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<td>Author 1</td>
<td>Dr. Ugwuja J.J.O.</td>
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<td>Title</td>
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STUDY HABITS OF JUNIOR SECONDARY SCHOOL STUDENTS IN ENUGU STATE AS CORRELATES OF THEIR ACHIEVEMENTS IN MATHEMATICS.

IMPLICATIONS FOR THE UNIVERSAL BASIC EDUCATION (UBE) PROGRAMME

BY

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Abstract
This paper discussed study habits adopted by Junior Secondary School students as they relate to their achievements in mathematics. A random sample of 14 (fourteen) old secondary schools, out of a total of 25 (twenty five) of them in Nsukka Local Government Area of Enugu State, were used. Out of a total of approximately 14000 (fourteen thousand) Junior Secondary School students in the local government, a random sample of 1,120 (one thousand, one hundred and twenty) of them, selected from JS II and JS III classes were used in the survey. Data collected were analyzed using Descriptive Statistics like percentages and frequencies. Inferential statistics like the Z-test, the t-test statistics were also used in comparing mean achievements of male and female students in their end of term examinations in mathematics. Junior secondary school students in Nsukka Local Government Area of Enugu state were found to have, generally Bad Study habits and Bad Attention Spans in mathematics. The parents of students do not show sufficient interests in their wards' achievements in the subject. Parents are usually interested in their end of term or end of year results, not taking into cognizance their daily class works, like assignments, tests, projects etc. Male and female students did not show any
significant difference in their study habit patterns. However on the average, male students, performed significantly better than their female counterparts when their first term examination scores were analyzed. The students perceived their Classroom interactions in mathematics as Good. They also generally agree that they are, Ready to Learn, by having the necessary learning materials; pen, pencil, books etc. It is highly recommended among others, that the Universal Basic Education (UBE) teachers that are responsible for students at that level, should guard their loins to effectively make the students to adopt good study habits. It is also recommended that adequate, well planned time table be used in teaching the students mathematics at that level. This will help to improve on the Attention span of the students as well as in their performances in the subject.

Introduction

For many years now, at least for more than two decades, performances of students in Mathematics in secondary schools, particularly in the Junior Secondary School Certificate Examination (JSSCE), have been the poorest when compared with other subjects offered by the students. Ogoamaka (2000), National Examination Research Development Council (ERDC, 2000) to mention but a few, laid credence to these poor results of students in this subject in many schools across the country over the years. Both parents, teachers, educationists and even the students themselves had continually been stunned by these continued poor nature of results in mathematics.

Specific objectives of mathematics education at Junior and Senior Secondary classes in Nigeria are:

- Developing originality, creativity and curiosity in the learners.
- Acquiring relevant manipulative skills.
- Emphasizing the wide application of mathematics in various
Leading the learners to discover and appreciate the beauty and elegance of mathematics and critical consciousness required for effective performance of social, and political roles and features of one's environment. (NPE 2000).

The Federal Government of Nigeria has left no stone unturned towards achieving the objectives of Mathematics education. For more than a decade now, mathematics education at the tertiary levels of education in the country attracts automatic scholarship. This scholarship is usually awarded from their penultimate to their final year. It is still obtainable at the Department of Mathematics of the University of Nigeria, Nsukka. The Federal Government of Nigeria has also built a National Mathematics Centre aimed at improving, not only the welfare of teachers of mathematics throughout the federation, (through in-service training programmes), but also in providing other needed motivating factors that will help to improve on the subject matter content of mathematics. Generally, Mathematics teachers are also readily offered employment opportunities on graduation from either National Teachers Institute (NTI-NCE programme), Colleges of Education or Universities. This is evidenced from the usual tendency to give mathematics teachers more chances of recruitment than others, especially at secondary and tertiary levels of education. This is still happening today in Enugu state of Nigeria for instance in all recruitment exercises at secondary schools level of education.

Despite all these efforts of Government, the state of affairs in results obtained in this subject have remained unchanged. With the present age of technology, almost the whole world is going computer. Information Communications Technology (ICT), the most recently developed computer network of programmes, has moved the world many steps further in information and...
fields.

- Leading the learners to discover and appreciate the beauty and elegance of mathematics and
- The training of the individual to develop critical thinking, and critical consciousness required for effective performance of social, and political roles and the appreciation of basic issues and features of one's environment. (NPE 2000)

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Despite all these efforts of Government, the state of affairs in results obtained in this subject have remained unchanged. With the present age of technology, almost the whole world is going computer. Information Communications Technology (ICT), the most recently developed computer network of programmes, has moved the world many steps further in information and
study habits of junior secondary school students in Enugu State as correlates of their achievements in Mathematics.

