



## **EFFECTIVE ATTITUDE OF SECONDARY SCHOOL STUDENTS TOWARDS MATHEMATICS**

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### **Abstract**

*The present study attempts to assess the attitudes of secondary school students towards Mathematics. To the study, the researcher has adopted convenient sampling method. Both male and female students constitute the population under study. A questionnaire has been administered by the researcher on a total of 60 students studying in State Board Schools in Mumbai namely Rizvi Springfield High School, Shri. V.V.K. Sharma High School & Bandra Hindu Association High School. The data collected has been analysed using mean which is a measure of central tendency. The results are presented graphically and interpreted thereof. The findings suggest that most of the students have a positive attitude towards the subject while only a certain percentage of the students are not in favour of the subject.*

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### **Introduction**

Mathematics as a discipline has its applications in a wide range of contexts. It has gained relevance as a subject. In the current scenario, the knowledge of Mathematics forms the basis of all other knowledge. Mathematical literacy has become the need of the hour. It is a body of knowledge which has emerged due to numerous discoveries and inventions in the field. It relies on the understanding of mathematical concepts, symbols, laws, theorems, and propositions. Mathematics has a specific language of its own. The aim of any Mathematics enables individuals to become better problem solvers. Mathematics occupies a place of special importance in the school curriculum. It develops in students' problem-solving ability, rational thinking and logical decision making. It shapes the cognitive abilities of students and fosters critical thinking in them. Although it is considered as one of the most challenging subjects and prioritized over the other subjects, most students develop anxiety towards the subject which leads to a fall in their academic achievement.

### **Need for the Study**

Mathematics today has an ever-widening scope in the fast-growing world of technology. In the present era, greater emphasis is placed on acquiring the knowledge of mathematics since it forms the basis of all other knowledge. Everyone should have some knowledge of basic mathematical concepts and terminologies and their applications to daily life. The foundation of any mathematical learning is to develop within an individual such problem-solving skills which help him throughout the entire course of his life. Its relevance cannot be ignored in the field of science, technology, computing, navigation artificial intelligence etc and hence the researcher felt a strong need to work on this topic. It is found that most students develop anxiety towards the subject as they



reach upper primary classes and drop out the subject completely due to lack of interest. This is one of the major challenges that we as educators' face and the solution to this problem lies in designing such strategies and using innovative methods to teaching learning and to instil in students the love for the subject.

### Importance of Study

There is mathematics in every domain of human activity. Right from the arrangement of atoms in an electronic circuit to understanding the mechanisms in an MRI Machine, Math's is everywhere. While individuals encounter several problems in their daily life, Mathematics is a tool for finding out solutions to these problems. Mathematics equips students with the wide variety of skills which are useful to them throughout the entire span of their career and provide opportunities for career advancement, some of these vital skills being decision making, critical thinking, analysing, and arriving at generalizations.

### Operational Definitions

To the present study, terms have been operationalized as follows:

*Mathematics: In the words of Benjamin Pierce "Mathematics is the science that draws necessary conclusions."*

**Attitudes:** Attitude is the cognitive, sensory and behavioural positive or negative inclinations and is directed towards the events, objects, people, thought systems and institutions within the limits of one's perception realm.

### Aim of the Study

A study of the Attitude of Secondary School Students towards Mathematics.

### Objectives of the Study

The following are the objectives of the present study:

- 1- To study the Attitude of Secondary school students towards Mathematics.
- 2- To study the Attitude of Secondary school students towards Mathematics based on Gender.
- 3- To study the Attitude of Secondary school students towards Mathematics based on Standards.
- 4- To study the Attitude of Secondary school students towards Mathematics based on Divisions.
- 5- To study the Attitude of Secondary school students towards Mathematics based on Schools.

