Attitude of Secondary Students towards Mathematics and its Relationship to Achievement in Mathematics

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Abstract

Study of Mathematics at secondary level is the foundation stage of Higher Education. Every secondary school student should study mathematics as a compulsory subject so that he/she gains a basic quantum of Mathematical knowledge as a part of general education. In our society there exists a general belief that mathematics is a subject for boys. Even today a very few people encourage girl students to opt for this subject. In the present study data have been collected from secondary students through questionnaire and their attitudes have been compared. Also their attitudes and achievements have compared.

1. Introduction

Mathematics now dominates almost every field of one’s activities. In this age of science and Technology, it has permeated through the human life in such a way that, it has now become every man’s everyday concern. Mathematics disciplines the mind, systematizes one’s thought and reasoning. The subject has also rich potentialities of affording true enjoyment to its students. Mathematics is an important subject in school curriculum. It is more closely related to one’s daily life as compared to other subjects. Except one’s mother tongue there is no other subject which is more closely related to one’s daily life as mathematics. Mathematics is considered to be the father of all sciences. Napoleon remarked that-“The progress and improvement of mathematics is linked to the prosperity of the state”. Although there is no standard definition of the term attitude, in general it refers to a learned predisposition or tendency on the part of an individual to respond positively or negatively to some object, situation, concept or another person.

In assessing Mathematics performance and potential of students, attitudes towards Mathematics and Mathematics learning are frequently cited as factors contributing to success. Several studies have shown that positive attitudes are conductive to good performance. However, an individual’s attitude towards Mathematics can be influenced by many factors. It is generally held that females exhibit less positive attitudes towards mathematics than males do. The foundation of success, regardless of our chosen field, is attitude.

Objectives of the study

The following objectives have been formulated related to the study:

- To study gender-wise difference in student’s attitude towards mathematics.
- To study is there any relationship between attitude and achievement of a student

Hypotheses of the study

Keeping in view the above objectives of the study, the following hypotheses have been framed.

- There is significant difference in attitude of secondary students on the basis of their gender.
- There always exists a positive relation between achievers in Mathematics and their attitude towards the subject.

Variables: In the present study attitude of a student towards the subject mathematics has been taken as a dependent variable depending on gender of students. But when relationship between attitude and achievement of students have been studied, in that case achievement of students considered as dependent variable, depending on their attitude.
Sample: For the present study Kamrup district of Assam has been considered. This is the largest district of Assam having area of 2740.74 sq. km. Data has been collected from 1057 secondary students selected by simple random sampling from 33 secondary schools of Kamrup district. Out of 33 schools 12 private and 21 government, including both urban and rural. 10 schools are English medium and 23 are vernacular, including both Assamese and Bengali. Out of 1057 students 553 are male and 504 are female students.

2. Review of Literature

F. Khatoon[6] has studied the relationship of mathematical aptitude among boys and girls with interest and vocational preferences. Though Khatoon finds no significant difference in the aptitude for mathematics among boys and girls, Khatoon found a significant difference in the achievements. Vocational preferences are influenced by environmental factors like the occupation of the father; in genus boys prefer vocations related to mathematics.

A. Rosaly [1] has found that the attitude of high school students towards the learning of mathematics and their achievements in mathematics are highly correlated and that urban boys and girls have a more positive attitude towards mathematics than rural boys and girls.

V. Deshmukh [10] has studied the correlation of mathematics learning and certain personality variables of the students. Deshmukh finds small but positive and highly significant correlation between mathematics learning and responsible and ascendant temperaments. Deshmukh also finds low but negative and highly significant correlation between mathematics learning and three temperamental dimensions viz., sociable, accepting and impulsive. IQ and reasoning are found significantly related to dimensions, ascendant, responsible, critical and plentiful.

W. J. Mckeachie and Y. Lin [11] studied the relationship between student sex, teacher’s instructional strategies and student’s achievements and found that appropriate teacher instructional strategies resulted in higher mean achievement measured by grades of students.

D. Stipek and H. Granlinski [4]indicates in the article that girls have lower expectations for themselves in math than boys, and that girls believe they do not have mathematical ability. When girls do poorly in math, they attribute their poor performance to their inability to do math.

B. Moore [2] found in school students that impression of the teachers as ‘like’ or ‘smart’ significantly predicted student’s attitude towards Science and Mathematics. The results of the study also showed that ‘boys’ are more advantaged than their counterpart ‘girls’.

J. Gill [7] indicates that middle school and high school girls have positive attitudes toward school but negative attitudes toward mathematics. It focuses on the gendering - the separation of boys and girls - of Australian schools through the study of 7th, 8th, and 10th graders in coeducational programs as well as girls-only schools.

E. Fennema and J. Sherman [5]found that students of teachers who were well organized, achievement oriented and enthusiastic tended to have more positive attitude towards mathematics and science.

D. Swetman [3]shows that girls’ positive attitudes towards mathematics decline as they grow older. Initially girls have more positive attitudes towards math than boys do, but as they continue in school, girls’ attitudes become more negative. In order to improve girls’ performance in math, teachers need to facilitate positive attitudes in girls towards mathematics.

X. Ma and J. Xu [12] conducted a study to determine the casual ordering between attitude towards mathematics and achievement in mathematics of secondary school students. Results showed the achievement demonstrated casual predominance over attitude across the entire secondary school. Gender difference in this casual relationship was not found but elite status in mathematics moderated this casual relationship.

N. R. Patel [8] conducted a study on Mathematical ability of pupils of classes IX and X in the context of some cognitive and affective variables. They found that there were no significant sex differences with regard to mathematical ability of pupil of classes IX and X.

S. Saha [9] conducted a study on gender, attitude to mathematics, cognitive style and achievement in mathematics. It was found that all the three contributes to statistically significant difference in achievement in mathematics.

3. Methodology

To obtain data, an instrument Mathematics Attitude Scale (MAS) has been developed by the investigators. MAS consists of 32 items. The instrument uses five point scale – strongly disagree, disagree, undecided, agree and strongly agree. For achievement, their marks in mathematics examination have been considered.

4. Analysis of data

Analysis of data shows that 37% boys considered mathematics to be a hard subject whereas 39.2% girls considered mathematics to be a hard subject. 60% boys considered mathematics to be helpful in the development of mind whereas 58% girls think so. Moreover students of urban area show more positive attitude than rural area. Also the students (both boys and girls) whose attitude scores are high they score good marks in mathematics examination, whereas students having low attitude score got less marks in examination.
5. Conclusion

It can be concluded that boys show more positive attitude towards mathematics than girls. Also attitude of students and achievement are positively correlated.

5. References