Technological breakthrough. All these innovations that contribute immensely to greater and faster national development, are principally anchored on some reasonable knowledge of Mathematics and possession of interest therein.

It has therefore become imperative to conduct a survey on the types of study habits employed by students in mathematics in junior secondary schools in selected secondary schools in Nsukka Local Government Area of Enugu State of Nigeria. Such discoveries will help to throw some light on the causes of the very poor nature of the results in the subject. Such early discoveries at the Junior Secondary School (JSS) level will help to improve on the situation of things in mathematics.

Problem of the study

Results of students in mathematics in both Junior Secondary School Certificate (JSSC), West African Examination Council (WAEC) and the National Examinations Council (NECO), examinations have continued to be the poorest when compared with other subjects offered by students over the years in schools in this country. Students, at all levels of education in this country and even parents and other stakeholders have continued to be stunned at the abysmal nature of the results that continued to be obtained by students.

Government has also continued to provide incentives towards improving mathematics education in this country without any noticeable improvement in results obtained. Scholarships are awarded to anybody who wishes to study mathematics at tertiary levels; starting from their penultimate to final year. National Mathematics Centre has been built and fully equipped to address all issues concerning mathematics education; more employment opportunities are usually offered to graduates of Mathematics especially during recruitment exercises at secondary schools levels. The problem of this study therefore put in question form is:

Which type(s) of study habits do students adopt in studying
Mathematics in schools, especially at the Junior Secondary School level?

What are the relationships between these study habits adopted and achievements in the subject?

Purpose of the study

The main purpose of this study is to obtain baseline information on students' study habits in mathematics in Junior Secondary Schools. Specifically, the study aims at:

- Discovering the study habits adopted by students in mathematics in junior secondary schools,
- Discovering if there is any general pattern between their study habits, and achievements in the subject.
- Knowing if there will be any significant difference between types of study habits and achievements of students in the subject at that level.
- Discovering if there is any pattern of study habits that can be recommended to students in Mathematics that will help to increase achievements in the subject at the secondary school level.
- Finding out if there will be any significant difference between the study habits of males and females in mathematics.
- Finding out if there will be any significant difference between the mean achievement scores of male and female students in their first term examination in mathematics.

All the above purposes will enable one, not only to find out the causes of the poor results of students in the subject, (a consequence of study habits adopted by them) but also to take a decision(s) on how best to study and achieve in mathematics.

Significance of the study

This study is considered significant because of the following reasons:

- The types of study habits adopted by students that lead to the very poor nature of results in Mathematics at the JSS level will
The types of study habits that lead to increased achievement will be identified.

Other mitigating factors in achievement in the subject at that level will be addressed for immediate eradication.

Information Communications Technology (ICT) capacity building, the in-thing worldwide, will be properly based on solid foundations both for the individual learners and the nation at large.

The NCE teachers of Colleges of Education and the National Teachers Institute, will benefit immensely from the findings of this work since they will be in charge of this level as provided in the Universal Basic Education (UBE) programme.

The very poor nature of the results in mathematics, that have continually stunned both parents, students and Educational Planners in this county, will be gradually eradicated if the recommendations, based on the results to be obtained in this research endeavour are properly followed.

**Research Questions**

The following research questions were used in addressing the problem of this study:

Which subject(s) do students in JS schools seldom study? Which subjects do they study most regularly? What is their attention span in the subject like? What is the classroom interaction like (students versus teacher, students versus students) in mathematics? How often do their parents inspect their ward’s tests/assignment exercise books in mathematics? How is the classroom environment conducive for learning? How ready or possible is it for students to learn effectively in mathematics (i.e. do they have the relevant textbooks, library materials, pens, pencils etc to facilitate learning?).

**Research Hypothesis**

The following research hypotheses were formulated to address
this study. Each hypothesis was tested at $\alpha = 0.05$ level. These are

(i) There will be no significant difference between the number of students with good study habits, and those with bad study habits in the schools sampled.

(ii) There will be no significant difference between the number of males and females with good study habits in the schools.

(iii) There will be no relationship between study habits and achievements of students in these schools.