### Scope of the Study

The present study is based on the attitudes of secondary school students towards Mathematics in general and based on their gender, class, school, and division. The attitudes of secondary school students are measured with the help of a Five Point Rating Scale. In the study an attempt is made by the researcher to understand how student's level of interest and motivation towards the subject has a direct correlation with the learning of the subject. Math's is one of the most favoured subjects in the school curriculum due to its greater demand and its applications to real life situations. Mathematics is the art of living. The study of the subject helps students to become better problem solvers and ignites a spark of creativity in them by shaping their intellectual activities. Besides Mathematics is responsible for the inventions and discoveries which have happened since times immemorial, and which support mathematical knowledge. It encompasses the diverse range of knowledge which is built based on mathematical knowledge. We cannot imagine a world without Mathematics. Its relevance and significance in the present scenario cannot be ignored. Hence the researcher felt the need to explore the topic in depth to understand the perspectives of students towards Mathematics and how educators can play a significant role in



developing the interest of students and broadening their horizons towards the subject. Mathematics is a necessity of life. It helps individuals develop the much-needed skills essential for personal and professional growth.

**Size and Composition of the Population**

Size	Institute
41	Rizvi Springfield High School
9	Bandra Hindu Association High School
10	Shri. V.V.K. Sharma High School

**Table No. 1: Composition of Sample**

**Tool for Data Collection**

For the present study, a questionnaire was developed by the researcher. The tool is directed towards determining the attitude of secondary school students towards Mathematics. It consists of a total of 30 statements including both positive and negative statements. The scale used in the tool was 5-point Likert rating scale. The positive items in the scale are given the points 5, 4,3,2,1 which indicate Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree respectively. The negative items in the scale are given the points 1, 2,3,4,5 beginning from Strongly Disagree to Strongly Agree. The lowest point in the scale is 30 and the highest point in the scale is 150. The tool is valid and reliable.

**Data Collection**

Data collection is an important aspect of any type of research study. It is essential to collect factual material data related to the topic under study. Data can be obtained from many sources, direct or indirect. It is necessary to adopt a systematic procedure to collect essential data. Relevant data, adequate in quantity and quality should be collected. They should be sufficient, reliable, and valid. Data Collection is an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results. Data collection methods for impact evaluation vary along a continuum. At the one end of this continuum are quantitative methods and at the other end of the continuum are Qualitative methods for data collection.

**Testing of Objectives**

**O1- To study the Attitude of Secondary school students towards Mathematics.**

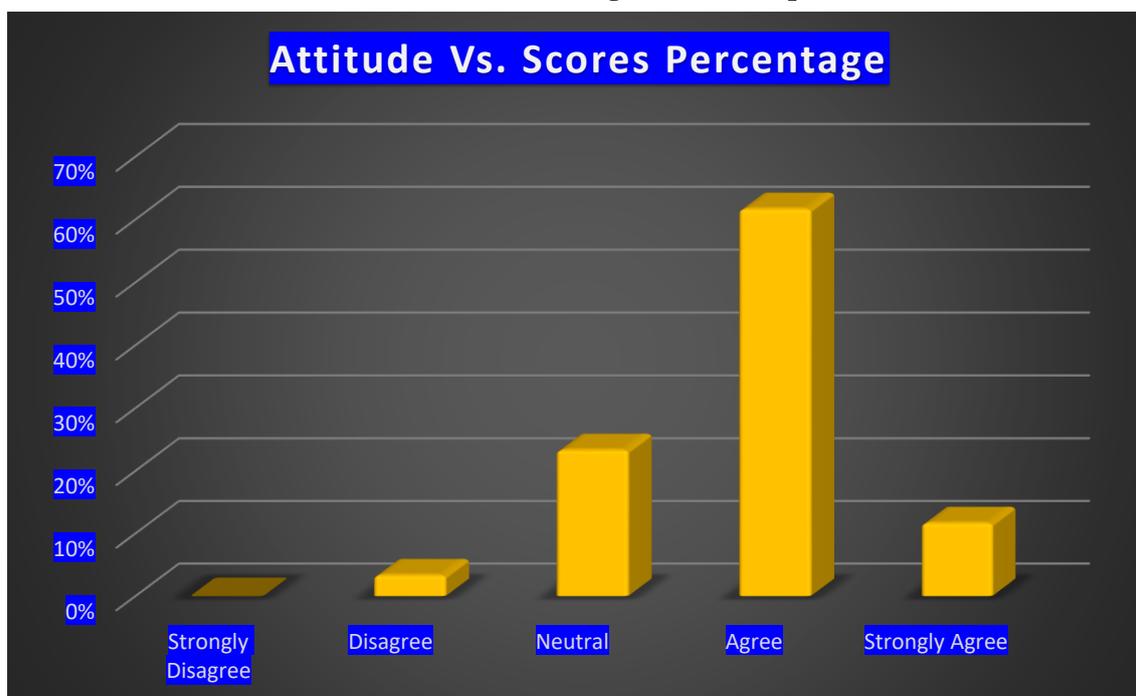
Range of Scores	No of Sample	Attitude opinion
30 - 53	0	Strongly disagree
54 - 77	2	Disagree
78 - 101	14	Neutral
102 - 125	37	Agree
126 -150	7	Strongly Agree
<b>Total</b>	<b>60</b>	

