



A STUDY ON MATHEMATICAL ATTITUDE OF SECONDARY SCHOOL STUDENTS IN SRIKAKULAM, VIZIANAGARAM AND VISAKHAPATNAM DISTRICTS.

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ABSTRACT

Mathematics is one of the most important subjects in the school curriculum as it educates students to deal with a wide range of personal, social and civic issues According to the Kothari Commission, "Science and Mathematics should be taught to all learners as part of general education in the first ten years of school". Furthermore, specialized secondary-level courses in these subjects should be available to students with above-average ability." This paper suggests what programs and actions can be taken to increase students' mathematical abilities in order to increase their achievement in mathematics, even if students have positive and negative attitudes toward mathematics.

Key Words: Mathematics, Attitude, Achievement, Secondary schools, Government.

INTRODUCTION

Mathematics is one of the most important subjects in the school curriculum because it educates pupils to deal with a wide range of personal, social, and civic issues (Anthony & Walshaw, 2009). According to the Kothari Commission, "science and mathematics should be taught to all learners as part of general education during the first ten years of schooling" (1964). Furthermore, special secondary-level courses in these topics should be available for pupils with higher-than-average ability." In the present competitive world, life has become more complex and more mathematical knowledge is needed to understand and adjust to the demand of life. With the increase in scientific inventions and approaches the value and importance of mathematics has also gained its significance in secondary level, as at this stage, this subject prepares students for higher education in sciences, engineering, technology etc. Thus, mathematics is a highly valued subject in school curriculum.

MATHEMATICAL ATTITUDE:

Students' attitude towards mathematics and their study habits affects their academic achievement in the subject. Low attitude towards the subject could considerably reduce a student's willingness to persist with a problem and this may hinder in the development of good study habits. The student may also lose interest in the subject and think not to continue it at the higher level. This indifference towards the subject is a serious problem for any school administration. School teachers can help the students by encouraging them to develop favourable attitude towards the subject and to cultivate better study habits. Because every job attempted is greatly influenced by one's attitude toward it, a positive attitude is considered one of the most effective tools in learning mathematics. Mathematics is commonly thought to be a difficult topic, yet it can be learned by any student of average intelligence. It is also considered that learning mathematics demands special abilities and brains, and as a result, most students want to escape the burden of studying this subject, believing that they are not capable of doing so. There is nothing like mathematical ability or intelligence, any student can acquire this ability by developing positive attitude towards mathematics. Some students who are not showing any potential in the subject at this stage may prove their worth in the coming years of his/ her school stage by developing proper study habits. If the mathematics subject is not difficult and does not require any special intelligence than what other factors may be responsible for creating fear in mathematics. This is an area which must be explored.

NEED AND SIGNIFICANCE OF THE STUDY

Proficiency in languages, science and mathematics is seeing as an essential precursor to success in modern society. Singh, Granvilla and Dica (2001) studied that high achievement in mathematics is function of many interrelated variables related to students, families and teachers. Among students variables attitudes are regarded by several researchers. A positive attitude towards mathematics reflex a positive emotional dispositions in relation to the subject, in a similar way learning styles of a student also impact individuals style of learning and attitudes towards learning.

Several studies have been undertaken to try, to reach and understanding of the relationship between student attitudes towards mathematics with secondary school students.

OBJECTIVES OF THE STUDY

1. To find out the level of mathematical attitude of secondary school students with reference to the following variables.

- a) Gender (Boys / Girls)
- b) Locality (Urban / Rural)
- c) Management (Government / Private)
- d) Medium of instruction (English / Telugu)
- e) Mathematics achievement. (High Achievers / Low Achievers)

2. To find out the mathematical attitude of secondary school students in Srikakulam, Vizianagaram and Visakhapatnam districts.

HYPOTHESES OF THE STUDY

The following hypotheses have been formulated for the present investigation:

1. The mean mathematical attitude of students would not be influenced by their gender.
2. The mean mathematical attitude of secondary school students would not be influenced by the locality.
3. The mean mathematical attitude of secondary school, students would not be influenced by the type of school.
4. The mean mathematical attitude of secondary school students would not be influenced by the medium of instruction.
5. The mean mathematical attitude of secondary school students would not be influenced by the mathematical achievement.
6. There would be no significant mean difference in Mathematical Attitudes of Secondary School Students with reference to Srikakulam, Vizianagaram and Visakhapatnam districts.

LIMITATIONS OF THE STUDY

The present study specifically focuses on assessing Mathematical attitude of secondary school students. The main intention of the study is to make a survey of mathematical attitudes of 9th class students of secondary schools in urban and rural areas of Srikakulam, Vizianagaram and Visakhapatnam districts of Andhra Pradesh with reference to the variables gender, medium of Instruction, management of school, Mathematical Achievement. The researcher is fully aware of the broad scope of the subject area as well as various constraints. So the study is limited in terms of the following:

The study is limited to 6360 different management secondary school students from the selected three districts.