The Role of the Teacher in Aiding Retention and Recall of what has been Learned

Mgbodile (1986) discussed elaborately the role of the teacher in aiding retention and recall of previously learnt materials under the following headings:

- Content
- Presentation
- Revision and practice
- Transfer of learning
- Time tabling and
- Response and evaluation

Content

According to Mgbodile (1986), the content of the lesson should be presented, not as isolated units but essentially as a continuation of that which has been learnt previously. The content ought to be associated with the learners' existing stock of knowledge, and must be meaningful to the learners.

Presentation

Presentation of lesson, demands logical, clearly connected sequence of steps or parts, backed up with instructional materials. If the parts of the lesson are organized sequentially, comprehension, acquisition and retention of the lesson taught is facilitated. This is so, because organized patterns of learning are usually more acceptable than disjointed fragments.
Revision/Practice
Assimilation, consolidation and retention of lesson contents, require recapitulation, rehearsal, periodic revision and review of materials earlier treated. Frequent practice helps a great deal in retention of what has been learnt.

Time tabling
Mgbodile (1986) also stressed that time-table preparation ought to take into consideration the difficulties that might arise for learners as a result of pro-active and re-troactive inhibitions. Time tabling should space out similar subjects in lesson periods to increase comprehension.

Transfer of Learning
Well-planned lesson notes in every day teaching activities helps a great deal in promoting transfer of learning. When the knowledge of something facilitates the learning and performance of another, there is positive transfer, but if otherwise, there is negative transfer. However if the learning of the former has no influence on new learning, then there is zero transfer.

Response and Evaluation
Evaluation instruments can be either oral or written types. All such evaluations should be based on the instructional objectives and should be clear and devoid of any ambiguities. Assignments, practicals, discussions, or tests can be used to elicit responses from the students.

EMPIRICAL STUDIES ON STUDY HABITS AND ACHIEVEMENTS
A number of empirical studies have identified some adequate
study habits which help students in secondary schools and universities to study effectively on their own. Anyaegbunam (1979), identified eight study habits that help secondary school students to study on their own. Some of the major ones are:

- Use of the library by students
- Having regular study times
- Keeping in good physical form for study by engaging in extracurricular activities.
- Use of past question papers and
- Use of notebooks and text books for revision etc.

Denga (1982) also outlined the following, in their order of importance:

- Getting acquainted with the library
- Budgeting time effectively
- Reading under ideal conditions and
- Determining the best study time.

Main (1980), has his ideal study habits as:

- Having regular schedule of study
- Working with a timetable
- Usually working at the same time each day and
- Reviewing notes as soon as lectures are over.

Mbadiwe (1973) carried out a research on study habits and achievements of undergraduates of the University of Nigeria, Nsukka. The author discovered, amongst other things that the students have different study habits and patterns; that the percentage of students with good or adequate study habits increased in line with the cumulative grade point average of the students. Those with high average recorded good study habits while those with low averages, recorded bad study habit patterns.

Denga (1982) also conducted a research on the problems militating against academic performance of 4000 (four thousand)
students drawn from ten Universities in Nigeria. Out of the 40 (forty) problem areas reported, “Failure to learn how to study well”, ranked highest.

Entwistle and Cowell (1973) also used a sample of 87 (eighty-seven) University students in their research. They discovered that those of them that were high achievers also had high motivation, good study habits and good examination techniques, while those that were low achievers were those of average ability, with low motivation and poor study habit measures.

The views of Entwistle and Cowell (1973) were supported by Miller (1970) who opined that the amount of time spent on study is a useful index of motivation, but the more motivated student also spends his time more effectively and wisely.

Small (1976) showed that there is a positive and highly significant relationship between academic achievement and adherence to a significant pattern of study.

Sinha and Himmelaert (1970) found out that high achievers are more regular and systematic in their studies than the low achievers.

Presley (1974) compared the study habits of college students with good academic standing with those with poor standing. The author discovered that some study habit patterns, like good planning of work to be done in advance, reading under conducive environment, reviewing of notes taken, are distinguishing factors between the good and poor groups of students.

However there seem to exist some conflicts in the opinions of the people about the characteristics of bright students and the way they study. Sexton (1975) reported that intelligent and poor students are likely to display ‘bad’ study habits with equal frequency. The author concluded that many investigators have
shown that bright students spend more time in their study, they
tend to adapt to the amount of time they consider appropriate to
achieve success in the learning of different subjects.