**Table No. 2: Overall data of sample**



No of Sample	Attitude opinion	Scores in Percentage
0	Strongly disagree	0%
2	Disagree	3.33%
14	Neutral	23.33%
37	Agree	61.67%
7	Strongly Agree	11.67%
<b>60</b>	<b>Total</b>	<b>100%</b>

Table No. 3: Percentage data of sample



Graph No.1: Attitude vs. Overall data

Q 2. To study the Attitude of Secondary school students towards Mathematics based on Gender.

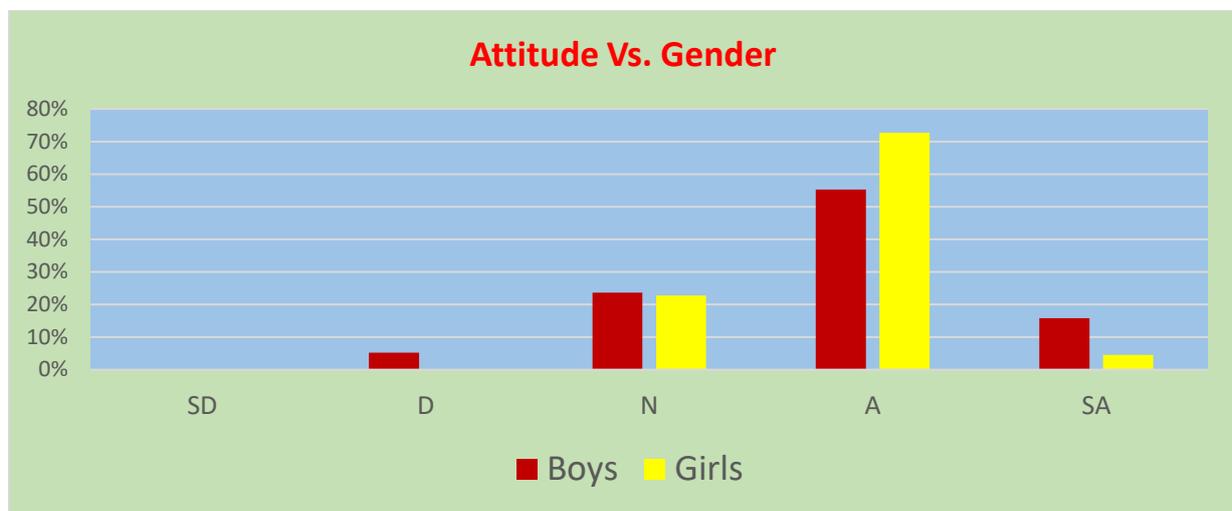
Attitude Vs. Gender	SD	D	N	A	SA	Total
Boys	0	2	9	21	6	38
Girls	0	0	5	16	1	22
Total	0	2	14	37	7	60

Table No. 4: Attitude vs. Gender wise



Attitude Vs. Gender	SD	D	N	A	SA	Total %
Boys	0%	5.26%	23.68%	55.26%	15.78%	100%
Girls	0%	0%	22.72%	72.72%	4.54%	100%

**Table No. 5: Attitude vs. Percentage of Gender wise**



**Graph No.2: Attitude vs. Percentage of Gender wise**

The above table and graph present the percentage wise distribution of student’s attitudes towards Mathematics based on their gender and the proportion of their mean scores. It is clear from the above analysis that both the male and female students have a positive attitude towards Mathematics. If we consider the percentage wise breakup of the scores lying within the four ranges, as far as attitudes are concerned it is to be noted that the boys outnumber the girls. 45% of the boys have a positive attitude towards Mathematics while only 27% of the girls have a positive attitude towards Mathematics. This could also be due to the reason that the sample consisted of more boys than girls. 15% of the boys show neither positive nor negative attitudes towards Math’s. On the contrary 8% of the girls have neither positive nor negative attitude. 3.33% of the boys have a negative attitude towards the subject.

