

# STUDENTS AND THEIR ATTITUDES TOWARDS THE LEARNING OF MATHEMATICS: A CASE STUDY OF OWERRI MUNICIPAL LOCAL GOVERNMENT AREA.

Obichili, Chinonso Solomon

National Examination Council (NECO) Owerri.

[chinonsoarchbishop@yahoo.com](mailto:chinonsoarchbishop@yahoo.com); [sendtoarchbishop@yahoo.com](mailto:sendtoarchbishop@yahoo.com)

## **THE ABSTRACT:**

Mathematics is one of the subjects that hold high influence among other subjects, which is applied in almost all competitive courses in the universities. It is also the backbone of development in the society, which makes it paramount for all good and available efforts to be put together to suppress the ill shortcoming in students and elevate the existing strong hopes in them. Thus, the objective of this study was to assess whether students' attitudes towards mathematics are influenced by the attitude of teachers, parents, peer-groups, society and their personal interest. The study adopted the descriptive survey design using simple percentages and Chi-square test of independence in analyzing the data. Senior secondary school students from randomly selected schools in Owerri Municipal Local Government Area were used. One instrument was used while five research questions were answered in the study. The result showed that teacher's method of teaching mathematics and his personality greatly accounts for students' attitude towards the learning of mathematics. From the results, one could conclude that mathematics could be made simple and attractive if all factors that impede teaching of mathematics are adhered to. It is recommended that teachers and parents should develop positive relationship with students. Government and policy makers should organize periodic seminars and workshops for students, parents and teachers desired to promote positive attitudes towards mathematics learning.

## **CHAPTER ONE**

### **INTRODUCTION**

National policy on education (1981) noted that the aim of primary and secondary education included among others to achieve the development of the full potentials and capabilities of the individuals irrespective of sex and cultural setting. However, Mathematics is an indispensable subject, which is regarded as the backbone of development in every society. However, attempts have been made by the Federal Government of Nigeria for the effective learning and improvement of Mathematics as a subject.

The aim of this research is to find out the secondary students attitude towards mathematics in selected schools in Owerri. The research will focus on finding the students attitude towards mathematics. The following research questions have been drawn for the study:

- Can interest and ability be considered as factors that influence students' attitude towards learning of mathematics
- What are the influences of teachers/instructional materials or student's attitude towards learning of mathematics?
- To what extent can peer – group influence student's attitude towards learning of mathematics?

#### **The objectives of the study are as follows:**

- To find out whether interest and ability of the students can be considered as factors that influence their attitude towards learning of mathematics.
- To find out if parental influence affect students' attitude towards learning of mathematics.
- To verify if teachers professionalism/knowledge influences students attitude toward learning of mathematics.
- To find out if societies influence affects student's attitude towards learning of mathematics.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

Serious problems are being faced with regard to students' attitude towards learning of mathematics. Problems could be attributed to the slogan "prefer taking up apprenticeship in trading line to schooling". Byrne (1960) claimed that there is no short cut to a successful life or educational system. Kochler and Grouws (1992) described various levels of mathematics classroom research and recognized the complex role of the affective domain of the four described levels, one level assumes that pupils' characteristics should be broadened to encompass attitudes as well as achievement. Another level includes cultural factors such as students' gender, race, and ethnicity, socioeconomic status and confidence level that can affect teacher practice and student behavior, "Beliefs developed gradually overtime are influenced by classroom experiences and the cultural backgrounds both teacher and students (Mcheod, 1992)".

According to the Multi-component model of Attitude (Eagly & Chaiken, 1993), attitudes are influenced by three components. They are cognitive (beliefs, thoughts, attributes), affective (feelings, emotions) and behavioral information (past events, experiences) (G. Maio, G. R. Maio, & Haddock, 2010). When reviewing literature on students' attitude towards mathematics, it reveals that several factors play a vital role in influencing student's attitude. These factors can be categorized into three distinctive groups.

- Factors associated with the students themselves. Some of these factors include student's mathematical achievement score (Köğçe et al, 2009), anxiety towards mathematics, (Tahar et al, 2010).
- Factors associated with the school, teacher and teaching. Some of these factors that influence attitudes are teaching materials used by teacher, teachers' classroom management, teachers' content knowledge and personality, teaching topics with real life enriched examples, other students' opinions about mathematics courses (Yilmaz, Altun & Olkun, 2010).
- Factors from the home environment and society also affect students' attitude towards mathematics. Factors such as educational background of parents, occupation of parents (Köğçe et al, 2009) and parental expectations (Tobias, 1993) play a crucial role in influencing student's attitude towards mathematics.