The Design of the Study
The Descriptive Survey Research Design was employed in the
study. This design enabled the researcher to employ some
descriptive statistics like percentages, frequencies, mode, and
median to describe the situation of things as they are, with respect
to the study habits of students in relation to their levels of
achievement in mathematics in the schools.

Scope of the Study
This study covers only junior secondary school students (JSII-
JSIII) of all the schools in Nsukka Local Government Area of
Enugu State. Continuous assessment records, as well as the end
of term promotion examination results of students in 2002/2003
session in this subject were used. Their study habits were
collected on a random sampling basis, using a questionnaire
instrument. All the secondary schools in the local government
were classified into three major categories, namely: (i) All the
schools with a population of 1000 (one thousand) students and
above were classified as grade A; (ii) Those with population
between 500-1000 were classified as grade B; and those with less
than 500 students were classified as grade C. This categorization
was done with the hope of discovering if all the students exhibited
the same study habits, irrespective of location. All the grades A, B
and C schools are essentially Urban, Semi-urban and Rural
schools in the local Government Area.

Area of Study
The study was conducted in Nsukka local government area of
Enugu State with a total of 25 (older) secondary schools. The
schools are composed of 4 (four) all females, 4 (four) all males,
and 17 (seventeen) mixed schools.
Population of the Study
Out of the 27 secondary schools in the LGA, 25 of them have existed for more than six years and have subsequently been taking part in both the Junior Secondary Schools Certificate Examination (JSCE), West African Examination Council (WAEC) and National Examination Council (NECO) of Nigeria conducted examinations. This implies that the schools have sufficiently come of age and the students can be used in investigating study habit patterns and achievements at Junior Secondary School Level.

The Total of approximately 14000 (fourteen thousand) students in all 25 secondary schools in the LGA, constitute the population of this study.

Sample and Sampling Technique
Out of 25 (twenty five) old secondary schools in the LGA, a sample of 14 (fourteen) of them was chosen. Seven of them from each of the urban and rural areas of the local government were randomly obtained and used. From the 14 schools randomly selected, between 30-50 students were randomly selected from each of JSSII and JSSIII classes. This brought the total sample size of students that were used to 1120 (one thousand, one hundred and twenty).

Instrument Development
A Mathematics Achievement and Study Habit Questionnaire Instrument (MASHQI) was developed by the researcher for completion by students in JSII and JSIII classes of schools selected. The questionnaire instrument consisted of 15 (fifteen)
items which focused on some of the following: Time allocation in mathematics; Availability of instructional materials for mathematics teaching; Classroom interaction in mathematics; Time allocation during evening prep; night prep; During week end; During revision periods before examination; Home work, corrections in class; Environmental factors, Parents' role etc. Achievement tests of students were collected from their records using the first term examination scores. These scores are comprised of (a) Two class tests (one oral, one written or both) (b) Two assignments (c) Mid term test (d) End of term test.

Instrument Validation
The MASHQI was validated with the help of Experts in Mathematics Education and Measurement and Evaluation in the Department of Science Education, University of Nigeria, Nsukka. The instrument was also principally based on the study habit inventory developed by Bakare (1970).

Instrument Administration
The questionnaire was administered to JSII and JSIII students in the schools selected by the researcher himself and with the help of some teachers who volunteered to assist. The JSI class was excluded because the researcher considers them to still possess the primary school stuff in terms of study patterns. These steps ensured a 90% return of the questionnaire used for the study.

Method of Data Analysis
Data collected was analyzed using both Descriptive and Inferential Statistics. Such statistics like mean, mode, percentage, t-test statistics, the Chi-square goodness of fit test were used.
RESULTS OF THE STUDY

Results of Research Question

Research question 1

This research question sought information on the subject studied rarely by the students, amongst the core subjects offered in schools. These are, A=Maths, B=Agric Sc., C=Igbo lang, D=English Lang. From Table 1 below, subject rarely studied is Maths. This is followed by Igbo language, Agric Sc. and English language in this order. Maths has 30%, Igbo language 29%, Agric 42.4% and English 17%.

Research Question 2: this sought information on the subject studied most often.

