STUDENTS ATTITUDE AS CORRELATES OF ACADEMIC PERFORMANCE IN MATHEMATICS IN ABUJA, NIGERIA

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Abstract

This research, being a descriptive study was conducted to investigate the attitudes of students towards mathematics learning at Junior Secondary School level in Kwali Area Council, FCT-Abuja. Sample of 180 respondents were selected using random sampling. Structured questionnaire was the main instrument used for data collection. Frequency distribution and simple percentage were used for data analysis. The study confirmed that students have negative attitudes towards mathematics learning. Also the study showed that conducive environment plays key role in improving students' interest in learning of mathematics. It was revealed that students' attitudes are affected by motivation. Recommendations were made based on the findings.

Keywords: Secondary School, Students Attitude, Mathematics, Academic Performance

Introduction

Attitude towards mathematics plays a crucial role in the teaching and learning process of mathematics. It affects students' performance in mathematics. The teaching method, the support of the structure of the school, the family and students' attitude towards school affect the attitudes towards mathematics. Usually the way that mathematics is presented in the classroom and perceived by students, even when teachers believe they are presenting it in authentic and context dependent way stands to alienate many students from mathematics (Barton, 2000; Furinghetti and Pekhonen, 2000). Researchers concluded that positive attitude towards mathematics leads students towards success in mathematics. Attempt to improve attitude towards mathematics at lower level provides base for higher studies in mathematics. It also causes effect in performance of mathematics at secondary school level (Ma and Xu, 2004).

In a study conducted by Saha (2007) on relationship among gender, attitude to mathematics, cognitive style and achievement in mathematics. It was found that all the three variables contributed to significant difference in achievement in academic achievement of the students in mathematics.

In a related study conducted by Thomas (2006) to determine the attitude of students towards mathematics and achievement by combining co-operation learning strategies with instruction delivered using an integrated learning system (I.L.S) which involved 65 fifth grade students who were randomly grouped into experimental and control group revealed that students using on I.L.S for mathematics instruction performed better on standardized tests and were more positive towards mathematics and they worked in co-operative groups than when they worked on the same individually.

Xin Ma and Jiangmin (2004) conducted a study to determine the casual ordering between attitude towards mathematics and achievement in mathematics of secondary school students.

Results showed that the achievement demonstrated casual pre-dominance over attitude across the entire secondary school. Gender difference in this causal relationship was not found but elite status in mathematics moderated this casual relationship.

Number of researchers have shown that the relationship between aspects of the social environment and students emotional aspects may be mediated by other variables such as control- related appraisals and values-related competence support, autonomy support, expectations and feedback that students receive from others have impact on their cognitive appraisals and these are the main sources of their emotional dispositions. When studying attitudes, it is important to take into consideration the role of these mediated variables where we can include the motivation features of each student. In this sense Wig (1997) in his reading specific domain, maintains that attitudes, realized as the individual's feelings towards reading, could be related to the motivation of the individual concerned because they influence how much students involve themselves in reading activities. Attitudes are affective responses that accompany a behavior initiated by a motivational state. Attitudes can therefore be linked directly to motivation and provide key information to a better understanding of attitudinal and motivational processes.

In the domain of mathematics there is little research that studies the relationships between motivation and attitudes. However, a number of studies have highlighted some specific associations. Sighn (2002) used two sets of items to tap motivation, one related to attendance of school and classes and another to participation and preparedness for math classes. The author concluded that a mathematics attitude was affected by motivational factors since significant direct effects of 19 and 21 of these two motivation components were identified in student attitudes. Students who displayed school behavior associated with low motivation (e.g., coming late to school, skipping classes, coming unprepared without books and home work) had a negative attitude toward mathematics.

The causes of the gender differences in mathematics attitude were found to be multifaceted, interactive and dynamic (Aiken, 1985). Those with low mathematics abilities are likely to have a more negative attitude towards the subject. They do not have the inclination to improve their skills in mathematics. Although the majority of research indicates that poor attitudes towards mathematics are related to lower levels of achievement in the subject.

Akey (2006) showed that several aspects of school context (e.g teacher support, student-to-student interaction, and the academic and behavior expectations of the teacher) were significantly related to student attitudes and behaviours. He concluded that the class environment where teachers who students see as supportive promote student feelings of control and confidence in their ability to succeed. Meat (2010) identified a significant relationship between learning environment and attitude towards mathematics. Students with a higher perception of the learning environment and a more positive perception of their teachers have more positive attitudes towards mathematics. Rawnsley and fisher (1998) also found that students had more positive attitudes toward mathematics when their teacher was perceived to be highly supportive.

The conceptions, attitudes, and expectations of students regarding mathematics and mathematics teaching have been considered to be very significant factors underlying their school experience and achievement (Borasi, 1990; Shoenfeld, 1985). In general, the concepts students

hold about mathematics determine how they approach the subject. In many cases, students have been found to approach Mathematics as procedural and rule oriented. This prevents them from experiencing the richness of mathematics and the many approaches that could be used to develop competence in the subject.

Attitude can also be gender related. There are many who hold the view that boys do better in mathematics than girls. This belief tends to affect the attitude of girls towards Mathematics. Farooq and Shah (2008) in a study of secondary school students in Pakistan found that there was no significant difference in confidence of male and female students towards Mathematics at secondary school level. They rather found that students' success in Mathematics depended on attitude towards the subject. Nonetheless, some studies have found gender difference in students' confidence in mathematics. Compared to boys, girls lacked confidence, had debilitating causal attributional patterns, perceived mathematics as a male domain and were anxious about mathematics (Casey, Nuttal & Pezaris, 2001). In the study, girls were found to have lower self-confidence in Mathematics than boys.

