Exploring Attitude towards Learning Mathematics of Secondary School Students

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Abstract
The main objective of the research was to study attitude of 9th standard students towards learning mathematics. The study analysed gender, type of management and locality wises difference in the attitude towards learning mathematics of 9th standard students. The study adopted survey design to collect data. The data was collected from 9th standard students studying the three schools of Bangalore city. Among, one was government school another two were private schools. A total of 83 students studying in 9th standard respondent for the survey. The Independent Sample t test and three-way ANOVA was used. The study revealed that there was no significant difference in the learning mathematics of boys and girls and whereas difference observed concern to students studying in private government and private secondary school as well as rural and urban secondary school studying in secondary school; there was no significant three way interaction of gender, type of management and locate on attitude towards learning mathematics of secondary school students.
Keywords: *Secondary Students, Secondary School, Attitude and Learning.*

Introduction

In schooling, having a solid foundation and knowledge of a variety of disciplines is important. A handful of the subjects were also discovered to be quite difficult for the pupils, causing stress and strain during the learning process. Maths is one such subject in schools. However, it is a crucial subject for school education. The Kothari Commission(1964) rightly pointed out that "science and mathematics should be taught to all learners as part of general education during the first ten years of schooling" (Devi and Reddi, 2023). So, students attitude to this subject is important in learning and environment of students in mathematics. The attitude of the students is always the first indicator of its toughness. Secondary students' attitudes can be impacted by the attitude, personality, and style of instruction used by their teachers in the classroom. Students' positive attitudes towards mathematics, teachers' methods of instruction, and the school environment all influence their success in the subject. (Sarmah and Das, 2020). Narayan (2015) opined that students' attitude towards mathematics is a major influence on and determine their performance in the discipline (Baidoo, Assan and Baidoo, 2022). In this context, a student's favourable or unfavourable attitude consistently determines their level of effectiveness in learning mathematics. With this background, the study was conducted to investigate.

Review of Related Literature

Marchis (2011) carried out research on Factors that influence secondary school students' attitude to mathematics. The study found that the most important factor was the teacher: the teachers' attitude to mathematics and the amount of confidence and support he/she gives to the pupil influence their attitude towards mathematics. Another important factor was how pupils think about the utility of mathematics in their everyday life. Self-efficacy and self-judgment also influence pupils' attitude towards learning mathematics. Mazana, Montero, and Casmir, (2019) explored a study on Investigating students attitude twoards learning mathematics. The study found that initially students exhibit a positive attitude towards mathematics, but their attitude

becomes less positive as the students move forward to higher levels of education. Sarma and Rabha (2021) carried out an Investigation on Attitude Towards Learning Mathematics Among Higher Secondary School Students. The study revealed that the male students show more positive attitude towards learning Mathematics than the female students. Among the eight components, in few components students of Government schools show more positive attitude than Private schools. Whereas, in some components students of Private schools show more positive attitude than students of Government schools. Mahapatra and Sahoo, (2022) conducted a study on Student's Attitude towards Mathematics. The study found that that private secondary school students' have a better attitude towards mathematics than the Govt. secondary school students; Government -aided school students' have a better attitude towards mathematics than the Govt. secondary school students; no significant difference between Government aided and Private secondary school students' attitude towards mathematics; the female students have a better attitude towards mathematics than of male students; no significant difference between urban and rural students' attitude towards mathematics. Owu-annan, Assuah, and Akayuure, (2022) examined Female students attitude towards the leanring of matehmatics: Emerical evidence form high school in central region. The results of the study were female students had less self-assurance when performing Mathematical tasks. The students were uncertain about whether motivation could change their attitude toward learning Mathematics. The female students were less enthusiastic about Mathematics. The students understood the value of Mathematics and how it applied to all facets of life. The students' knowledge of the importance of mathematics was a strong predictor of their positive attitudes toward learning Mathematics.The aforementioned study makes it abundantly evident that studies have been conducted on secondary students' attitudes towards learning mathematics. The impact and interaction of gender, management style, and location on secondary students' attitudes towards learning mathematics was also extended and further examined in this study.