Table 1: Subjects Rarely Studied

<table>
<thead>
<tr>
<th>Subject</th>
<th>1%</th>
<th>2%</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
<th>6%</th>
<th>7%</th>
<th>8%</th>
<th>9%</th>
<th>10%</th>
<th>11%</th>
<th>12%</th>
<th>13%</th>
<th>14%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maths</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td>245</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>B Agric</td>
<td>22</td>
<td>16</td>
<td>10</td>
<td>15</td>
<td>17</td>
<td>16</td>
<td>22</td>
<td>12</td>
<td>25</td>
<td>18</td>
<td>24</td>
<td>16</td>
<td>20</td>
<td></td>
<td>272</td>
<td>79%</td>
</tr>
<tr>
<td>C Igbo</td>
<td>14</td>
<td>19</td>
<td>15</td>
<td>9</td>
<td>11</td>
<td>8</td>
<td>12</td>
<td>10</td>
<td>18</td>
<td>12</td>
<td>18</td>
<td>22</td>
<td>18</td>
<td></td>
<td>314</td>
<td>17%</td>
</tr>
<tr>
<td>D Eng.</td>
<td>23</td>
<td>22</td>
<td>28</td>
<td>25</td>
<td>24</td>
<td>22</td>
<td>22</td>
<td>24</td>
<td>27</td>
<td>24</td>
<td>31</td>
<td>29</td>
<td>28</td>
<td></td>
<td>357</td>
<td>32%</td>
</tr>
<tr>
<td>Total</td>
<td>79</td>
<td>87</td>
<td>78</td>
<td>66</td>
<td>69</td>
<td>79</td>
<td>66</td>
<td>87</td>
<td>86</td>
<td>95</td>
<td>72</td>
<td>91</td>
<td>88</td>
<td>1120</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Therefore, out of 1120 students used in the study, a total of 340 or 30% of them claimed that they study mathematics rarely. This is followed by Igbo language with a total of 330 or 29%; Agric science with 272 or 24% and English language with 196 or 17%.
From table Number 2, the subject studied most often is English language. This is followed by Agric science, Mathematics and Igbo language in this order.

Research Question 3
This sought information on the Attention Span of the students in mathematics.
From data collected from the responses of the students in the 14 (fourteen schools used), the table below shows the summary.

<table>
<thead>
<tr>
<th>Always studied. Very Good</th>
<th>Very often studied Good</th>
<th>Rarely studied. Bad.</th>
<th>Very rarely studied V. Bad</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maths</td>
<td>356</td>
<td>398</td>
<td>247</td>
<td>119</td>
</tr>
</tbody>
</table>

From this table, the mean attention span of the students is obtained to be 2.88 or 3 approx. Therefore the attention span of the students in mathematics tends to be Good.

Research Question 4: This sought information on the Nature of Classroom Interaction in Mathematics lessons

<table>
<thead>
<tr>
<th>Very high (4)</th>
<th>High (3)</th>
<th>Low (2)</th>
<th>Very low (1)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maths</td>
<td>401</td>
<td>272</td>
<td>207</td>
<td>240</td>
</tr>
</tbody>
</table>

From this table no. 4, the mean response is $= 2.7 \approx 3.0$. This also indicates that classroom interaction of the students in mathematics tends to be good.

Research Question 5
This sought information on the role of parents in improving
mathematics achievement of their wards.

Table 5: the response of the students.

<table>
<thead>
<tr>
<th></th>
<th>Very often</th>
<th>Often</th>
<th>Rarely</th>
<th>Never</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspector of Math tests,</td>
<td>128</td>
<td>236</td>
<td>254</td>
<td>502</td>
<td>1120</td>
</tr>
<tr>
<td>assignment, notebooks by</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>parents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Result of analysis shows that their mean response is 1.99 or 2.00 approximately.

Therefore parents of the students in the LGA Rarely inspect or show interest in the performance of their wards in mathematics by inspecting their notes, tests and assignments exercise books and corrections made, at the end of each day's work.

Research Question 6, 7 and 8

Table 6: Results of these research questions are indicated as follows:

<table>
<thead>
<tr>
<th></th>
<th>Very good or very adequate</th>
<th>Good or adequate</th>
<th>Bad or inadequate</th>
<th>Very bad or very inadequate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom environment</td>
<td>140</td>
<td>238</td>
<td>324</td>
<td>418</td>
<td>1120</td>
</tr>
<tr>
<td>Provision of instructional materials</td>
<td>312</td>
<td>346</td>
<td>260</td>
<td>802</td>
<td>1120</td>
</tr>
<tr>
<td>Readiness to learn</td>
<td>322</td>
<td>340</td>
<td>410</td>
<td>150</td>
<td>1120</td>
</tr>
</tbody>
</table>

(i) The classroom environment is Bad, with a mean response of 2.08 or 2.0 approximately.

