International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 10 Oct. 2022, pp: 1126-1130 www.ijaem.net ISSN: 2395-5252

A Study of Attitude towards Mathematics in Relation to Self Concept among High School Students.

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Date of Submission: 15-10-2022 Date of Acceptance: 31-10-2022

ABSTRACT
The aim of present study is to investigate the attitude towards Mathematics with respect to self-concept among high school students. The descriptive survey method with self constructed questionnaires of self-concept and attitude scale towards mathematics was used to collect the data. The sample data containing 200 students have been analyzed. The t-test has been used to compute whether there is significant difference in self-concept among high school students with respect to gender. Thecomputations of this study proved that there exists a positive relationship to self-concept among high school students.

I. INTRODUCTION

Mathematics plays an important role in our society. It is a tool that can be used to solve problems in our daily life. Due to this, Mathematics has been considered as one of the most critical subjects in high school curriculum. It links geometry, algebra and trigonometry (Pilayan, 2013). The study of Mathematics at high school level is necessary for the foundation stage of higher education (Cater G.S. & Norwood K.S (1997). Several researches have revealed that in many countries to find the factor that influences a student's performance in Mathematics. So, attitude is one of the factors that affects learning of Mathematics. Attitude is our personal temperament, which we reflect towards different things under different scenarios (Greenwald, 1989). Attitude of the learner towards Mathematics will determine the measure of learnes, attractiveness or repulsiveness of Mathematics. However, negative attitudes towards Mathematics are common (Naught, 2010, Blackwere, 2016). This type of attitude depends on the result of experiences of individual students. Various researches showed significant differences can be found in one class and another as well as between the students in the same Mathematics class (Noyes, 2012). As coded in a study conducted in 2012, the West African Examination Council (WAEC) stated academic performance has been very low among secondary school students in Nigeria (WAEC, 2012). There are so many factors including social, economic, regional and psychological factors in which self-concept plays major factors contributing to students' academic performance (Bandura, 1977). Several researches reported that boys have more positive self-concept than that of girls. (Skadvik& Rankin, 1994 &Ecreles, 1994). Research, mostly in Western and European culture, has established that self-concept has a significant influence on a student's outcome (Hoge&Renzuli , 1999, Marsh and Shavelson , 1985, Hailer, 1989, 1996, Spinach et al, 2006).

II. SIGNIFICANCE OF THE PROBLEM

Students' attitude towards Mathematics has been one of the trending topics these days. The various research scholars have tried to find out the different causes that affect the learning of Mathematics. The attitudes of the students and the self-concept towards Mathematics have been identified as important factors in predicting the students' achievement towards Mathematics; the majority of the research has been conducted in developed countries of the West. Educational climate in India is very different from other countries. So, it is necessary to study the relation between attitudes & self-concept of Mathematics in high school students.

Objectives

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1. To study the attitude towards Mathematics among high school students with respect to gender.
2. To study the self-concept among high school students with respect to gender.
3. To study the relationship between attitude towards Mathematics and self-concept of high school students.

Hypotheses

1. There exists a significant difference in attitude towards Mathematics among high school students with respect to gender.
2. There exists a significant difference in self-concept among high school students with respect to gender.
3. There exist a significant relationship between the attitude towards Mathematics and self-concept of high school students.

III. REVIEW OF RELATED LITERATURE

Strenke (2010) conducted a study on self-concept and self-esteem in adolescents with learning disabilities. Data was collected through random sampling technique. Results of this study showed that both students with learning disabilities and without learning disabilities exhibit varying levels of self-concept and self-esteem.

Arune, Bharathi and Sreedevi, (2013) investigated a study on self-concept adolescents in which the self-concept scale of Saraswati (1984) was used to analyse the data of 40 adolescents. The findings of this study revealed that overall self-concept was 27.5 percent high and 72.5 percent above average.

Nelson, Bunand, Grithu, etal, (2014) explored the relationship between students' attitude towards Mathematics, self-concept and achievements in the Military science programme of Egerton University Kenya. The data was collected from 145 student offices in Military science programme. SPSS technique was used to analyse the data Result of this study revealed that there is a positive relationship between students' attitude towards Mathematics, self-concept and achievement in Military science programmes.

Lee and Kung (2018) conducted a study on Mathematics self-concept and Mathematics achievement. Data was analysed by using various statistical techniques. Results of this study revealed that self-concept of boys is significantly higher than that of girls whereas girls exhibited higher Mathematics achievement than boys.

Montero, Colkin and Respickins, (2019) investigated the students' attitude towards learning Mathematics. ABC model and Walberg's theory of productivity used to investigate 318 secondary school students and 132 college students from 17 schools and 6 colleges. The collected data was analyzed by using percentage mean, standard deviation, t-test and correlation. The result of this study revealed initially that students exhibit a positive attitude towards Mathematics but their attitude becomes less positive as the students must forward to a higher level of education.