Statement of Problem

To study attitude of 9th standard students towards learning mathematics. The study analysed gender, type of management and locality wises difference and interaction on attitude towards learning mathematics of 9th standard students.

Objectives of the Study

1. To find out the difference in attitude towards learning mathematics of boys and girls secondary school students.
2. To find out the difference in attitude towards learning mathematics of students studying in government and private secondary school.
3. To find out the difference in attitude towards learning mathematics of rural and urban background students studying in secondary school.
4. To find out main influence of Gender, Management, and Locality and their various integration on Attitude towards Learning Mathematics of student studying in secondary school

Hypotheses of the Study

- There is no significance difference between the attitude towards learning mathematics of boys and girls secondary school students.
- There is no significance difference in the attitude towards learning mathematics of students studying in government and private secondary school.

- There is no significance difference in in attitude towards learning mathematics of rural and urban background students studying in secondary school.
- There is no significant main influence of Gender, Management, and Locality and their various integration on Attitude towards Learning Mathematics of student studying in secondary school

Limitation of the Study

- The study is limited to three secondary school located in Bangalore city.
- The students studying in 9th standard considered for the study.
- Attitude towards learning mathematics developed by researcher was used in the study to collect the data.
- The study is limited to selected demographic variable gender, type of management and locality.

Methodology

The study adopted survey design to collect data. The data was collected from 9th standard students studying the three schools of Bangalore city. Among, one was government school another two were private schools. A total of 83 students studying in 9th standard respondent for the survey.

Tool Used in the Study

A researcher-developed attitude towards learning mathematics scale was employed in this study. There are 22 items on the five-point Likert scale, which are Strongly Agree, Agree, Undecided, and Disagree.

Statistical Technique

The Independent Sample t test and three-way ANOVA was used to examine the gathered data. Also, a graphical representation of the results was provided.

Analysis and Interpretation of Data

Hypothesis-1: There is no significance difference between mean scores of attitude towards learning mathematics of boys and girls secondary school students.

Table 1 Comparison of Attitude towards Learning Mathematics of Boys and Girls Secondary School Students

Gender	N	Mean	SD	t - value	p - value	Remark
Boys	44	79.9318	12.51492	.414	.680	NS
Girls	39	78.8974	9.88831			

The aforementioned table shows the obtained t value is .414 and p value is .680 with df of 81 for difference in the attitude towards learning mathematics of boys and girls secondary school students. Here the obtained p value higher than .05 level of significance. Therefore, accepting the null hypothesis, it is concluded that, there is no significance difference between mean scores of attitude towards learning mathematics of boys and girls secondary school students at .05 level of significance, t = .414 and p= .680. Thus, boys and girls found to be same level of attitude towards learning mathematics in secondary school.

Hypothesis-2: There is no significance difference between mean scores of attitude towards learning mathematics of students studying in government and private secondary school.

Table 2 Comparison of the Attitude towards Learning Mathematics of Students Studying in Government and Private Secondary School

Management	N	Mean	SD	t- value	p- value	Remark
Government	40	82.2000	12.70816	2.166	.034	S
Private	43	76.8837	9.24330			

The aforementioned table shows that the obtained t value is 2.166 and p value is .034 with df of 81 for difference in the attitude towards learning mathematics of students studying in government and private secondary schools. Therefore, rejecting the null hypothesis, it is concluded that, there is a significance difference between mean scores of attitude towards learning mathematics of students studying in government and private secondary school at .05 level of significance, t = 2.166 and p= .034. The mean difference indicate that, the students studying in government secondary school showed higher attitude towards learning mathematics compare to students studying in private secondary school.

Hypothesis-3: There is no significance difference between mean scores of attitude towards learning mathematics of rural and urban background students studying in secondary school.

Table 3 Comparison of Attitude towards Learning Mathematics of Rural and Urban Background Students Studying in Secondary School

Locality	N	Mean	SD	t-value	p-value	Remark
Rural	39	74.9231	10.26846	3.697	.000	S
Urban	44	83.4545	10.74104			

The aforementioned table shows that the obtained t value is 3.697 and p value is .000 with df of 81 for difference in the attitude towards learning mathematics of rural and urban background students studying in secondary school. Therefore, rejecting the null hypothesis, it is concluded that, there is a significance difference between mean scores of attitude towards learning mathematics of rural and urban background students studying in secondary school at .05 level of significance, t = 3.697 and p= .000. The mean difference indicate that, urban background students studying showed higher attitude towards learning mathematics compare to rural background students in secondary school.

