined some college students regarding their parents’ responsiveness, school involvement interest, and commitment to achievement. Boys reported that both maternal and paternal support significantly predicted their achievement; however, girls reported that parental involvement and style did not predict their achievement. Based on findings from this study, therefore, parental involvement seems to be sensitive to student gender.

Epstein [5] identified six areas of parental involvement in their children’s academic activities: parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community. If parents are actively involved in these areas, no doubt it will stimulate children’s interest in school and positively influence academic achievement. Parental involvement cannot work alone to influence school outcomes. The cooperation of students with their parents and
teachers can be very valuable. A student should be willing to learn, take interest, and participate fully in academic activities before he or she can benefit from school. Sarason [6] observed that schools are no longer interesting places for most of the students; however, this type of observation may vary from place to place or even from school to school in a particular area. Yet attention should be given to how interest influences school achievement. Morakinyo [7] also noted that many students now take more interest in a certificate than in what they can gain in school because of the scourge of examination malpractices and over-emphasis on paper qualification. The present study therefore sought to find out the influences of parental involvement and interest in senior secondary school students’ mathematics achievement in Kebbi state.

1.1 Purpose of the Study
The family is the primary socializing agent of which a child is a member since it is in the family the child is born. One may rightly say that the family is the informal socializing agent since all its members are blood relations. At this junction, it must be clearly known that families differ vastly in terms of their significance in social order as some have more prestige, dignity, money and power than others. Parental attitude is a measure or an index of parental involvement. A child, brought up with affection and care in the least restrictive environment would be able to cope up better with the sighted world. Therefore, the family shapes the social integration of the child more than a formal school. Turnbull [8] has identified four basic parental roles- parents as educational decision makers; parents as parents; parents as teachers and parents as advocates. Since the parent's attitude is so important, it is essential that the home and school work closely together, especially for children with disabilities. It is against this that the study sets out clearly among other things
to find out the role of parents in providing necessary materials, supporting extra lessons in school, motivating students to study mathematics.

1.2 Statement of the Problem
The role of secondary education is to lay the foundation for further education and if a good foundation is laid at this level, there are likely to be no problem at subsequent levels. However, different people at different times have passed the blame of poor performance in secondary school to students because of their low retention, parental factors, association with wrong peers, low achievement, low retention, low achievement motivation and the likes; Aremu & Sokan [9]. Parental involvement and interest are important factors that determines individual outlook towards anything in life. Parents’ involvement is said to be more positive among people of higher level of socio-economic status. Ichado [10] notes that the environment in which the students come from can greatly influence his performance in school. Sewell and Shah [11] argues that encouragement from parents, teachers, friends as well as youths own perception of ability, act as mediating variables between socio-economic status on the other hand and aspiration on the other. Uche [12] state that, many parents in Nigeria are too poor to provide their meals a day for their family, let alone to buy text-books for their children and other necessary school requirement. Therefore, the problem of this study is to determine the parental involvement and interest in senior secondary school students’ mathematics achievement in Kebbi state, Nigeria.

1.3 Objectives of the study
The study intends to achieve the following objectives:

i. To determine the relative influence of parental involvement and interest on students’ achievement in mathematics.
ii. To what extent will students’ parental involvement and interest in school predict the achievement in mathematics

iii. The relationships among students’ parental involvement, interest in school and mathematics achievement.

iv. To determine the differences between male and female students’ in parental involvement, interest in school and mathematics achievement.

1.4 Research questions
This research will attempt to answer the following questions:

i. What is the relative influence of parental involvement and interest on students’ achievement in mathematics?

ii. What are the relationships among students’ parental involvement, interest in school, and mathematics achievement?

iii. To what extent will students’ parental involvement and interest in school predict the achievement in mathematics?

iv. What is the difference between male and female students’ in parental involvement, interest in school and mathematics achievement?

1.5 Research hypotheses
The following null hypothesis were formulated and tested at 5% level of significance.

Ho₁: There is no significant difference between the relative influence of parental involvement and interest on students’ achievement in mathematics.

Ho₂: There is no significant difference between the relationships among students’ parental involvement and interest in mathematics achievement.

Ho₃: There is no significant difference between students’ parental involvement and interest in predicting the achievement of mathematics.
Ho₄: There is no significant difference between male and female students’ in parental involvement and interest towards the achievement of mathematics.

