



An Investigation on High School Students' Attitude Towards Mathematics

KEYWORDS

Mathematics, Attitude, Achievement, High School Students, Type of School

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ABSTRACT

This study was based on a survey of high school students about their attitudes towards mathematics. The objectives of the study were to find out whether there is any significant difference in Attitude towards mathematics of high school students with respect to gender, locality of student and type of school. Sample of the study was 120 IX standard students selected from six schools of Tirunelveli district. The results indicated that female students Attitude towards mathematics were significantly favourable than male students. Further, urban students rated more on Attitude towards mathematics than their counterparts and the government high school students have more Attitudes towards Mathematics than others.

Introduction

Mathematics is a tool in which students and youngsters get knowledge and experience about life, they learn how to deal with problems, and apply their knowledge into real life problems, they improve their ability about logical thinking and reasoning, and they are getting ready for their future (Arslan, 2012).

Kothari Commission has rightly pointed out that Mathematics should be made a compulsory subject for the students of 1st to 10th standard, as a part of general education (Bishnoi, 2010).

It is generally believed that students' attitude towards a subject determines their success in that subject. In other words, favorable attitude result to good achievement in a subject. A student's constant failure in a school subject and mathematics in particular can make him to believe that he can never do well on the subject thus accepting defeat. On the other hand, his successful experience can make him to develop a positive attitude towards learning the subject. This paper deals with 'Attitude towards mathematics', a construct which plays an important role in mathematics education. A bi-dimensional definition, in which behaviours do not appear explicitly (Daskalogianni, 2000): attitude toward mathematics is therefore seen as the pattern of beliefs and emotions associated with mathematics.

What other research says?

The conceptions, attitudes, and expectations of the students regarding mathematics and mathematics teaching have been considered to be very significant factor underlying their school experience and achievement (Borasi, 1990; Shoenfeld, 1985). There is a relationship between attitudes toward mathematics and mathematics self-efficacy beliefs (Stramel, 2011). Young people's attitudes towards science, technology, engineering, and mathematics (STEM) are subject to interpersonal influence of significant persons, defined as those who influence a person's attitudes (Sjaastad, 2013). The way students' perceive their teachers' in terms of knowledge of mathematics contents, communication ability, teaching methods and classroom management skills has a significant relationship with students' attitude towards mathematics. When the students' perception of their teachers' characteristics is low, students' attitude towards mathematics tends to be negative (Etuk, 2013). The school environment, teachers attitudes and beliefs, teaching styles and parental

attitudes were identified as explanation factors that account for student's attitudes towards mathematics (Kaldo, 2012). Teachers and other stakeholders in the education industry should organize seminars and workshops for students, parents, teachers and school administrators to enhance and promote positive attitudes towards mathematics (Asante, 2012).

Objectives of the study

1. To find out the level of attitude towards mathematics of high school students with regard to gender, locality of the student and the type of school.
2. To find out whether there is any significant difference between male and female high school students in their attitude towards mathematics.
3. To find out whether there is any significant difference between rural and urban high school students in their attitude towards mathematics.
4. To find out whether there is any significant difference among government, aided and private high school students in their attitude towards mathematics.

Hypotheses

1. There is no significant difference between male and female high school students in their attitude towards mathematics.
2. There is no significant difference between rural and urban high school students in their attitude towards mathematics.
3. There is no significant difference among government, aided and private high school students in their attitude towards mathematics.

Method

A descriptive survey method was adopted for the present study.

Sample

The investigator used the stratified random sampling technique for selecting the sample. The investigator selected 120 high school students from Tirunelveli district.

Tool used

Attitude towards mathematics (AtMa, 2013) developed by the investigators used for the present study.

Statistical techniques used

Percentage analysis, t-test, F-test and Scheffe test.

Analysis of data

Table 1

Level of attitude towards mathematics of high school students with regard to gender, locality of the student and type of school

Variable	Background Variable		Low		Average		High	
			Count	%	Count	%	Count	%
Attitude towards mathematics	Gender	Male	17	43.6	19	48.7	3	7.7
		Female	13	16.0	46	56.8	22	27.2
	Locality of Student	Rural	20	44.4	21	46.7	4	8.9
		Urban	10	13.3	44	58.7	21	28.0
	Type of School	Govt.	0	0.0	30	66.7	15	33.3
		Aided	13	36.1	19	52.8	4	11.1
Private		17	43.6	16	41.0	6	15.4	

From the above table it is clear that half of the high school students have average level of attitude towards mathematics with regard to the gender, locality of student and type of school.