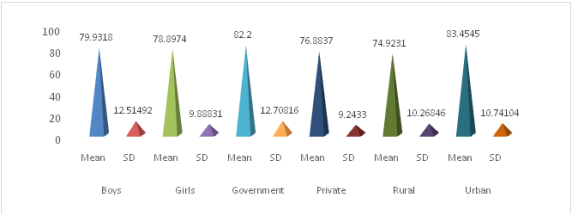

Figure 1 Gender, Type of Management and Locality Wise Mean and SD Scores of Attitudes towards Learning Mathematics Of Students Studying in Secondary School

Hypothesis-4: There is no significant main influence of Gender, Management, and Locality and their various integration on Attitude towards Learning Mathematics of student studying in secondary school

Table 4 Summary of 2 X 2 x 2 Factorial ANOVA for Attitude towards Learning Mathematics of Student Studying in Secondary School

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	159.796	1	159.796	1.997	.162
Type of Management	1950.613	1	1950.613	24.374	.000
Locality	2907.790	1	2907.790	36.335	.000
Gender * Type of Management	453.206	1	453.206	5.663	.020
Gender * Locality	135.274	1	135.274	1.690	.198
Management * Locality	136.622	1	136.622	1.707	.195
Gender * Type of Management * Locality	126.669	1	126.669	1.583	.212
Error	6002.063	75	80.028		
Total	534338.000	83			
Corrected Total	10472.506	82			

The aforementioned table shows that the obtained F value is 1.1997 and p value is .162 for main influence of gender, F value is 24.374 and p value is .000 for main influence of type of Management and F value is 36.335 and p value is .000 for main influence of Locality. Where concern to

two way interaction, the obtained F value is 5.663 and p value is .020 for two way interaction of Gender and Type of Management, F value is 1.690 and p value is .198 for two way interaction of Gender and Locality and F value is 1.707 and p value is .195 for two way interaction of Type of Management and Locality. In terms of three-way interaction, the obtained f value is 1.583 and p value is .212 for joint interaction of Gender, Type of Management and Locality. Thus, study found significant influence of gender and locality on attitude towards learning mathematics. However, related two-way interaction gender and type of management interacting on attitude towards learning mathematics of secondary schools students. The study found not observed three way interaction of gender, type of management and locality on attitude towards learning mathematics of secondary school students.

Major Findings of the Study

- There was no significance difference between mean scores of attitude towards learning mathematics of boys and girls secondary school students at .05 level of significance, t = .414 and p= .680.
- There was a significance differencebetween mean scores of attitude towards learning mathematics of students studying in government and private secondary school at .05 level of significance, t = 2.166 and p= .034.
- There was a significance difference between mean scores of attitude towards learning mathematics of rural and urban background students studying in secondary school at .05 level of significance, t = 3.697 and p= .000.
- There was no significant three way interaction of gender, type of management and locate on attitude towards learning mathematics of secondary school students at .05 level of significance, F= 1.583 and p =212.

Discussion and Conclusion

The main objective of the research was to study attitude towards learning mathematics of secondary school students. From independent sample t test, the study found that there was no significant difference in the learning mathematics of boys and girls and whereas difference observed concern to students studying in private government and private secondary school as well as rural and urbanise secondary school studying in secondary school. From the mean difference the study suggests that, in comparison to students attending private secondary schools, pupils at government secondary schools had a more positive attitude towards learning mathematics; when compared to secondary school students from rural backgrounds, students from urban backgrounds had a more positive attitude towards learning mathematics. From three-way ANOVA, the study found that type of management and location were found to have an influence on attitudes towards learning mathematics. Though, there is a corresponding two-way interaction between gender and type of management of secondary school students' attitudes towards learning mathematics. Whereas study not observed three-way interaction of gender, type of management and locality on attitudes towards learning mathematics of secondary school students.

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