Instructively, research on the relationship between student attitude and performance has also been inconclusive. Researches that have been conducted to determine the relationship between students' attitude towards mathematics and achievement have yielded contradictory results. The findings have thus lacked consistency on the subject. Some studies have demonstrated a strong and significant relationship between Mathematics attitude and Mathematics achievement (Minato & Yanase, 1984, Randhawa & Beamer, 1992, Schenkel, 2009). In the Schenkel's (2009) study of elementary school pupils, positive correlation between students' attitude and students' performance was found. Student beliefs and attitudes were found to have the potential to either facilitate or inhibit learning. In a comparative study of factors influencing Mathematics achievement, Burstein (1992) found that there is a direct link between students' attitudes towards mathematics and student outcomes. Cheung (1998), in his study of 11-13 year olds, also discovered positive correlation between attitude and Mathematics achievement. The correlation showed that the more positive the attitude, the higher the level of achievement in the student.

Some researchers have, however, demonstrated that the correlation between attitude towards mathematics and achievement in mathematics was rather weak and could not be considered to be of practical significance (Vachon, 1984; Wolf & Blixt, 1981). In a meta-analysis of 113 primary studies involving elementary and secondary school children, Ma and Kishor (1997) found that attitude towards Mathematics and achievement in Mathematics was positively and reliably correlated but not strong. The correlation was not statistically significant. Flowing from the preceding findings, studies in different cultural settings are eminent to realise the influence of student attitude towards Mathematics on student learning outcomes in the subject. A study was needed to see the attitude of Kwali Area Council students towards mathematics. This study will answer the possible questions regarding the attitude and performance in mathematics.

Purpose of the Study

The purpose of this study was to investigate students' attitudes towards mathematics learning in secondary school. The study was meant to achieve the following specific objective:

(i) To find out whether the students' attitude towards mathematics is negative or positive.

Research Questions

The following research questions were stated and answered in the study.

(i) Does motivation affects the attitudes of students towards mathematics learning?

(ii) Do conducive environment improves the interest of students towards mathematics learning?

(iii) Do students have negative attitudes towards mathematics learning?

Methodology

This study adopted the descriptive survey design. The target population for the study comprised of all the students in senior secondary schools (SSSIII) of the secondary schools in Kwali Area Council, Abuja. There are nine (9) secondary schools in the Area Council. The samples for the study involved 180 senior secondary three (3) students randomly selected from six (6) secondary schools to participate in the study, and the schools selected were both Private and Government's own schools.

Structured questionnaire was the main instrument for data collection. Items were constructed by the researcher and subjected to face content validity by two science educators and three mathematics teachers. They recommended that the questions were capable of capturing the required data for the research and analysis.

The researcher personally took the designed questionnaire to the respondents in the study area. The researcher does that by going to the sampled schools and administered the questionnaire to one hundred and eighty (180) students and collected them after being responded to, and data collected were analyzed using frequency distribution and simple percentage.

Results

The findings/results of data analysis were presented according to research questions:

Research Question 1

Does motivation affects the attitudes of students towards mathematics learning?

Table 1: Students' percentage response on motivation towards mathematics Learning

Variable	Number of Respondents	Percentage (%)
Yes	140	77.8%
No	40	22.2%
Total	180	100%

Table 1 shows that140 students representing 77.8% said that motivation do affect their attitudes towards mathematics learning. While 40 students representing 22.2% said motivation do not affect their attitudes towards mathematics.

Research Questions 2

Do conducive environment improves the interest of students towards mathematics learning?

Table 2: Students' percentage response on environment towards mathematics learning

Variable	Number of Respondents	Percentage (%)
Yes	125	69.4%
No	55	30.6%
Total	180	100%

Table 2 reveals that 125 students representing 69.4% responded that conducive environment do improve their interest towards mathematics; while 55 students (30.6%) indicated that conducive environment do not necessarily improve their interest towards learning mathematics.

Research Questions 3

Do students have negative attitudes towards mathematics learning?

Table 3: Students' percentage response on negative attitudes towards mathematics learning

Variable	Number of Respondents	Percentage (%)
Yes	130	72.2%
No	50	27.8%
Total	180	100%

Table 3 shows that 130 students representing 72.2% responded that they do have negative attitudes towards mathematics learning; while 50 students (27.8%) said no.

Discussion of Findings

From the findings on the first research question, the result of the findings has shown that 77.8% of the students said that motivation do affect their attitudes towards mathematics learning. This is in line with Sighn (2002) who used two sets of items to tap motivation, one related to attendance of school and classes and another to participation and preparedness for math classes. The author concluded that mathematics attitudes were affected by motivational factors since significant direct effects of 19 and 21 of these two motivation components were identified in student attitudes.

Also, the responses of students towards environment in learning mathematics were good because 76.7% of the students observed that the learning environment is very interesting and conducive. However, Akey (2006) said that the class environment where teachers who students see as supportive promote student feelings of control and confidence in their ability to succeed and the way students perceive teacher characteristics will affect their attitudes towards mathematics.

Also, from the findings 72.2% of students agreed that they do have negative attitudes towards mathematics learning which the researcher believes that it might be due to some factors such as teaching method, pressure, facilities, lack of qualified teachers etc.

Conclusions

The study investigated students' attitudes towards mathematics learning at the senior secondary schools. It was discovered that students have negative attitude towards mathematics learning,

conducive learning environment improves the students' interest towards mathematics learning and motivation affects students' attitudes towards mathematics learning.

Recommendations

In respect of findings carried out in this study, the following recommendations are made:

(i) More qualified teachers should be employed to help students develop positive attitude towards mathematics.

(ii) Seminars and workshops should be organized on regular basis for mathematics teachers to update their knowledge in order to help students positively.

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