METHODOLOGY

- (a) **Sample:** Altogether (9th class) 6360 students from 212 schools in three districts of Andhra Pradesh state are selected randomly for the study.
- (b) **Research Tool:** The researchers used a well prepared Mathematical Attitude scale of research for the present investigation. After selecting the items for the tool, the researchers verified whether the tool prepared for the present investigation is in conformity with the conditions required by a standard measuring instrument. The tool was administered to 6360 secondary school students in Sirkakulam, Vizianagaram and Visakhapatnam districts.

- (c) **Administration of the Tool** : After selection and finalization of the tools to measure Mathematical attitudes of secondary school students the researcher took the prior permission from head masters of the schools. Prior to the administrative of the tool, the researcher explained the importance of the study to selected sample of students. Instructions are given very clearly too all students about how to fill the questionnaire. The selected tools are distributed to selected sample of students in each school. The filled questionnaires are gathered after a stipulated time. Scoring is done to the filled questionnaires; data is tabulated and considered for further statistical analysis.

STATISTICAL INTERPRETATION OF DATA

The data collected has been analysed using different statistical techniques such as Mean score values, Standard Deviations, Analysis of Variance and t-ratios; and is presented in the following tables:

- The mean mathematical attitude of students would not be influenced by their gender.

Table 1. Mean, SD and 't' values for mathematical attitudes of secondary school students with reference to gender.

S.no	Gender	N	Mean (Group Mean)	SD	't' value	df (Group)	Level of significance
1	Boys	3362 (212 Groups)	158.87	9.17	3.78**	422	0.01
2	Girls	2997 (212 Groups)	162.97	9.12			

** Significant at 0.01 level

It is clearly observed from table 4.73 that the calculated value of 't' (3.78) is significant at 0.01 level of significance. Hence there is a significant mean difference between Boys and Girls in their mathematical attitude. The greater the value of mean (162.97) for Girls clearly shows that mathematical attitude of Girls is better than that of Boys.

- The mean mathematical attitude of secondary school students would not be influenced by the locality.

Table 2. Mean, SD and 't' values for mathematical attitudes of secondary school students with reference to locality.

S.no	Locality	N	Mean (Group Mean)	SD	't' value	df (Group)	Level of significance
1	Urban	3019 (112 Groups)	162.64	7.98	4.12**	210	0.01
2	Rural	3341 (100 Groups)	158.30	10.12			

** Significant at 0.01 level

It can be seen from the table 4.74 that the calculated 't' value (4.12) is greater than the table value at 0.01 level of significance. Hence the mean scores of urban students for their mathematical attitude scores is significantly greater than the mean scores of rural students. From the data it is observed that the greater the mean (162.64) of urban students is significantly better than the mean (158.30) value of rural students.

3. The mean mathematical attitude of secondary school, students would not be influenced by the type of school.

Table 3. Mean, SD and 't' values for secondary school student's mathematical attitudes with reference to type of school.

S.no	Type of School	N	Mean (Group Mean)	SD	't' value	df (Group)	Level of significance
1	Govt	3414 (106 Groups)	157.25	9.92	6.35**	210	0.01
2	Private	2946 (106 Groups)	163.70	7.50			

** Significant at 0.01 level

It is clearly evident from above table that the obtained 't' value (6.35) is significant at 0.01 level of significance. Since it is greater than the 't' table value. The greater the mean of private school students reveals that the mathematical attitude of private school students is significantly better than that the mathematical attitude of government school students.

4. The mean mathematical attitude of secondary school students would not be influenced by the medium of instruction.

Table 4. Mean, SD and 't' values for mathematical attitudes of secondary school with reference to medium of instruction.

S.no	Medium	N	Mean (Group Mean)	SD	't' value	df (Group)	Level of significance
1	English	3950 (124 groups)	162.30	7.57	3.44*	210	0.01
2	Telugu	2410 (88 Groups)	158.64	10.56			

** Significant at 0.01 level

The above table shows the mean, SD and 't' values for mathematical attitude of secondary school English and Telugu medium students. The calculated 't' value(3.44) is significant at 0.01 level of significance. Hence it is concluded that there is a significant mean difference between English and Telugu medium secondary school students for their mathematical attitude. The greater the mean scores (162.30) of English medium students for their mathematical attitude reveals that English medium students are better than Telugu medium students in their mathematical attitude.

5. The mean mathematical attitude of secondary school students would not be influenced by the mathematical achievement.

Table 5. Mean, SD and 't' values for mathematical attitudes of secondary school students with reference to their mathematics achievement.

