

ASSESSMENT OF MALE AND FEMALE STUDENTS ATTITUDE TOWARDS MATHEMATICS IN SELECTED PUBLIC AND PRIVATE SCHOOLS IN ETI – OSA, LAGOS

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Abstract

This study assessed the mathematics learning attitude of senior secondary students towards mathematics in Eti-osa educational district of Lagos state. One research question and two hypotheses guided the study. This study employed the descriptive survey research design. The study population consisted of students of senior secondary schools class II in Eti-osa Educational district. The sample of 200 senior secondary school students was purposively drawn from 10 senior secondary schools in Eti-osa local government education district out of about 40 based on population size and accessibility. The instrument for the study was a questionnaire titled: Students' Mathematical Attitude Inventory (SMAI). The validity of the instrument was done by experts in the Faculty of Education, NOUN. The reliability of the instrument was determined by administering it on a sample of 30 secondary school students in the Apapa local government area of Lagos state, which was not part of the original sample population. The exercise was repeated in two weeks interval. Based on the results obtained from the analyzed data, the reliability was calculated using test-retest method and the reliability index was 0.86, hence it was considered adequate for the study. The data collected from the field were analyzed with frequency distribution, descriptive statistics and Independent sample test (IST). Hypotheses were tested at 0.05 significant levels. The finding revealed that there were no significant differences in the learning attitudes of private and public senior secondary school students and male and female senior secondary school students towards the learning of mathematics in Eti-osa educational district of Lagos State. Recommendations were given based on the outcomes which included that Lagos state government, teachers and parents should expedite action to improve students' attitude towards mathematics.

Keywords: Attitudes, Mathematics, Gender, School Location, Assessment.

Introduction

Effective teaching and learning of Science, Technology and mathematics is a sine qua non to scientific and technological greatness and prosperity of nations (Ogunleye & Bamidele, 2013). Attitude in mathematics is seen as an essential precursor to success in modern society. In Nigeria today, Mathematics is one of the essential subject that every student must study at primary, secondary and tertiary institution levels. The knowledge of mathematics is an essential tool in our society which can be used in our daily life to problem solving strategies (Ogunleye & Akinoso, 2016). Mathematics sharpens the human mind, develops logical thinking; enhances reasoning ability and spatial power. It influences an individual's personal development and contributes to the wealth of the country.

Attitude is a central part of human identity. Attitudes can be defined as a summary evaluation of an object of thought (Bohner & Wänke, 2002). Learning mathematics does not only involve thinking and reasoning, it is dependent on the attitudes of the learners towards learning and mathematics (Anthony & Walshaw, 2007; Grootenboer, Lomas, & Ingram, 2008; Kele & Sharma, 2014). Han and Carpenter (2014) stated that attitudes consist of cognitive, affective and behavioural reactions that individuals display towards an object or the surrounding based on their feelings or interest. The affective component of attitude is the feeling or emotions of the individual associated with learning mathematics (Ingram, 2015).

Attitude towards mathematics is a major factor that might influence the performance of the students. Due to this, several studies have been conducted in different countries in order to determine students attitude towards mathematics (Tahar, Ismail, Zamani & Adnan, 2010; Tezer & Karasel, 2010; Maat & Zakaria, 2010; Bramlett & Herron, 2009; Köğçe, Yıldız, Aydın, & Altındağ, 2009; Tapia & Marsh, 2004). Researchers have reached conclusions that students' attitudes play a vital role in the learning of mathematics (Ingram, 2015; Kele & Sharma, 2014). Most times, attitude and academic performance show a positive relationship (Mohd, Mahmood, & Ismail, 2011; Bramlett & Herron, 2009; Nicolaidou & Philippou, 2003). However, some studies show that students have a relatively positive attitude towards mathematics (Tezer & Karasel, 2010; Yilmaz, C., Altun, S. A. & Ollkun, S. (2010); Fan, Quek, Yan, Mei, Lionel & Yee, 2005).