(ii) Provision of instructional materials for teaching mathematics is Bad with a mean score of 2.1 or 2.0 approximately.

(iii) The extent to which the students are ready to learn mathematics through having relevant textbooks, pens,
pencils etc Tend to be adequate with a mean of 2.5 or 3.0.

Results of Research Hypotheses
Research hypothesis No. 1 states that there will be no significant difference between the number of students with good study habits, and those with bad study habits in the schools sampled.

The following table number 7, shows the details of the results obtained. All the items where the students responded to study habits patterns that are considered adequate were categorized as Good study habits. Those that were considered as inadequate, were categorized as Bad study habits.

<table>
<thead>
<tr>
<th>Study Habits patterns Used by Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good study habits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S/N</th>
<th>Schools</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>QRSS</td>
<td>60</td>
<td>24</td>
<td>576</td>
<td>40</td>
<td>-2</td>
<td>4</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>STC</td>
<td>70</td>
<td>34</td>
<td>1556</td>
<td>30</td>
<td>-12</td>
<td>148</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MRS</td>
<td>35</td>
<td>11</td>
<td>65</td>
<td>33</td>
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<td>23</td>
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<td>24</td>
<td>-12</td>
<td>144</td>
<td>36</td>
<td>-6</td>
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<td>LGSS Nkdk</td>
<td>47</td>
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<td>-13</td>
<td>169</td>
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<td>36</td>
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<td>-6</td>
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<td>444</td>
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<td>256</td>
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<td>-2</td>
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<td>14</td>
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<td>40</td>
<td>-2</td>
<td>44</td>
<td>60</td>
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<tr>
<td>Total</td>
<td>595</td>
<td>3649</td>
<td>3313</td>
<td>488</td>
<td>1120</td>
<td>1120</td>
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</tbody>
</table>

Mean response for good habit $X_0 = 36$. Mean response for bad study habit $X_n = 42$.

Weighted average response $= 502 \times 2 + 615 \times 1 = 1625 = 1.2$. 

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Therefore, JS students, on a general note have **Bad Study Habits**
in mathematics.

The mean response for the good study habits $X_1 = 36$. The mean
response for the bad habit, $X_2 = 42$.

Using table 7,

Standard deviation for the Good study habit

$$\sigma \approx \sqrt{\frac{36 - 36}{405}} = 2.1$$

and Std deviation for the bad study habit

$$\sigma \approx \sqrt{\frac{2113}{615}} = 3.4$$

But $Z_{(0.05)} = 1.96$

Therefore since $27.3 > 1.96$, we reject the null hypothesis that
there is no significant difference between the number of those
students with bad study habits and those with good study habits.
Therefore there is significantly a greater number of students with
bad study habits than those with good study habits amongst JS
students in the schools.

**Result of Research Hypothesis 2**

This states that there will be no significant difference between the
study habits of males and female students in the schools.

From table number 7, all male and all female schools used in the
study are from STC, NHS and BSS Nru (for males) and QRSS,
UGSS and SCGSS (for females)
There is no significant difference between the number of males and females with Good Study Habits in the schools. In other words, ISS students in the schools do not differ significantly by gender with regards to the number that have Good or Bad study habits.

Results of Research hypothesis 3
This states that there will be no relationship between study habits and achievements of the students in mathematics. This result was obtained by testing for any significant difference between the average scores of students with Good Study habits and those with Bad study habits in their first term examination in the subject. To this end, four students were randomly selected from the Good and Bad study habit groups in each of the schools. This brings the total to 64 (sixty four) scores that were used in this area. Tables 8 and 9 show these in details.
Table 8