Due to these several factors, students have different attitudes towards mathematics. More often, the public image of mathematics is labeling it as a difficult, cold, abstract, theoretical and ultra-rational subject (Ernest, 2004). However, some studies show that students have a relatively positive attitude towards mathematics (Tezer & Karasel, 2010; Yilmaz et al, 2010; Fan, Quek, Yan, Mei, Lionel & Yee, 2005). Sometimes, Mathematics is also considered as very important and largely a masculine subject (Ernest, 2004). Several studies give evidence that compared to boys, girls lack confidence in doing mathematical sums and viewed mathematics as a male domain (Meelissen & Luyten, 2008; Odell & Schumacher, 1998; Hyde, Fennema, Ryan, Frost, & Hopp, 1990).

## CHAPTER THREE

### RESEARCH METHODOLOGY

The survey research technique was used to carry out this study. Nwana (1981) stated that survey research design is a design that facilitates the description of a situation in its current state and solicits information directly from the respondents, which makes the information more finite and distinct. The population of the study is the Junior Secondary School students in Owerri, the capital of Imo state. In choosing the sample for the study, a simple random sampling was adopted to select five schools out of the schools in Owerri Local government. Furthermore, a total of sixty students were sampled from each school using balloting without replacement, which the researcher deemed adequate for the study. Questionnaire was the main instrument used to collect data for this project work; documentary sources were also used.

## METHOD OF DATA ANALYSIS

The raw data would be presented in a tabular form, and analyzed using simple percentage and Chi-square tests. For the percentage the formula used is % response to an option.

$$\% \text{ response} = \frac{\text{Number of respondents to the option}}{\text{Total number of respondents to the items}} * 100$$

For the chi-square calculation, the formula is

$$x^2 = \frac{\sum [O - e]^2}{e}$$

Where  $x^2$  is the chi-square,  $O$  is the observed frequency and  $e$  is the expected frequency.

## CHAPTER FOUR

### PRESENTATION OF DATA, ANALYSIS AND DISCUSSION

#### Demographic characteristics

Table 1 represents the demographic back ground of the students according to their gender. The number of students that participated in this study is 294, of which 132 are male students and 162 are female students.

| Gender | Number | %     |
|--------|--------|-------|
| Male   | 132    | 44.82 |
| Female | 162    | 55.18 |
| Total  | 294    | 100   |

#### Attitude towards Mathematics

The questionnaire was analyzed to find out the students attitude towards mathematics (personal confidence of students and perceived usefulness of mathematics)

| NO | ITEMS   | YES | NO | TOTAL | YES (%) | NO (%) | TOTAL |
|----|---|-----|----|-------|---------|--------|-------|
| 1  | I enjoy doing extra exercises on mathematics at my spare time             | 229 | 65 | 294   | 78      | 22     | 100   |
| 2  | There is so much hard working mathematics that it takes the fun out of it | 196 | 98 | 294   | 67      | 33     | 100   |
| 3  | I will be happy is mathematics is removed in senior secondary classes     | 229 | 65 | 294   | 78      | 22     | 100   |

In the above table, out of one hundred percent, 78% agreed that they enjoy extra exercises on mathematics at their spare time, while 22% disagreed to that. Also in the same table, 67% agreed that there is so much hard work in mathematics, which takes the fun out of it while 33% disagreed to that view. Equally, 78% agreed that they will be happy if mathematics is removed in senior secondary classes while only 22% disagreed. The Chi-square ( $x^2$ ) test as shown in table 2 above indicates that

the observed chi-square is 12.88, which is more than the table value of 5.99 (at 2 degrees of freedom and an alpha level of 0.05), thus, we reject the null hypothesis and conclude that interest and ability can be considered as factor that influence student's attitude towards learning of mathematics.

The researcher found out that when a child likes mathematics, he will most likely spend time doing it and perform well in it, unlike someone who has no interest in the subject.

| <b>TABLE 4: PARENTAL INFLUENCE</b> |   |     |     |       |         |        |       |
|------------------------------------|---|-----|-----|-------|---------|--------|-------|
| NO                                 | ITEMS   | YES | NO  | TOTAL | YES (%) | NO (%) | TOTAL |
| 4                                  | My parents would want me to do such, professional courses like medicine so I am interested in mathematics | 157 | 137 | 294   | 53      | 47     | 100   |
| 5                                  | My parents think that those who do mathematics are respectful and important                               | 131 | 163 | 294   | 44      | 56     | 100   |
| 6                                  | My parents dictate my future career because they are learned  | 114 | 180 | 294   | 39      | 61     | 100   |

In the above table, 53% accepted that their parents encouraged them to do a course in mathematics while 47% rejected the view. Also 44% agreed that their parents saw those who do mathematics as important and respectful people in the society while 55% disagreed to that. Equally, 39% agreed that their parents dictate their future career while only 61% disagreed to that view. The chi-square test of independence as shown in the table above, indicates that the observed chi-square is 12.86, which is more than the table value of 5.99 (at 2 degrees of freedom and an alpha level of 0.05), thus, we reject the null hypothesis and conclude that student's attitude towards learning of mathematics is dependent on parents influence. This implies that when parents influence their children to do professional courses, it influences their interest in mathematics.

