

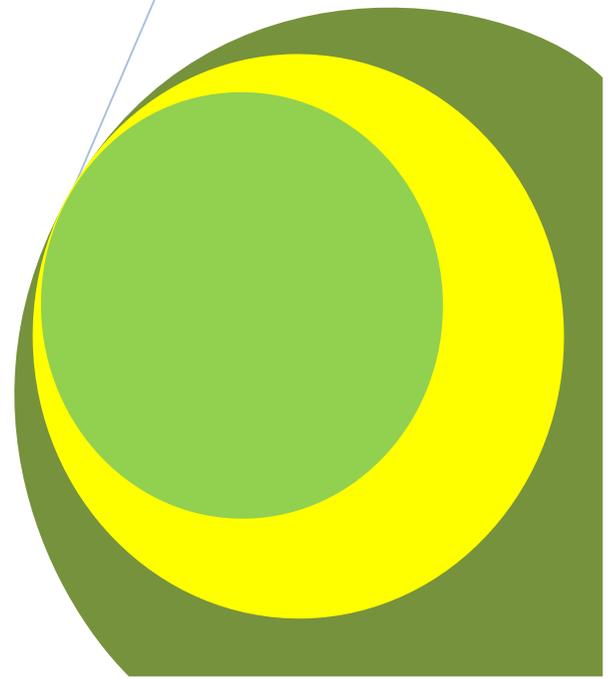
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Influence of Study Interest and School Location on the Attitude of Secondary School Students towards Mathematics in Ekiti State, Nigeria

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Research Article

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ABSTRACT

The study made an investigation as to whether the study interest and school location of students have significant influence on the attitudes of secondary school students towards Mathematics. The population of the study consisted of all secondary school students in Ekiti State, Nigeria. 600 students comprising of 300 male and 300 female secondary school students were randomly selected for the study from 12 secondary schools in ten out of the 16 local government areas in Ekiti State, Nigeria. A 28-item attitude scale in Mathematics constructed and validated by the researcher was the instrument used. The items in the scale have discriminating power of 0.72 and above and item total correlation coefficients of 0.23 and above. The scale used has a construct validity coefficient of 0.29 using discriminant analysis and reliability coefficient of 0.81 using Cronbach reliability method. Two hypotheses were tested at 0.05 level of significance. Hypothesis one was tested using Students' t-test while hypothesis two was tested using Analysis of Variance (ANOVA) and Scheffe's post-hoc test for pairwise comparison. The results of the analysis showed that there was no significant difference in the attitude of students from rural and urban setting towards Mathematics and that location did not influence the attitude of secondary school students towards Mathematics. The results also showed that study interest has significant difference on the attitude of students towards Mathematics and that study interest has influence on the attitude of secondary school students towards Mathematics. Therefore, it is recommended that efforts should be made by the teachers, parents and government to inculcate positive attitude of students towards Mathematics irrespective of their study interest.

Keywords: Study interest, Location, Attitude, Validity coefficient, Reliability, Affective variables.

INTRODUCTION

Mathematics is one of the core subjects in the secondary and primary schools curricula. It is the bedrock, queen and king of all sciences (Kolawole, 2004). Despite the relationship between Mathematics on one hand and science and technology on the other, the rapid shortfall in the performance of students in Mathematics at the secondary school and in the number of applicants wishing to study Mathematics or pursue science related courses in tertiary level of education in Nigeria is highly disturbing. According to Adebule (2004), factors affecting the teaching and learning of Mathematics in Nigeria especially at the secondary school level include historical, political and social and academic problems: and the academic problems include students' unparallel hatred, indifference and poor attitude towards Mathematics among others. Despite the fact that Mathematics plays a fundamental role in economic and technological development of a nation, evidence shows that the results of students at both internal and external examinations are not encouraging. The Nation newspaper of Thursday October 2, 2008 showed that between year 2001 and 2005 less than 39% of secondary school leavers pass Mathematics at credit level each year.