**O3- To study the Attitude of Secondary school students towards Mathematics based on Standards.**

Attitude Vs. Standards	SD	D	N	A	SA	Total
V	0	0	0	5	0	5
VI	0	0	0	5	0	5
VII	0	1	2	8	3	14

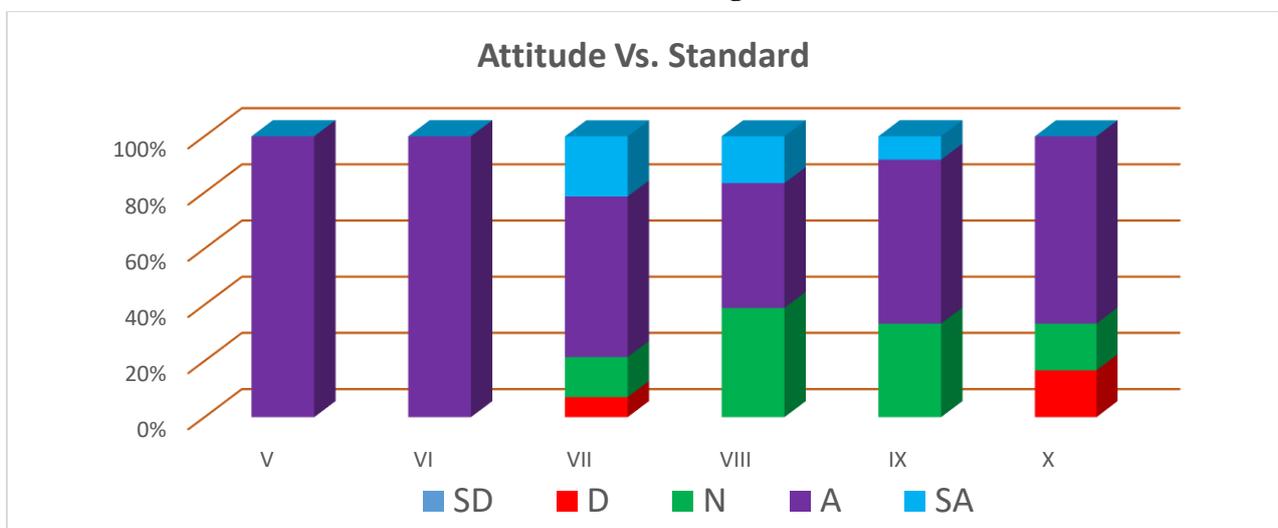


VIII	0	0	7	8	3	18
IX	0	0	4	7	1	12
X	0	1	1	4	0	6
<b>Total</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>37</b>	<b>7</b>	<b>60</b>

Table No. 6: Attitude vs. Standards wise

Attitude Vs. Standards	SD	D	N	A	SA	Total
V	0%	0%	0%	100%	0%	100%
VI	0%	0%	0%	100%	0%	100%
VII	0%	7.14%	14.28%	57.14%	21.42%	100%
VIII	0%	0%	38.88%	44.44%	16.66%	100%
IX	0%	0%	33.33%	58.33%	8.33%	100%
X	0%	16.66%	16.66%	66.66%	0%	100%
<b>Total</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>37</b>	<b>7</b>	<b>60</b>
	<b>0%</b>	<b>3.33%</b>	<b>23.33%</b>	<b>61.66%</b>	<b>11.66%</b>	<b>100%</b>