| <b>TABLE 6: SOCIETY INFLUENCE</b> |  |     |     |       |         |        |       |
|-----------------------------------|--|-----|-----|-------|---------|--------|-------|
| NO                                | ITEMS  | YES | NO  | TOTAL | YES (%) | NO (%) | TOTAL |
| 7                                 | Mathematics is meant for people who proceed to the university  | 196 | 98  | 294   | 67      | 33     | 100   |
| 8                                 | Mathematics offers nothing but hardship, making one a class teacher with low income little personal progress | 163 | 131 | 294   | 56      | 44     | 100   |
| 9                                 | Those who study mathematics can hold high administrative post and be policy makers in government.            | 147 | 147 | 294   | 50      | 50     | 100   |

In the table above, 67% agreed that mathematics is meant for people who can proceed to the university, while 33% disagreed to that. Also, 56% agreed that those who studied mathematics can hold high administrative post and be policy makers in government while 44% disagreed to the view. Equally, 50% were of the view that mathematics offers nothing but hardship, making one a class teacher with low income and little personal progress while 50% disagreed to that. The chi-square test of independence as shown in the table above indicates that the observed chi-square is 17.37, which is more than the table value of 5.99 (at 2 degrees of freedom and an alpha level of 0.05), thus, we reject the null hypothesis and conclude that society influences students' attitude towards learning of mathematics.

| NO | ITEMS   | YES | NO  | TOTAL | YES (%) | NO (%) | TOTAL |
|----|---|-----|-----|-------|---------|--------|-------|
| 10 | Teachers' methodology of teaching can influence students attitude towards mathematics                         | 131 | 163 | 294   | 44      | 56     | 100   |
| 11 | Lack of mathematics teachers influence students' attitude towards mathematics.                                | 163 | 131 | 294   | 56      | 44     | 100   |
| 12 | Lack of solid foundation for mathematics in JSS classes can influence students' attitude towards mathematics. | 190 | 104 | 294   | 65      | 35     | 100   |

In the above table, 44% agreed that teachers' methodology of teaching could influence students' attitude towards mathematics while 56% disagreed. Also 56% agreed that lack of solid foundation for mathematics in JSS classes could influence students' attitude while 44% disagreed to that view. Equally, 65% agreed that lack of mathematics teachers can influence students' attitude while 35% in the above table, the researcher discovered that lack of mathematics teachers can influence students' attitude towards the subject. The chi-square test of independence as shown in the table above, indicates that the observed chi-square is 24.17, which is more than the table value of 5.99 (at 2 degrees of freedom and an alpha level of 0.05), thus, we reject the null hypothesis and conclude that teachers has influence on students' attitude towards learning of mathematics.

| NO | ITEMS   | YES | NO  | TOTAL | YES (%) | NO (%) | TOTAL |
|----|---|-----|-----|-------|---------|--------|-------|
| 13 | My friend does well in mathematics, so I like it.   | 147 | 147 | 294   | 50      | 50     | 100   |
| 14 | Poor performance of past students in WAEC examination deters me from choosing the subject | 163 | 131 | 294   | 55      | 45     | 100   |
| 15 | My friends persuade me from not choosing mathematics.                                     | 107 | 187 | 294   | 37      | 63     | 100   |

In the above table, 50% agreed and like mathematics because their friends do well in the subject while 50% disagreed. Also, 55% agreed that the poor performances of past students in WAEC examination deters them form choosing the subject while 45% disagreed. Equally, 37% agreed that their friends persuade them for not choosing mathematic while 63% disagreed to the view. The chi-square test of independence as shown in the table above, indicates that the observed chi-square is 22.71, which is more than the table value of 5.99 (at 2 degrees of freedom and an alpha level of 0.05), thus, we reject the null hypothesis and conclude that peer group influences students' attitude towards learning of mathematics

## **CHAPTER FIVE**

### **RECOMMENDATIONS OF THE STUDY**

Based on the findings from this study, the following recommendations are made by the researcher:

- Parents should allow their children to choose their future career, in areas of their interest and best performance.
- Mathematics should be taught as specialized course in secondary schools and only teachers with proven ability and knowledge should be assigned to teach it.

- Concrete instructional materials should be made available to schools for better teaching of the subject. Whereby such are not available, schools should be encouraged to improvise such instructional materials using local materials.

## CONCLUSION

Mathematics is one of the subjects that hold high influence among other subjects, which is applied in almost all competitive courses in the universities. It is also the backbone of development in the society, which make it paramount for all good and available efforts to be put together to suppress the ill shortcoming in students and elevate the existing strong hopes in them. From the results, one could conclude that mathematics could be made simple and attractive if all factors that impede teaching of mathematics are adhered to. However, the attitude of students' towards mathematics could be improved if there are organized short courses, workshops, seminars and conferences from time to time to improve the knowledge of teachers in Owerri Municipal Secondary schools, so that they have increased knowledge in delivering their lessons.

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