Adedoyin (1998) stated that the poor state of Mathematics in the country was brought to a sharp focus and was partly seen as a long-term effect of playing down of affective domain in Mathematics lessons suitable for some educational concepts. Very often, many Mathematics teachers tend to overlook this affective domain in their teaching to the detriment of the learners. The importance of attitude and interest in education and the need to inculcate them positively cannot be over-emphasized, unlike the past when the development of cognitive ability of the individual was emphasized with a resultant de-emphasis on the development of affective aspects of the individual. There is presently a change aimed at educating the whole child made up of cognitive, affective and psychomotor aspects.

In the same vein, Aborisade (2009) explained that teaching and learning of Mathematics are affected by a lot of affective variables ranging from lack of interest of students, teachers and parents to the stereotype that Mathematics is a male domain to hostile environment and lack of other facilities such as textbooks, instructional and visual materials.

According to Oxford Advanced Learner's Dictionary (2006), attitude is the way someone thinks and feels about something, or the way one behaves towards something especially when it shows how one feels. Attitudes are effective variables of paramount importance for the well-being of the individuals and the society. Individuals have to acquire the right types of attitudes towards self, work, other people and objects.

Study interest is the type of course offered by the students in Nigerian secondary schools (i.e. commercial, science and arts). There is general belief that science students are mathematically oriented than arts and commercial students and that students who were talented in science and mathematics were less sociable and more intelligent than those rare gem in the arts and commercial subjects. According to Obioma (1982), students in science classes have more positive reactions to mathematics than arts and commercial students. Most of the science students were supposed to be above board in mathematics and other related subjects. According to Adebule (2002), because science subjects are practical in nature, science students tend to be more mentally alert and have more initiative than their arts and commercial counterparts (Adebule, 2002). Schools are located in both urban and rural settings. Same cannot be said of the Nigerian communities with regard to social amenities, the urban and rural areas are still unequal. According to Ibudeh (1990), students that resided in urban centres especially where there are higher institutions like polytechnics or universities are likely to have inclination for higher education than those in the rural setting. Students in urban setting could have more access to libraries, laboratories, etc than those in rural setting. According to Adelabu (2008), lack of social amenities in rural areas impinges on the education services, such amenities are electricity, pipe-borne water, technical resources, safe and secure facilities that are essential to successful educational programmes.

In the light of the above, this study could help to find out if study interest and school location influence attitude of students towards Mathematics in order to arouse the interest of students for better performance in the subject.

Statement of the Problem

Teachers have always been blamed for the poor performance of students in Mathematics but they should not be allowed to bear the whole blame; rather, it should be looked at as a problem that has many contributory factors, among which are student factor, teacher factor and government factor. There seems to be little empirical work on student factors which students' attitude to Mathematics form part.

Research Questions

The following research questions were raised in the study:

1. Does school location influence students' attitude towards Mathematics?
2. Does study interest affect students' attitude toward Mathematics?

Research Hypotheses

The following hypotheses were tested at a 0.05 level of significance.

- H₀₁: There is no significant influence of school location on students' attitude toward Mathematics.
H₀₂: There is no significant influence of study interest on students' attitude toward Mathematics.

METHODOLOGY

The study employed descriptive research of survey type. The population of the study consisted of the secondary school students in Ekiti State, Nigeria. A total sample of 600 students consisting of 300 male and 300 female were randomly selected for the study using multistage and stratified random sampling techniques. The research instrument for the study was a 28-item Mathematics Attitude Scale (MAS) constructed and validated by the research for use in Nigerian secondary schools based on the assumptions, procedures and principles of summated ratings developed by Likert (1932). The items validity co-efficient ranged from 0.21—0.50 which was significant beyond $p < 0.05$. Using Cronbach's Alpha method, a reliability coefficient of 0.81 was obtained. Cronbach's (coefficient) alpha (α) reliability is a nice method of estimating coefficient when dealing with such construct as attitude or interest where items are not scored dichotomously but along a continuum (Anyanwu, 1987). The items have discriminating power of 0.72 and above and the construct validity of the scale was ensured through discriminant analysis using Pearson Product Moment Correlation formula and its coefficient was 0.29. Hypothesis one was tested using students t-test and hypothesis two was tested using Analysis of Variance (ANOVA).