Table No. 7: Attitude vs. Percentage of Standards wise



Graph No.3: Attitude vs. Percentage of Standards wise



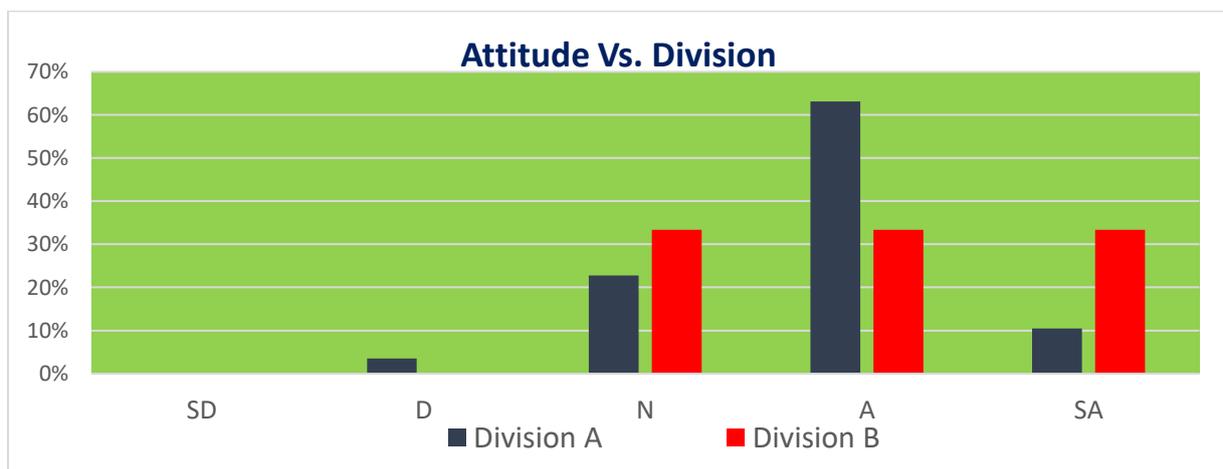
**O4- To study the Attitude of Secondary school students towards Mathematics based on Divisions.**

Attitude Vs. Divisions	SD	D	N	A	SA	Total
Division A	0	2	13	36	6	57
Division B	0	0	1	1	1	3
<b>Total</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>37</b>	<b>7</b>	<b>60</b>

**Table No. 8: Attitude vs. Divisions wise**

Attitude Vs. Divisions	SD	D	N	A	SA	Total
Division A	0%	3.50%	22.80%	63.15%	10.52%	100%
Division B	0%	0%	33.33%	33.33%	33.33%	100%
<b>Total</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>37</b>	<b>7</b>	<b>60</b>

**Table No. 9: Attitude vs. Percentage of Divisions wise**



**Graph No.4: Attitude vs. Percentage of Divisions wise**

**O5- To study the Attitude of Secondary school students towards Mathematics based on Schools.**

Attitude Vs. Schools	SD	D	N	A	SA	TOTAL
B.H.A School	0	0	2	6	1	9

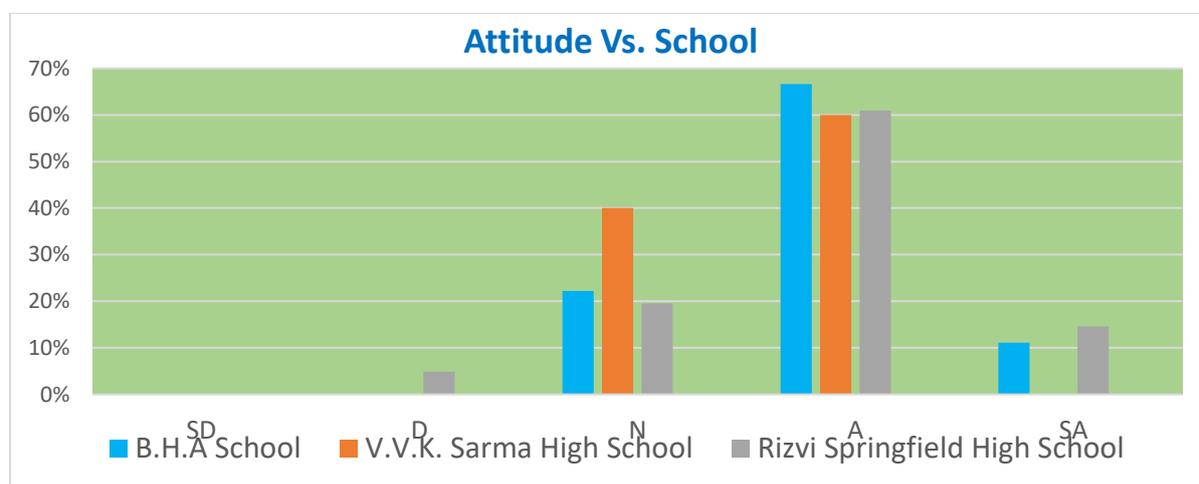


V.V.K. Sarma High School	0	0	4	6	0	10
Rizvi Springfield High School	0	2	8	25	6	41
<b>Total</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>37</b>	<b>7</b>	<b>60</b>