Designgol, (2018) investigated a study on Mathematics and academic self-concept. For this study, Mathematics attitude scale developed by Baypul (1990) and self-concept scale adopted by Senomoglu, (1989) were used. Result of this study revealed that Mathematics self-concept is higher in males. There is a statically significant and positive relationship between Mathematics attitudes and academic self-status of gifted and talented boys.

IV. METHODOLOGY

4.1 Tools Used

1. Self-constructed questionnaire of self-concept.
2. Attitude towards Mathematics Inventory (ATMI) (1996)

4.2 Procedure

Eight schools situated in Amritsar District were visited by the investigator to collect the data from respondents.

The questionnaires were administered to the students so that they were responded to answer the questionnaire after explaining the purpose of study. The gathered responses were scored.

Descriptive statistics: Descriptive statistics such as Mean, Standard Deviation t-test and Correlation of the total sample for the variable of self-concept and attitude scale towards Mathematics were to ascertain.

V. RESULT AND DISCUSSION

Hypothesis-I:

There exists a significant difference in attitude towards Mathematics among High School students with respect to gender.

Analysis on attitude towards Mathematics with respect to gender.

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Table 1. Shows the Mean score and S.D. of Boys & Girls Attitude towards Mathematics.

Table No 1

Sr. No.	Gender	N	Mean	S.D
1.	Boys	100	14.5	6.90
2.	Girls	100	12.5	4.98

Table 1.2 Shows

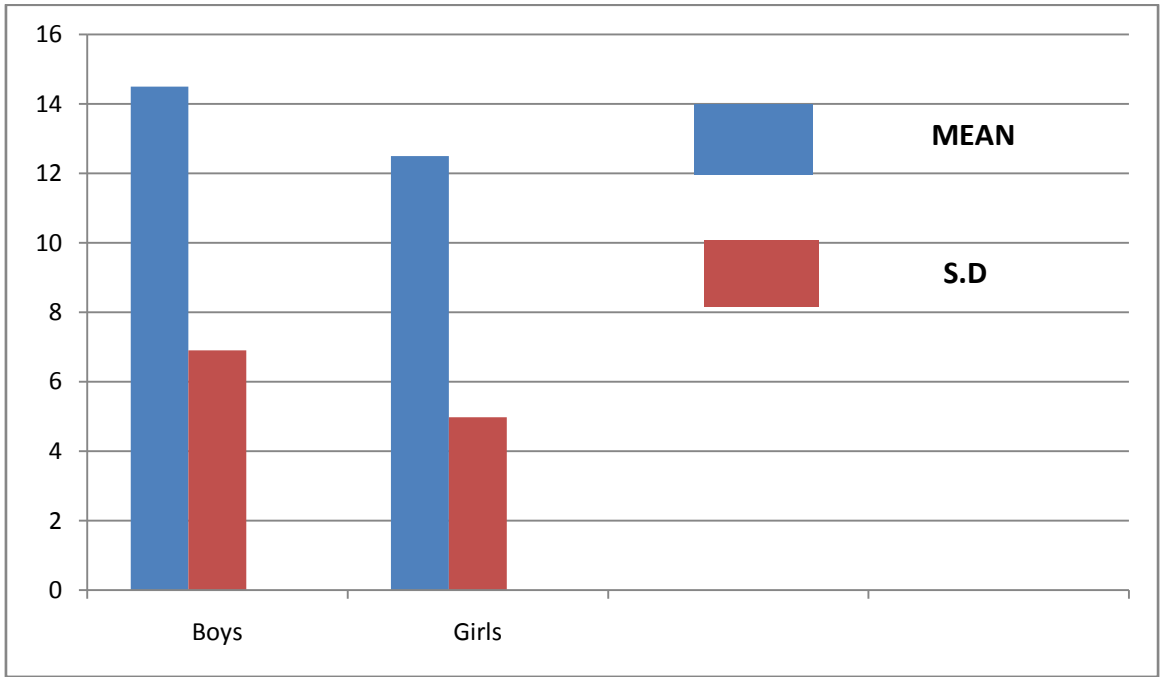

Fig.1.1: Mean Score & S.D. of High School Students in Attitude towards Mathematics w.r.t gender (Boys& Girls)

Analysis of Gender on attitude towards Mathematics

In order to test the Hypothesis (I), the value of t-ratio for difference in mean score of attitude towards Mathematics of boys and girls students were calculated.

Table No. 1.2 Analysis of Gender on Attitude towards Mathematics.

Table 1.2

Variable	Gender	N	Mean	S.D	df	t-test	Infered
	Boys	100	15.5	6.90	198	2.02	Significant
	girls	100	13.8	4.98			

(Critical Value 1.98 at 0.05 level and 2.58 at 0.01 level)

Table 1.2 reveals that the mean score and S.D of boys is 15.5 and 6.90 respectively and Mean Score and S.D of girls is 13.8 and 4.98. The t-value comes out to be 2.02 which is significant at 0.05 & 0.01 level. Hence in the hypothesis no-I, there exists a significant difference in attitude towards Mathematics among high school students w.r.t gender is accepted.