Analysis of Data

The first hypothesis was tested using the parametric students t-test while the second hypothesis was tested using the parametric f-test for variance.

RESULTS

Hypothesis 1: There is no significant influence of school location on students' attitude toward mathematics

Table 1: Student t-test summary table for urban and rural locations

Location	N	Means	SD	df	t_{cal}	t_{tab}
Urban	300	85.75	13.90	598	1.17	1.96
Rural	300	84.58	10.72			

$p > 0.05$ (Results not significant)

The result in table 1 showed that t-calculated for students from rural and urban locations on the Mathematics attitude scale was 1.17 which was less than the t-table value of 1.96 at 0.05 level of significance. The result was therefore not significant hence the null hypothesis was not rejected. This showed that there was no significant difference between the ratings of students from rural and urban setting of the Mathematics attitude scale. From this result, it can be inferred that school location does not determine the attitude of students toward Mathematics.

Hypothesis 2: There is no significant influence of study interest on students' attitude toward Mathematics

Table 2: Student t-test summary table for urban and rural locations

Source	df	ss	Mss	f_{cal}	f_{tab}
Between group	2	1959.14	979.57	6.47	3.00
Within group	597	9039486	151.42		
Total	599	92353.998			

$P < 0.05$ (Significant Results)

The result in table 2 showed that F-calculated was 6.47, a value that is greater than the F-table value of 3.00 at 0.05 level of significance. Therefore, the null hypothesis was rejected. Consequently, there was a significant difference between the rating of arts, commercial and science students of the Mathematics Attitude Scale. This is to say that the type of course offered by the students influenced significantly their rating of the scale. A post-hoc test was also carried out using the Scheffe's test to determine the pairs of groups where the significant difference occurred.

Table 3: Post hoc test: Scheffe's test

Course study	Means	Arts	Commercial	Science
Arts	86.38			*
Commercial	86.78			*
Science	82.81			

(* denotes pair of group significant at $p < 0.05$)

From table 3, the results showed that the ratings of those students offering arts and commercial courses differed significantly from the ratings of those offering science courses. This study shows that study interest has influence on the attitude of secondary school students toward Mathematics.

DISCUSSION

The finding of this study on hypothesis one showed that there was no significant difference between the attitude of secondary school students from rural and urban setting towards Mathematics.

This result agreed with Omirin (1999) who indicated no significant difference in the ratings of students in the science-oriented scale with reference to rural and urban location. On the other hand, Adebule (2002) found significant difference between the ratings of students from rural and urban settings of the Mathematics Anxiety Rating Scale. Adelodun (1979) and Burton (1980) found a significant difference between the scores of students

from urban and rural areas on an attitude scales on science. Also, Ibudeh (1990) found that students that resided in urban centres especially where there are higher institutions like polytechnic or university showed a higher inclination for higher education than those in the rural setting.

The finding of hypothesis two indicates that there was a significant difference between the ratings of Arts, Commercial and Science students. The result agreed with the finding of Omirin (1999) who indicated that the course of study of students significantly influenced their ratings of the science oriented scale. The findings of this study also confirmed the work of Gire (1988) as the findings also showed significant difference between the ratings of science students and other non-science students. According to Obioma (1982), students in science class showed more positive reactions than arts and commercial students in the rating of a Mathematics achievement test developed and validated for diagnostic purpose in the Nigerian secondary schools. This result corroborated the findings of this study that there was a significant difference between the rating of arts, commercial and science students. However, there were some studies that were at variance with the funding of this study. Zaregal et al (1985) and Olarewaju (1986) did not observe any significant difference in the attitude of arts, commercial and science students in their studies on performance and attitude toward Mathematics.

RECOMMENDATIONS

With reference to the findings of this study, the following recommendations are considered important for the current education system:

1. Effort should be made by the teachers, parents and government to inculcate positive attitude of students toward Mathematics, irrespective of their study interest.
2. There is the need for teachers to make their lessons captivating to the students by relating Mathematics to the environment of the learner and using appropriate teaching aids to arouse and maintain students' interest in the subject.

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