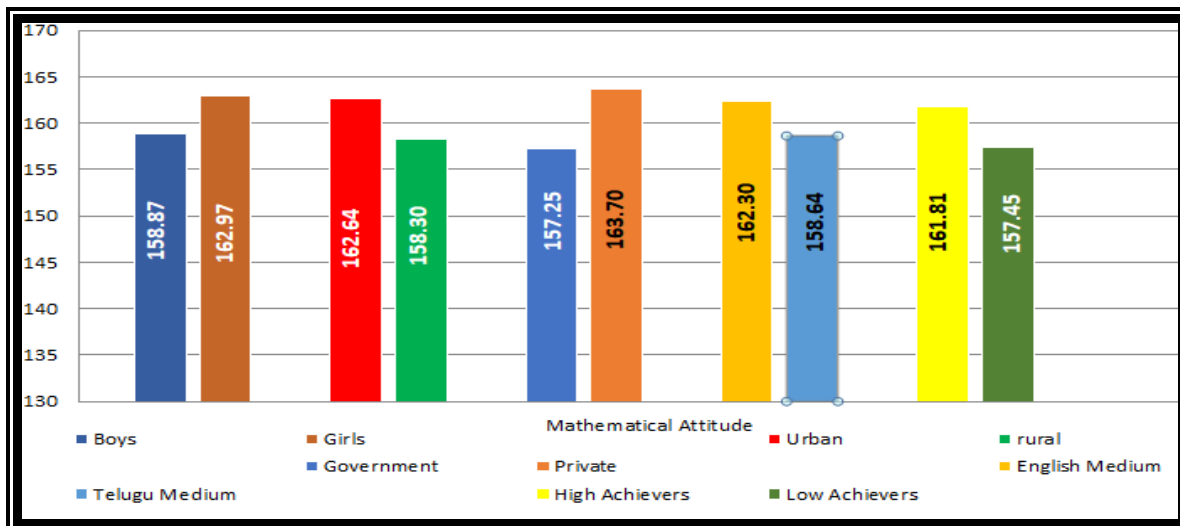
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Significant at	S.no	Mathematical Achievement	N	Mean (Group Mean)	SD	't' value	df (Group)	Level of significance
0.01 level	1	High Achievers	3393 (212 groups)	161.81	9.71	3.78**	422	0.01
	2	Low Achievers	2967 (212 Groups)	157.45	8.89			

It is clearly evident from

the above table that the 't' value (3.78) significant at 0.01 level of significance. The mean mathematical attitude of High achievers (161.81) is greater than the mean mathematical attitude of Low achievers(157.45) hence it can be concluded that the mathematical attitude of High achievers is significantly better than that of mathematical attitude of Low achievers.

Fig: 1: Mean difference in Mathematical Attitudes of secondary school students with reference to the variables i.e Gender, Locality, Type of School, Medium of instruction and Mathematical Achievement.



6. There would be no significant mean difference in Mathematical Attitudes of Secondary School Students with reference to Srikakulam, Vizianagaram and Visakhapatnam districts.

Table: 6. Mean, SD and 'F' values. –Mathematical Attitude in Srikakulam, Vizianagaram and Visakhapatnam districts.

S. No	Districts	N	Mean	SD	'F'-Value	Level of Significance
1.	Srikakulam	76	159.51	9.56	6.51**	0.01 Significant
2.	Vizianagaram	52	163.14	8.59		
3	Visakhapatnam	84	158.76	9.38		

Analysis of variance (ANOVA) for the scores of Mathematical Attitude of Srikakulam, Vizianagaram and Visakhapatnam districts.

Source of Variance	Sum of Squares	df	Mean Square	F-Value	Level of Significance
Between Groups	1099.789	2	549.895	6.51**	0.01 Significant
Within Groups	25086.378	209	84.466		
Total	26186.167	211			

** Significant at 0.01 level

It is observed from the ANOVA table that there is a significant mean difference in mathematical attitude of secondary school students in three districts namely Srikakulam, Vizianagaram and Visakhapatnam districts. The obtained 'F' value 6.51 is greater than the table value at 0.05 level of

significance. This shows that the mathematical attitude of secondary school students are differing significantly.

FINDINGS OF THE STUDY:

1. The mean Mathematical attitude of Secondary school students are significantly influenced by their Gender.
2. The mean Mathematical Attitude of secondary school students are significantly influenced by the locality
3. The mean Mathematical Attitude of secondary school students are significantly influenced by the type of school.
4. The mean Mathematical Attitude of secondary school students are significantly influenced by the Medium of instruction.
5. The mean Mathematical Attitude of secondary school students are significantly influenced by the Mathematical achievement
6. There is a significant mean difference in Mathematical Attitudes of Secondary School Students with reference to Srikakulam, Vizianagaram and Visakhapatnam districts.

CONCLUSIONS:

The main objective of this investigation is to study the Mathematical attitude of secondary school students. In the light of the research findings, it is felt that the present research work may contribute in developing positive attitudes among students towards Mathematics. It can be expected that well planned programmes may be given for enhancing the student's Mathematical Attitude. The findings of the study may be taken into consideration for a better framework to enhance and improving Mathematical attitudes of students. So the researcher felt the need to inculcate better Mathematical attitudes in order to develop better achievement.

EDUCATIONAL IMPLICATIONS:

On the basis of the findings of the present study the following educational implications are made. It is necessary to encourage the students in order to uplift the students in terms of their attitudes..

In the present study Mathematical Attitudes of students are differing significantly with reference to Gender, Locality, Type of school, Medium of instructions and achievement. Hence facilities and training to the students should be provided to improve the Mathematical attitudes of students studying in Government schools, students studying in Telugu medium, Students studying in rural areas and Low achievers in Mathematics.

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