Gender differences are a recurrent theme throughout the literature in academic studies in general and in mathematics studies in particular. Mathematics is often considered to be a domain in which boys are higher achievers, both in terms of attitudes and self-concept. Sometimes, Mathematics is also considered as very important and largely masculine subject (Ernest, 2004). Several studies provide evidence that compared to boys, girls lack confidence in doing mathematical sums and viewed mathematics as a male domain (Meelissen & Luyten, 2008). Research has consistently shown that girls require lower mathematics self-concept than boys (Skaalvik and Skaalvik, 2004). Contrary to this, findings have revealed that mathematics achievement and grades do not significantly differ between boys and girls (Scafidi and Bui, 2010; Skaalvik and Skaalvik, 2004). There are, however, tangible variations in the beliefs held by boys and girls. Many studies also suggested a non-significant difference between attitude towards mathematics among male and female students (Mohd et al, 2011; Köğçe et al, 2009; Nicolaidou & Philippou, 2003).

Mathematics is a compulsory subject in Nigeria and a basic requirement for admission into many science related careers. Efforts are needed therefore for researchers to tackle the challenges militating against students' school performance in mathematics. It is in line with this objective that this study was contrived to assess senior secondary school students' attitude towards mathematics in Eti-osa educational district of Lagos state.

Statement of the Problem

As mathematics is an essential subject that offers daily life and makes crucial school curriculum It is a compulsory subject in schools and the foundation subject for social sciences and science students at higher institution. It is important for all students to pass mathematics but that is not the case today. It is common knowledge that poor achievement in mathematics has denied many students admission into tertiary institutions; opt out of lucrative careers, made students to abscond from school, caused losses in businesses among others. It is therefore necessary to assess students' attitude towards the study of mathematics in order to change the trend.

This necessitated the current study among senior secondary school students in Eti-osa educational district of Lagos State.

Objectives of the Study

The focus of this study is restricted to examine mathematics learning attitude of senior secondary students towards mathematics in Eti-osa educational districts of Lagos state. The specific objectives of this study were to assess:

1. The general attitude of senior secondary students towards mathematics in Eti-osa educational district of Lagos state.
2. Differences in the mathematics attitude of private and public senior secondary school students in Eti-osa educational district of Lagos state.
3. Differences in male and female senior secondary school students' attitude towards mathematics in Eti-osa educational district of Lagos state.

Research Question

What is the general learning attitude of senior secondary students towards mathematics in Eti-osa educational districts of Lagos state?

Research Hypotheses

The research hypotheses for this study are:

H1: There is no significant difference in students' attitude towards mathematics in the private and public senior secondary schools.

H2: There is no significant difference in male and female students the attitude towards mathematics.

Methodology

This study adopted a descriptive survey design to investigate the study variables without manipulating any of them. Descriptive studies are concerned with describing the characteristics of a particular individual or of a group and allow the researcher to gather information, summarize, present and interpret for the purpose of clarification. The study

population consists of students of senior secondary schools in Eti-osa Educational district. The sample was drawn from senior secondary schools in Eti-osa local government education district. There are about 40 senior secondary schools in Eti-osa local government area and 10 senior secondary schools were purposively selected based on population size and accessibility. 200 senior secondary school students were randomly selected from 10 senior secondary schools in Eti-osa local government area.

In each of the senior secondary schools chosen for the study, 20 students each were randomly selected. Hence, the total number of respondents for this study was 200 senior secondary school students in senior secondary schools in Eti-osa local government area.