FIRST TERM SCORES IN MATHEMATICS OF 32 STUDENTS WITH GOOD STUDY HABITS SELECTED AT RANDOM

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>b</th>
<th>d</th>
<th>D'</th>
<th>Z</th>
<th>X</th>
<th>X-X</th>
<th>Y</th>
<th>Y-Y</th>
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<tr>
<td>Urban Girls</td>
<td>48</td>
<td>-16</td>
<td>324</td>
<td>42</td>
<td>-34</td>
<td>195</td>
<td>48</td>
<td>-40</td>
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<td>46</td>
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<tr>
<td>O.R.I.S.</td>
<td>50</td>
<td>32</td>
<td>1054</td>
<td>71</td>
<td>5</td>
<td>25</td>
<td>54</td>
<td>-12</td>
<td>144</td>
<td>47</td>
</tr>
<tr>
<td>N.W.</td>
<td>51</td>
<td>-49</td>
<td>2255</td>
<td>73</td>
<td>6</td>
<td>36</td>
<td>97</td>
<td>-15</td>
<td>225</td>
<td>43</td>
</tr>
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<td>Islam Girls</td>
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<td>-18</td>
<td>3124</td>
<td>55</td>
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<td>121</td>
<td>54</td>
<td>-12</td>
<td>144</td>
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<tr>
<td>S.T.C.</td>
<td>65</td>
<td>-1</td>
<td>7</td>
<td>82</td>
<td>16</td>
<td>256</td>
<td>73</td>
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<td>49</td>
<td>76</td>
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<td>ECSN</td>
<td>65</td>
<td>-1</td>
<td>1</td>
<td>50</td>
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<td>16</td>
<td>83</td>
<td>17</td>
<td>289</td>
<td>88</td>
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<tr>
<td>N.S.</td>
<td>81</td>
<td>15</td>
<td>225</td>
<td>80</td>
<td>14</td>
<td>186</td>
<td>83</td>
<td>17</td>
<td>289</td>
<td>76</td>
</tr>
<tr>
<td>CSSO</td>
<td>77</td>
<td>5</td>
<td>25</td>
<td>75</td>
<td>17</td>
<td>68</td>
<td>9</td>
<td>81</td>
<td>78</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>537</td>
<td>2403</td>
<td>547</td>
<td>927</td>
<td>232</td>
<td>1608</td>
<td>518</td>
<td>172</td>
<td>289</td>
<td>76</td>
</tr>
</tbody>
</table>

\[
E = 66, d = 32, e = 32, \frac{e}{d} = 2120, \frac{e}{d} = 66
\]

\[
\Sigma = 2493 + 927 + 1608 + 2050 = 7078, \frac{\Sigma}{7078} = 14.9 = 15
\]
Therefore, we reject the null hypothesis that there is no significant difference between the average scores of the two groups. Therefore, students with good study habits achieved significantly higher than those with bad study habits in the first term examinations scores of the schools used.

Discussion, Implications, Recommendations and Conclusions

The fact that the scores of students with Good Study habits (in their first term examination), differed significantly from those with Bad study habits, is in line with the discoveries made by Mbadlwe.
(1975) who concluded in his study that the percentages of students with good study habits increased in line with cumulative grade point average of university students used. Higher grade achievers recorded good habits while lower grade point achievers recorded bad habits. The findings are also in line with those of Entwistle and Cowell (1973) who discovered that higher achievers had good study habits, while low achievers recorded bad study habits.

Since junior secondary school students of the schools used in the Local Government Area generally exhibited bad study habit patterns, this points to the fact that the poor results usually obtained in JSCE mathematics examinations results have been consequences of poor study habits of the students at that level. However other variables may also be contributing, but their study habits are major contributing factors.

There is the need for proper orientation of students in Nsukka Local Government towards adopting good study habits to improve on their achievement in the subject. Parents of students should also not be aloof with their wards' performances in mathematics tests/assignments. They should not only be concerned with their end of term/year promotion results in the subjects. Achievements in mathematics should be a collective effort of all.

Implications for Distance Learning Programme

The results obtained have a lot of implications for teachers, parents, teachers at distance learning programs and teachers generally. Apart from giving an insight to the study patterns of junior secondary school students, the study has also revealed the
inhibiting factors in the study of mathematics and other core subjects. The lack of adequate instructional materials, the inadequate environment, the lack of interest in mathematics by parents etc as perceived by the students indicate that the trainee teachers have a lot of problems to tackle when they get employed as teachers at the JS level as recommended in the UBE programmes. They should guard their loins for the work ahead at that level. The fact that males and females in junior secondary schools did not differ in their study habit patterns in mathematics points to the fact that they should all be given equal attention during instructions in mathematics etc.

Recommendations

It highly recommended that parents should pay attention to performances of their wards in all school works. They should not only show interest in the end of term or end of year promotion results of their wards. They should also show interest in their notes, corrections made, tests, assignments, projects, etc. These steps will help both the child, the parents and the teachers help to improve performance.