H₀ 1: There is no significant difference in attitude towards mathematics of high school students with respect to gender

Table 2
Attitude towards mathematics of high school students with respect to gender

Variable	Gender	N	Mean	Standard Deviation	Calculated 't' value	Remarks
Attitude towards mathematics	Male	39	177.26	20.855	3.36	S
	Female	81	191.77	22.719		

(t=1.96 at 5% level of significance)

It is inferred from the above table that, the calculated t-value (3.36) is greater than table value (1.96) for df (118) at 5% level of significance. Hence the null hypothesis is rejected. It shows that there is significant difference in attitude towards mathematics of high school students with respect to gender. The mean response given by girls with respect to attitude towards mathematics (191.77) is higher than the mean scores of boys (177.26).

H₀ 2: There is no significant difference in attitude towards mathematics of high school students with respect to locality of the student

Table 3
Attitude towards mathematics of high school students with respect to locality of the student

Variable	Gender	N	Mean	Standard Deviation	Calculated 't' value	Remarks
Attitude towards mathematics	Rural	45	175.89	20.623	4.41	S
	Urban	75	193.75	21.957		

(At 5% level of significance the table value of 't' is 1.96)

It is inferred from the above table that, the calculated 't' value (4.41) is greater than the table value (1.96) at 5% level of significance. Hence the null hypothesis is rejected. Thus there is significant difference between the high school students from rural and urban with reference to the attitude towards mathematics. The mean response given by the students from urban area with respect to Attitude towards mathematics (193.75) is higher than the mean scores of students from

rural area (175.89).

H₀ 3: There is no significant difference in attitude towards mathematics of high school students with respect to type of school

Table 4
Attitude towards mathematics of high school students with respect to type of school

Variable	Source of Variation	Sum of Squares	df	Mean Square	Calculated 'F' value	Remarks
Attitude towards mathematics	Between Groups	7880.097	2	3940.048	8.309	S
	Within Groups	55479.603	117	474.185		
	Total	63359.700	119			

(F = 3.07 at 5% level of significance)

It is inferred from the above table that, the calculated 'F' value (8.309) is greater than the table value (3.07) at 5% level of significance. Hence the null hypothesis is rejected. Thus there is significant difference in Attitude towards mathematics of high school students with respect to type of school.

Table 5
Scheffe test – Attitude towards mathematics of high school students with respect to type of school

Management of the Institution	N	Subset for alpha = 0.05	
		1	2
Aided	36	180.67	
Private	39	180.87	
Government	45		197.51

The Scheffe test indicates that the government, aided and private high school students differ significantly in their attitude towards mathematics. The mean value of government high school students is greater than the aided and private high school students. Hence the government high school students have more attitudes towards mathematics than others.

Findings

From descriptive analysis, the investigator found that 7.7% of male students and 27.2% of female students had high level of Attitude towards mathematics. Further, 8.9% of rural students, 28.0% of urban students had high level of Attitude towards mathematics. The investigator found that 33.3% of government high school students, 11.1% of aided high school students and 15.4% of private high school students had high level of Attitude towards mathematics.

From t-test, the results indicated that female student's attitude towards mathematics were significantly favourable than male students. This may be due to the reason that the female students are more goals oriented than male students. Their eagerness towards the academic achievement is higher than their counterparts.

T-test shows that urban students rated more on attitude towards mathematics than their counterparts. This may be due to the reason that urban students have more opportunities to know about the importance of mathematics in the present day competitive world.

The result revealed that the government high school students have more attitudes towards mathematics than others. This may be due to the reason that government has spent more money on education to enhance the quality of edu-

cation in government schools and gives so many innovative programmes for government teachers and students to enhance the quality of mathematics education.

Conclusion

The teachers who teach mathematics have the opportunity to dispel negative stereotypes and myths about mathematics, and to help create a positive classroom environment that encourages male students to have a good attitude towards mathematics. The direct and indirect messages of media, and their repetition over and over during the years, create a

deep and lasting influence in learning attitudes. Hence it is the responsibility of media to promote a positive attitude towards mathematics and it has to be reached the rural people also. The teacher should aim to make pupils' experiences constructive so that they contribute to an enduring, positive disposition towards engagement in mathematics. Government should continue to prioritise mathematics teaching in schools, enabling all mathematics teachers to undertake continuing professional development and providing them with the support necessary for them to concentrate on their teaching in a positive, unpressured and constructive environment.

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