Instrument for the Study

The instrument for the study was researchers' self-designed questionnaire tagged 'Students' Mathematical Attitude Inventory' (SMAI). The questionnaire was designed by the researcher to measure the impact of mathematics learning attitude on senior secondary school students' academic performance in mathematics in Eti-osa educational districts of Lagos state. It has two sections. Section A sought demographic data of senior secondary school teachers and this consist of teachers' qualification, sex, and years of experience while Section B - consisted of 10 items on mathematics learning attitude of senior secondary students towards mathematics. It is a 4 point Likert scale labeled Strongly Agreed (SA), Agreed (A), Disagreed (D), and Strongly Disagreed (SD) with the scores of 4, 3, 2 and 1 for positively worded items and reversed for negatively worded items. To determine the validity of the research instruments, it was presented to experts in the Faculty of education NOUN, who examined them to review the content, relevance, scope of coverage and adequacy. Based on the scrutiny, some items were modified while some were reviewed and 10 Item survived the exercise. The reliability of the instrument was determined by administering it on a sample of 30 secondary school students in the Apapa local government area of Lagos state, which was not part of the original sample population. The exercise was repeated in two weeks interval. Based on the data generated, the reliability was calculated using test-retest and the reliability index was 0.86, hence it was considered adequate for the study.

The researcher met with the principals of all the selected senior secondary schools in Eti-osa educational districts of Lagos state for their cooperation which was granted and the questionnaires were distributed to the respondents (that is, teachers and students) and collected same across all the senior secondary schools. The questionnaire was administered to 200 senior secondary school students and 75 senior secondary school teachers in senior secondary schools in Eti-osa educational districts of Lagos state. The data collected were analyzed with descriptive statistics and independent samples t-test. Hypotheses were tested at 0.05 significant level.

Results

Research Question

What is the general learning attitude of senior secondary students towards mathematics in Eti-osa educational districts of Lagos state?

Table 1: Attitudes of Students towards Mathematics

S/N	Variables on Students' Attitudes	Sum	Mean	Std. Deviation	Remarks
1	I often shy away from mathematics classes.	586.00	2.13	1.11	Disagreed
2	I dislike mathematics teachers.	554.00	2.01	1.08	Disagreed
3	I usually give excuses to avoid mathematics lessons.	516.00	1.88	.95	Disagreed
4	I often feel hypertensive towards mathematics periods.	564.00	2.05	1.07	Disagreed
5	I entertain the feeling that mathematics is a difficult subject.	664.00	2.41	1.06	Disagreed
6	Mathematics is a symbol of phobia to me.	601.00	2.19	1.10	Disagreed
7	I fell mathematics is not important to me.	487.00	1.77	1.01	Disagreed
8	I usually feel anxious when I encounter mathematics topics.	645.00	2.35	1.01	Disagreed
9	I often feel that mathematics is not important to me	604.00	2.19	1.05	Disagreed
10	I usually feel that mathematic knowledge is only for science students	593.00	2.16	.978	Disagreed
	Total	5855.00	2.13	6.80	Disagreed

Table 1 revealed the learning attitudes of senior secondary students towards mathematics in Eti-osa educational districts of Lagos state. "I entertain the feeling that mathematics is a difficult subject." tops the list, followed by "I usually feel anxious when I encounter mathematics topics," and "Mathematics is a symbol of phobia to me and I often feel that mathematics is not important to me," "I usually feel that mathematic knowledge is only for science students" and often shy away from mathematics classes" with mean scores of 2.41, 2.35, 2.19, 2.16 and 2.13 respectively. The least variable is: "I feel mathematics is not important to me" as indicated in the table was a lower mean score of 1.77. The weighted average is 2.13 which is below the average of 2.5. The implication is that, the attitudes of students towards Mathematics in Eti-osa educational districts of Lagos state are poor.

Hypotheses Testing

Hypothesis 1: There is no significant difference in students' attitude towards mathematics in the private and public senior secondary schools.