2 METHODOLOGY

2.1 Research Design

This study adopted a pure quantitative method using an ex-post facto design in which the researcher does not have direct control over independent variable because their manifestations have already occurred or because they are inherently not manipulable.

2.2 Population of the Study

The target population is all the senior secondary school students in Kebbi state. There are one hundred and sixty two (162) senior secondary schools in the state with the sum total of eighty four thousand five hundred and seventy three (84,573) students in which 56,158 are male and 28,415 are female students. Data statistics were supplied by the State Secondary Education Management Board (SSEMB).

Table 2: Population of the Study

<table>
<thead>
<tr>
<th>S/N</th>
<th>Educational zone</th>
<th>Number of schools</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B/Kebbi</td>
<td>34</td>
<td>10,177</td>
<td>5,116</td>
<td>15,293</td>
</tr>
<tr>
<td>2</td>
<td>Yauri</td>
<td>20</td>
<td>6,915</td>
<td>3,843</td>
<td>10,758</td>
</tr>
<tr>
<td>3</td>
<td>Argungu</td>
<td>24</td>
<td>7,603</td>
<td>4,711</td>
<td>12,314</td>
</tr>
<tr>
<td>4</td>
<td>Zuru</td>
<td>23</td>
<td>8,577</td>
<td>4,260</td>
<td>12,837</td>
</tr>
<tr>
<td>5</td>
<td>Bagudo</td>
<td>27</td>
<td>9,297</td>
<td>5,055</td>
<td>14,352</td>
</tr>
<tr>
<td>6</td>
<td>Gwandu</td>
<td>15</td>
<td>5,738</td>
<td>2,132</td>
<td>7,870</td>
</tr>
<tr>
<td>7</td>
<td>Bunza</td>
<td>19</td>
<td>7,851</td>
<td>3,298</td>
<td>11,149</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>162</strong></td>
<td><strong>56,158</strong></td>
<td><strong>28,415</strong></td>
<td><strong>84,573</strong></td>
</tr>
</tbody>
</table>

Source: [Kebbi State Secondary Education Management Board, 2012].
2.3 Sample for the Study
The researchers adopted a random sampling technique was adopted in selecting the schools, level of the students and the respondents. The schools are: Sarki Abdullahi College Birnin Yauri, Nana Asma’u Government Girls Secondary School Kamba, Government Day Secondary School Wara and Government Day Secondary School Ribah. The respondents were randomly drawn from a group of senior secondary school two (SS2) students in four secondary schools. A total of three hundred and eighty two (382) participants were taken as the sample which is in accordance with Krejcie and Morgan [13] table for determining sample size from a given population. Out of the 382 respondents, 258 were males and 124 were females.

Table 3: Sample Selected for the Study

<table>
<thead>
<tr>
<th>S/N</th>
<th>Name of School</th>
<th>Location</th>
<th>Males</th>
<th>Females</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>S. A. C.</td>
<td>B/Yauri</td>
<td>96</td>
<td>-</td>
<td>96</td>
</tr>
<tr>
<td>2</td>
<td>N. A. G. G. S. S.</td>
<td>Kamba</td>
<td>-</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td>3</td>
<td>G. D. S. S.</td>
<td>Wara</td>
<td>96</td>
<td>-</td>
<td>96</td>
</tr>
<tr>
<td>4</td>
<td>G. D. S. S.</td>
<td>Ribah</td>
<td>66</td>
<td>29</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>258</td>
<td>124</td>
<td>382</td>
</tr>
</tbody>
</table>

3 INSTRUMENTATION
Instrumentation involves careful selection of adequate and appropriate tool(s) which are administered in order to collect relevant data concerning the study. The instrument used in gathering data for this study was a close-ended questionnaire named parental involvement and interest on students’ mathematics achievement (PIISMA). The research hypotheses served as the controlling factor in preparing the questionnaire, this was to ensure that the items in the questionnaire reflect on the hypotheses of the study. The questionnaire contains 25 items and it is made up of two sections. Section A was design to elicit information on the demographic data of the respondents while section B was design to elicit information on parental
involvement and interest on students’ mathematics achievement. The instrument is based on four point modified likert scale of strongly agree (SA), Agree (A), Disagree (D), Strongly disagree (SD). In scoring the items, respondents would have a possible score ranging from 4-1 which represents his/her opinion on each item. The higher the score, the more influenced the respondent is by the item. The highest possible score is 100 while the lowest score is 25 and the range of the score is 75. The mid-point score is 37.5. The cut-off point is from 62.5 to 100. Thus, respondents who obtained scores from 62.5 to 100 were considered as having high parental involvement and interest on students’ mathematics achievement while those respondents who obtained scores below 62.5 were considered as having low parental involvement and interest on students’ mathematics achievement. The instrument was administered by the researcher with the help of some research assistants.