Table No. 10: Attitude vs. Schools wise

Attitude Vs. School	SD	D	N	A	SA	TOTAL
B.H.A School	0%	0%	22.22%	66.66%	11.11%	100%
V.V.K. Sarma High School	0%	0%	40%	60%	0%	100%
Rizvi Springfield High School	0	4.87%	19.51%	60.97%	14.63%	100%
<b>Total</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>37</b>	<b>7</b>	<b>60</b>

Table No. 11: Attitude vs. Percentage of Schools wise



Graph No.5: Attitude vs. Percentage of Schools wise

**Major Findings and Solutions**

The research paper has focused on studying the Attitude of Secondary School Students towards Mathematics:

**Investigating student’s attitude towards Mathematics:** The relevance of Mathematics in the present era cannot be negated. There has been explosion of Mathematical knowledge with technology moving at an accelerating pace. The knowledge of mathematics is extremely crucial, and it occupies a place of immense importance in the school curriculum. It has been noted that as students’ progress through the course of the academic life, their interest in the subject diminishes. So, an increasing need is felt to assess the attitude of students and to think of



strategies to maintain student's interest in the subject. Attitudes can be positive as well as negative. A positive attitude produces a desirable response by influencing an individual's willingness to learn thus in turn improving the student's achievement in the subject. On the other hand, a negative attitude towards Mathematics may be due to both intrinsic and extrinsic factors which affect the mathematical learning and result in lower grades in the subject.

### **Educational Implications**

Education is the essence of early civilization, and it is the light that shows mankind the right direction to surge. The main purpose of education is not just to make a student literate but also to enable him to think innovatively and to develop his knowledge ability. Education is the process of facilitating learning, the acquisition of knowledge, skills and shaping values as well as developing healthy attitudes. It may motivate children to think, reason out the existence of the world around them, comprehend, analyse, and bring out their hidden knowledge. Education shapes the personality of an individual and moulds his character by promoting holistic development and helps an individual in making self-adjustments in response to the environment. Education aims at bringing about changes in attitude and behaviour in a manner that is beneficial to the society and the world. It nurtures cognitive abilities, skills, and attitude to make life worth living. It is through education that the moral ideas, spiritual values, the aspiration of the nation and its cultural heritage are transmitted from one generation to the other for preservation and sublimation into higher culture.

Attitude determines the individual's interest in any particular entity. Attitude refers to beliefs about persons, things, and events. It is not something that is innate, but it is learnt and developed with time. Attitude gives meaning to how we perceive information and make sense of the world around us. Thus, attitude of a student plays a role in liking or disliking of a subject and it varies from individual to individual. With the world becoming more competitive there is excessive parental pressure on students to constantly perform better in academics. The desire for consistent and high-performance places a demand on students to outperform in Mathematics and this develops anxiety in Mathematics which have a bearing on student's attitudes. Many life stages and skills require a solid grasp of Mathematics. When students pursue higher education and seek out a career, they will inevitably need mathematical skills and strategies that they have learnt in school. Many careers require a solid understanding of Mathematics. But children often encounter several problems while dealing with Mathematics and this further goes on in shaping their attitudes towards the subject.

Adolescence is the period of transition between childhood and adulthood. As children enter the phase of adolescence, they go through many changes and their interests are also likely to be influenced by these changes. As children progress from lower grades to higher grades, their interest in Mathematics declines. A decrease in attitudes towards Mathematics can be associated with the overall decrease in intrinsic motivation which occur during adolescence. The support extended by the teacher towards the learning of Mathematics also plays an important role in influencing the attitudes of students towards the subject. If a teacher creates appropriate learning experiences to enrich student's knowledge in the subject, then intrinsic motivation can trigger, the student will be more inclined to achieve mathematical goals, he/she will feel competent enough and this in turn will promote positive attitudes towards Mathematics. A teacher who is supportive to students, shapes their expectations, sets

meaningful goals for them to achieve, provides them with tasks which are not excessively challenging at the same time engaging, promotes cooperative learning environments will probably stimulate the intrinsic motivation of students and this helps in building a healthy attitude towards the subject.

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