Table 2: T-test of Differences in the Attitude of Private and Public School Students' towards Mathematics

School	N	Mean	Std. Deviation	Std. Error Mean	df	t	Slg
Public	136	21.43	6.70	.57	198	.344	.668
Private	139	21.15	6.92	.59			

The results in Table 2 shows a t-test statistics on the difference in the learning attitude of private and public senior secondary school students towards mathematics in Eti-osa educational districts of Lagos state ($t=.344$; $df= 198$; $P<05$). The null hypothesis was therefore, not rejected. The implication is that the there was no significant difference in the learning attitude of private and public senior secondary school students towards mathematics in Eti-osa educational districts of Lagos state, as indicated in their close mean difference of 6.70 and 6.92 for public and private schools respectively.

Hypothesis 2: There is no significant difference in male and female students the attitude towards mathematics.

Table 3: T-test of Male and Female students Attitude towards Mathematics

Gender	N	Mean	Std. Deviation	Std. Error Mean	df	t	Slg
Male	139	22.07	6.39	.54	198	.007	1.92
Female	136	20.50	7.14	.61			

The results in Table 3 shows that there was no significant difference in the learning attitude of male and female senior secondary school students towards mathematics in Eti-osa educational districts of Lagos state ($t = .007$; $df= 198$; $p<.05$) with a mean of 22.07 for males and 20.50 for females. The hypothesis was therefore not rejected. The implication is that there was no significant difference in the learning attitude of male and female senior secondary school students towards the learning of mathematics in Eti-osa educational districts of Lagos state.

Discussion of Findings

Research Questions one sought to examine the learning attitudes adopted by students towards the learning of mathematics in Eti-osa educational districts of Lagos state. The outcome of the study revealed that the learning attitudes and tactics adopted by students in the learning of mathematics in Eti-osa educational districts of Lagos state were poor. This agreed with the findings of Tayo and Adediwura, (2007) who investigated the relationship/effect of students' perception of teachers' knowledge of subject matter, attitude to work and teaching skills on students' academic performance. The result showed that students' perception of teachers knowledge of subject matter, attitude to work have a significant effect on students' performance.

Research Hypotheses 2 states thus: There is no significant difference in the learning attitude of private and public senior secondary school students towards the learning of mathematics in Eti-osa educational districts of Lagos state. The research concluded that there was no significant difference in the learning attitude of private and public senior secondary school students towards the learning of mathematics in Eti-osa educational districts of Lagos state. This conclusion agreed with Ogunleye (2002) who reported no significant differences in chemistry performance of students across public and private schools.

Research Hypotheses 2 sought to evaluate whether there are differences in the learning attitude of male and female senior secondary school students in the learning of mathematics in Eti-osa educational districts of Lagos state. The findings showed that there are no significant differences in the learning attitude adopted by male and female senior secondary school students towards the learning of mathematics in Eti-osa educational districts of Lagos state. In agreement to this, findings show that math school achievement and grades do not differ significantly between boys and girls (Scafidi and Bui, 2010; Skaalvik and Skaalvik, 2004). Contrary to this, research has consistently shown that girls have lower math self-concept than boys (Skaalvik and Skaalvik, 2004).

Conclusion and Recommendations

This study is focused on impact of mathematics learning attitudes on senior secondary school students' academic performance in mathematics in Eti-osa educational districts of Lagos state. The outcome of the study revealed that the learning attitudes adopted by students towards the learning of mathematics in Eti-osa educational districts of Lagos state are poor. The findings showed that there are no significant differences in the learning attitudes of private and public senior secondary school students and male and female senior secondary school students towards the learning of mathematics in Eti-osa educational districts of Lagos state. However, there is need for Lagos state government, teachers and parents to expedite action to improve students' attitude and tactics towards mathematics. Based on these findings, recommendations point to the following stakeholders viz:

- * Lagos state government, teachers and parents should expedite action to improve students' attitude and tactics towards mathematics.
- * Government should provide guidance counselors in schools to help improve students' attitudes towards mathematics in particular and general education in particular.
- * Parents should provide guideline to guide students' behaviour and moderate the use of available home technology to improve students' attitude towards mathematics.

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