Hypothesis-II:

There exists a significant difference in self-concept among high school students with respect to gender.

Analysis of gender on self-concept among high school students.

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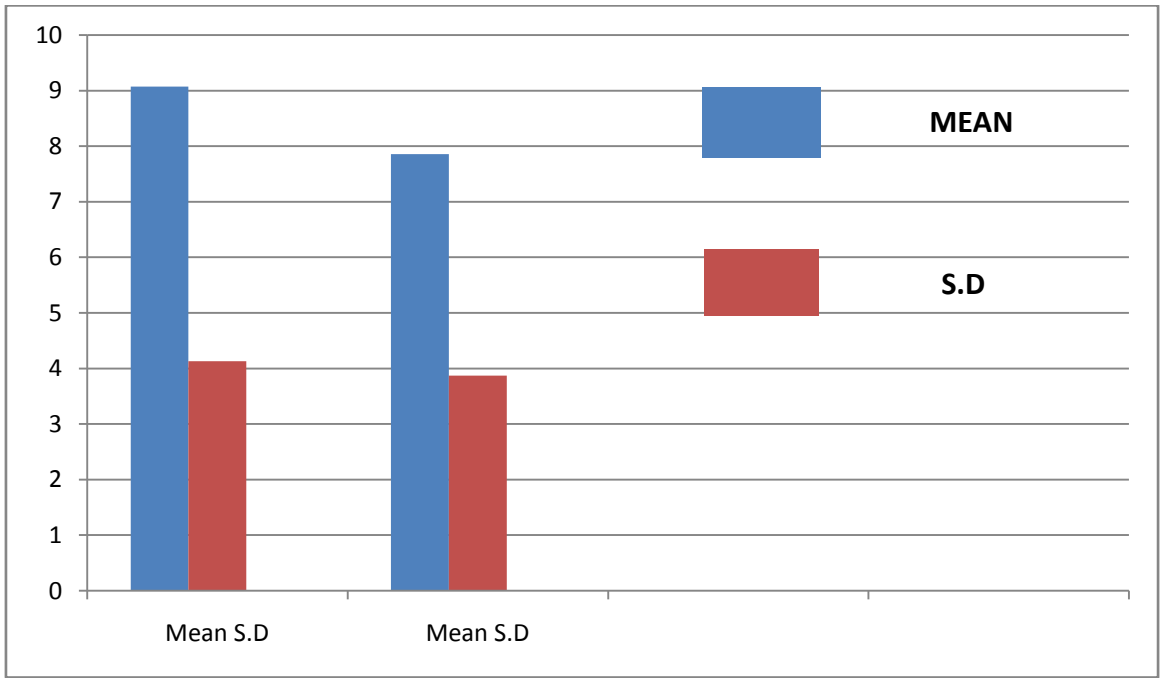
Table-2: Mean score and S.D of boys and girls towards the variable self-concept.

Table-2.1

Variable	Gender	N	M.	S.D
Self-concept	Boys	100	9.07	4.13
	Girls	100	7.86	3.87

Table-2: Show that means and S.D score of boys is 9.07 and 4.13 where mean and S.D score of girls is 7.86 and 3.87



Analysis of gender on the variable self-concept

In order to test the Hypotheses (II), the value of t-value for difference in mean score on the variable score of self-concept of boys and girls student was calculated.

Table 2.2 Analysis of gender on self-concept of Mathematics.

Variable	Gender	N	Mean	S.D	DJ	t-test	Infered
SELF CONCEPT	Boys	100	13.8	4.13	198	4	Significant
	Girls	100	11.6	3.87			

Table 2.2 reveals that the mean score and S.D of boys is 13.8 and 4.13 respectively and mean score and S.D of girls is 11.6 and 3.87. The t-value comes out to be 4 which is significant at 0.05 and at 0.01 level. Hence the hypothesis, there exists asignificant difference in self-concept among high school students with respect to gender is rejected.

Hypothesis: III

There exists a significant relationship between the attitude towards Mathematics and self-concept of high school students. In order to test the hypothesis correlation in attitude towards Mathematics and self-concept was calculated.

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Table-3: t- value

Variable	N	r-value	Infered
Self Concept Attitude towards Mathematics	200	0.957	Significant
Self concept Attitude towards Mathematics	200		

Table 3: shows that r-value comes out to 0.957 which is significant. Hence there exists a significant relationship between attitude towards Mathematics &self-concept was accepted.

VI. RESULTS AND FINDINGS

1. It was found that mean score of boys students towards Mathematics was more than that of girls students.
2. There exists a significant difference in attitude towards Mathematics among high school students w.r.t gender was accepted.
3. There exists a significant difference in self-concept of Mathematics in high school students w.r.t gender was accepted.
4. It was found that the mean score of boy's students in self-concept of Mathematics was more than that of girl's students.
5. This study also found that boy's students have more self-concept in Mathematics and attitude towardsMathematics as compared to girls.

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