3.1 Validity and reliability of the research instrument

The instrument was validated by experts at the department of science education, Ahmadu Bello University Zaria, Kaduna state Nigeria. The experts modify the test by setting their options lettered A-D instead of A-E. The researcher makes the adjustments to the tests as suggested by the experts. A trial testing of the instrument was carried out on a sample of 50 senior secondary school students which were not part of the targeted sample but part of the population. A test-retest method was employed in establishing reliability for the instrument. By means of Pearson product moment correlation, a reliability coefficient of 0.81 was achieved. This reliability coefficient showed that the instrument was reliable for use.
4 PROCEDURE FOR DATA ADMINISTRATION AND COLLECTION
The questionnaire was administered to 382 students and all the respondents returned the questionnaire. Data collections were done immediately and are marked fairly and honestly by the researcher. The lists of the scores of students were prepared by the researcher.

4.1 Procedure for data analysis
Scores obtained from the test were presented in tabulator form using SPSS for data storage and calculation. The data obtained from the study were statistically analyzed using analysis of variance (ANOVA) for Ho1, Pearson product moment correlation for Ho2, regression analysis for Ho3 and t-test for Ho4 all at 5% level of significance.

5 RESULTS
Ho1: There is no significant difference between the relative influence of parental involvement and interest on students’ achievement in mathematics.

Table 4: Analysis of variance (ANOVA) between the relative influence of parental involvement and interest on students’ achievement in mathematics

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>F-critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>271174</td>
<td>1</td>
<td>90391</td>
<td>23.01</td>
<td>3.84</td>
</tr>
<tr>
<td>Within Groups</td>
<td>15555</td>
<td>380</td>
<td>39.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>286729</td>
<td>381</td>
<td></td>
<td></td>
<td>S*</td>
</tr>
</tbody>
</table>

S* - Significant at 5% probability margin, Df = 380

Table 4 indicates that F-ratio (23.01) is greater than F-table (3.84) at 5% level of significant. The source of variance between groups is 271174 and the source of variance within groups is 15555 which clearly show a significant difference on the relative influence of parental involvement and interest on students’ achievement in mathematics.
Ho₂: There is no significant difference between the relationships among students’ parental involvement and interest in mathematics achievement.

Table 5: Relationships among students’ parental involvement, interest in school, and mathematics achievement

<table>
<thead>
<tr>
<th></th>
<th>Parental Involvement</th>
<th>Parental Interest</th>
<th>Mathematics Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental involvement</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental interest</td>
<td>0.743*</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Mathematics achievement</td>
<td>0.105*</td>
<td>0.325*</td>
<td>1.000</td>
</tr>
</tbody>
</table>

S* - Significant at 5% probability margin

There are significant positive relationships between parental involvement and mathematics achievement ($r=+0.105$, $p<0.05$) and between parental interest and mathematics achievement ($r=+0.325$, $p<0.05$). However, the highest positive significant relationship is between parental involvement and parental interest ($r=+0.743$, $p<0.05$).

Ho₃: There is no significant difference between students’ parental involvement and interest in predicting the achievement of mathematics

Table 6A: The influence of parental involvement and interest in predicting the achievement of mathematics

<table>
<thead>
<tr>
<th>Mode</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>Std. Error</th>
<th>R</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental involvement</td>
<td>191</td>
<td>5.89</td>
<td>2.139</td>
<td>6.789</td>
<td>0.270</td>
<td>0.039</td>
</tr>
<tr>
<td>Parental interest</td>
<td>191</td>
<td>6.17</td>
<td>2.135</td>
<td>0.202</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* - Significant ($p<0.05$)
Table 6B: Summary of analysis of variance (ANOVA) of regression of parental involvement and interest in predicting the achievement of mathematics

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F-cal.</th>
<th>F-crit.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1341.096</td>
<td>1</td>
<td>548.127</td>
<td>7.334</td>
<td>1.23</td>
<td>*</td>
</tr>
<tr>
<td>Residual</td>
<td>16250.466</td>
<td>380</td>
<td>39.431</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17591.562</td>
<td>381</td>
<td>39.431</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant (p<0.05)

Table 6A and 6B shows that parental involvement and interest accounted for 3.9% of the total variance in mathematics achievement ($R^2 = 0.039, p<0.05$). This percentage though it’s low but shown to be statistically significant. Also when $R^2$ was subjected to test of significance using F-ratio, the critical value of F was far less than the observed F under appropriate probability level and associated degrees of freedom. Thus, the null hypothesis is rejected. Therefore, the results indicated that parental involvement and interest are important factor in predicting mathematics achievement.