Conclusions

Junior secondary school students in Nsukka Local Government Area of Enugu State have, generally, bad attention span in mathematics learning. Males and females do not differ significantly in their study habit patterns in mathematics. They should improve on this by having adequate time allocation to mathematics learning and well spaced out time intervals between subjects. Parents should also show interest in all school works of their wards. The students should also adopt the good study habits recommended in the study. There is indeed a significant
The relationship between study habits and achievements of students in mathematics. Good study habit patterns result in good performances while bad ones result in poor performances.
APPENDIX
MATHEMATICS STUDY HABIT QUESTIONNAIRE
INSTRUMENT (MASHQI) FOR JUNIOR SECONDARY SCHOOLS STUDENTS

Please read the following carefully and answer the questions that follow. There are 5 (five) options A, B, C, D, E. Kindly circle or write out the letter of the alphabet that shows response to your answer to the question.

1. Which of these subjects do you study most often? A. Maths  B. Agric Sc.  C. English language  D. Chemistry  E. Biology

2. Which of these subjects do you rarely study? A. Maths  B. Agric Sc.  C. English language  D. Chemistry  E. Biology

3. Which of these subjects do you find most difficult to comprehend? A. Maths  B. Agric Sc.  C. English language  D. Chemistry  E. Biology

4. Which of these subjects is your best subject? A. Maths  B. Agric Sc.  C. English language  D. Chemistry  E. Biology

5. During time for evening prep (3.00 pm - 5.30 pm) what amount of time do you allocate to each of the following subjects? (amount of time: A. 30 mins  B. 40 mins  C. 50 mins  D. 1 hr  E. more than 1 hr)
   (a) Maths  (b) Agric Sc.  (c) English language  (d) Chemistry  (e) Biology.

6. During revision periods, before examinations, what...
amount of time do you allocate to each of the following subjects? (Amount of time: A 30 mins, B. 40 mins C. 50 mins D. 1 hr. E. more than 1 hr).
(a) Maths (b) Agric Sc. (c) English language (d) Chemistry (e) Biology.

For questions 6, 7, 8, 9, 11, 12, please rate any of the items with any of the following possible responses:
A. Always B. Very often C. Rarely D. Very rarely E. Seldom

7. How often do you complete given problems or assignments in these subjects?
(a) Maths (b) Agric Sc. (c) English language (d) Chemistry (e) Biology

8. How often do you complete uncompleted solutions and problems or assignment in these subjects?
(a) Maths (b) Agric Sc. (c) English language (d) Chemistry (e) Biology

9. How often do you study these subjects in a group with your classmates?
(a) Maths (b) Agric Sc. (c) English language (d) Chemistry
10. How often do you show the corrections made by the teacher after an assignment before going to do another one in the following subjects?
   (a) Maths
   (b) Agric Sc.
   (c) English language
   (d) Chemistry
   (e) Biology

11. How often do you consult your teacher when you have problems(s) in the following subjects?
   (a) Maths
   (b) Agric Sc.
   (c) English language
   (d) Chemistry
   (e) Biology

12. How often do you study these subjects?
   (a) Maths
   (b) Agric Sc.
   (c) English language
   (d) Chemistry
   (e) Biology

13. How is the interaction between the teacher and the students like, during classes in the following subjects?
   (a) Maths
   (b) Agric Sc.
Study Habits of Junior Secondary School Students in Enugu State as Correlates of Their Achievements in Mathematics.

(c) English language
(d) Chemistry

A) very high  B) not very high  C) high
D) Low  E) very low

14. How is the interaction between students like in these subjects during classes?
   A) very high  B) not very high  C) high
   D) Low  E) very low

15. How adequate is your classroom environment for learning in the following subjects?
   (a) Maths
   (b) Agric Sc.
   (c) English language
   (d) Chemistry

A) very adequate  B) just adequate  C) fairly adequate
D) inadequate  E) very adequate

16. How are your provision of relevant materials like, textbooks, notebooks, pens, pencils, etc in the following subjects, adequate for learning?

17. Are you always in good health to learn effectively in the following subjects?
   A) Always  B) very often  C) rarely
   D) very rarely  E) always sick

18. How often do your parents inspect your workbooks?
(textbooks, home work, exercise books) in the following subjects?

(a) Maths

(b) Agric Science

(c) English language

(d) Chemistry

(e) Biology

A) Always  B) very often  C) very rarely  D) seldom.
REFERENCES


Mgbodile (1986), *Educational Administration and Supervision*. *Journal of Institute of Education, University of Nigeria*

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