$H_{04}$: There is no significant difference between male and female students’ in parental involvement and interest towards the achievement of mathematics.

Table 7: t-test showing gender differences in parental involvement and interest towards the achievement of mathematics

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>S. D.</th>
<th>Std. Error</th>
<th>Df</th>
<th>t-cal.</th>
<th>t-crit.</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>258</td>
<td>55.096</td>
<td>19.512</td>
<td>51.127</td>
<td>380</td>
<td>15.802</td>
<td>1.968</td>
<td>0.05</td>
</tr>
<tr>
<td>Female</td>
<td>124</td>
<td>32.013</td>
<td>13.792</td>
<td>38.792</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$S^*$ - Significant at 5% level, Df = 380
Table 7 indicates the results of the analysis conducted on parental involvement and interest towards students’ academic achievement in mathematics based on gender. The table clearly revealed that t-calculated is 15.802 while t-critical is 1.968 at 5% level of significant. This shows that t-cal. is greater than t-crit., therefore the null hypothesis is rejected; this implies that there is significant difference between male and female students’ in parental involvement and interest towards the achievement of mathematics.

6 DISCUSSION OF RESULT

Parental attitude and support has a great deal of influence on their children participation and level of success attained in mathematics education. According to Leady, LaLonde and Rank [14], “Parents, as well as other adults, need to learn what mathematics really is”. If parents understand that mathematics is apply to everyday life, then so will their children. Parents can then encourage their children to use the mathematics they are learning in practical contexts. When mathematics becomes practical rather than “too hard”, then attitudes towards mathematics will change. From the findings, it clearly shows a significant difference on the relative influence of parental involvement and interest on students’ achievement in mathematics. This finding is in accordance with that of Campbell & Mandel [15], Fan & Chen [16], Ma [17] and Jacobs & Harvey [18] who identified that parental involvement has a significant impact on students’ mathematics achievement and attitudes towards mathematics.

Parental involvement and interest were combined to significantly predict students’ academic achievement in mathematics, which implies that students’ parental involvement and interest are important predictors of mathematics achievement. This view corroborates the findings of Sewell and Shah [11], Hixon [3] and Epstein [5] which reported that parental involvement could help improve students’ achievement in school. Baker and Soden [19] enumerated areas where parents
could be involved in their children’s academic activities: provision of stimulating literacy materials at home, supervision of homework, monitoring of television viewing, and participation in joint learning activities at home.

Result of the last hypothesis reveals a significant difference in level of parental involvement in male and female children’s academic activities. This study corroborates that of Paulson [4], Duffy, Gunther & Walters [20], Gorman [21] and Olatoye [22] who all reported a significant difference in favour of male students. However, this finding is contrary to the study of Kenith, Quirk, Sperduth, Santillo & Killings [23] who reported that there is no significant difference in parental involvement influence on students’ achievement across gender.

7 CONCLUSION

From the findings of this study, one can safely state that parents play a significant role in their children’s mathematics education. Parents are in the position to put their children on the right course, especially at the early stage of development. The parental roles continue to impact on children’s lifestyle, perhaps throughout life. It can be concluded that parental involvement and interest have a significant difference in academic achievement with respect to gender and are important predictors of mathematics achievement. Parents are in the position to help, counsel, and support their children socially, academically, and emotionally to achieve better grades in mathematics.
7.1 Recommendations

Based on the findings of this study, the researcher makes the following recommendations:

- Parents should understand the importance of the mathematics foundation they set to their children, as well as the needs for them to communicate positively about the importance of mathematics education.
- Parents should make sure they complement teachers’ efforts in school by monitoring and supervising their children’s academic activities in order to enhance mathematics achievement.
- Government should provide adequate instructional materials and qualified teachers so as to remove frustration in the process of learning.
REFERENCES


