
FACTORS AFFECTING ACADEMIC ACHIEVEMENT OF 9TH STANDARD STUDENTS IN MATHEMATICS

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The National Policy of Education (1986) has considered the importance of mathematics in general education and suggested that mathematics should be visualised as the vehicle to train the child to think, reason, analyse and articulate logically. The power of critical thinking, logical reasoning, process of induction, generalization, establishment of relationship between different components can be developed through the teaching of mathematics.

Kline (1967) has rightly considered mathematics as ‘a creative process, deriving ideas and suggestions from real problems, idealising and formulating the relevant concepts, posing questions, intuitively deriving possible conclusions and then and only then, proving the hunch or the intuited argument deductively’

In the state of Uttar Pradesh in India, the teaching of mathematics is compulsory in 9th standard and the mathematics curriculum has been upgraded by the inclusion of many modern topics. According to official records maintained by the Uttar Pradesh State Secondary Education Examination Board, Allahabad, the average percentage of pass by and large does not exceed 85 percent in the final year of secondary school examination and the pass percentage in the subject of mathematics is very low as compared to other subjects.

There exists a need to conduct research to find out relationship of mathematics achievement with factors like mathematical creativity, test anxiety, achievement motivation and attitude towards mathematics. Hence, the present study has been taken up and entitled as ‘**Factors affecting academic achievement of 9th standard students in Mathematics.**’

OBJECTIVES OF THE STUDY

The present study is taken up with the following objectives-

- To find out the relationship between achievement in mathematics and mathematical creativity, test-anxiety, attitude towards mathematics and achievement motivation of standard 9th.
- To study the significant difference in achievement in mathematics, mathematical creativity, test-anxiety, attitude towards mathematics and achievement motivation of male and female students.
- To study the significant difference in achievement in mathematics, mathematical creativity, test-anxiety, attitude towards mathematics and achievement motivational of 9th standard students studying in English and Hindi medium of instruction.
- Study the significant difference in achievement in mathematics, mathematical creativity, test-anxiety, attitude towards mathematics and achievement motivational of 9th standard students studying in schools differing with regard to type of management.
- To determine the relative contribution of the mathematical creativity, test-anxiety, attitude towards mathematics and achievement motivation to the prediction of achievement in mathematics.

RESEARCH METHODOLOGY

Sample of the study- Sample for the study consisted of 800 students by using stratified sampling technique from 20 secondary schools.

Tools used-

The tools used to collect the data are-

- Self constructed Achievement Test in Mathematics.
- Mathematical Creativity Test constructed by Singh-1988.
- Test Anxiety Scale constructed by Najma-1977.
- Attitude Scale to Measure attitude towards Mathematics by Sunny-1987.
- Achievement Motivation Inventory by Mehta-1969.

Data analysis-

Correlation, t-test analysis are used for analyzing data.

Table-1

Means, S.D and t-ratio showing differences between boys and girls on achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation

Variable	Means		S.D		t-ratio
	Boys	Girls	Boys	Girls	
Achievement in Mathematics	21.5875	22.7450	7.8038	7.9661	2.075
Mathematical Analysis	58.1800	56.9525	17.3714	17.6277	0.992
Test anxiety	65.7000	68.0300	11.2973	11.0895	2.94
Attitude towards Mathematics	104.8000	104.9050	13.8084	15.9225	0.071
Achievement Motivation	2.2550	1.4578	4.4504	4.4889	2.52

It is hypothesized that 'There is no significant difference in the mean achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation of and girls studying in 9th standard., On the basis of the results shown in Table-1 this hypothesis is rejected with regard to achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation. Girls are high on achievement in mathematics and test anxiety than boys. But boys are high on mathematical creativity than girls. No significant differences between boys and girls have been found on mathematical creativity and attitude towards mathematics.

Table-2

Means, S.D and t-ratio showing differences in achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation among students studying in English and Hindi medium of instruction

Variable	Medium of Instruction	N	Mean	S.D	t-ratio
Achievement in Mathematics	English	400	23.7225	8.3672	7.64
	Hindi	400	19.6100	6.7737	
Mathematical Analysis	English	400	58.7875	17.8757	1.976
	Hindi	400	56.3450	17.0507	
Test anxiety	English	400	65.9875	11.2409	0.310
	Hindi	400	65.7425	11.2477	
Attitude towards Mathematics	English	400	106.0700	14.3239	2.146
	Hindi	400	103.8150	15.3778	
Achievement Motivation	English	400	2.2550	4.2120	2.531
	Hindi	400	1.4575	4.6880	

The second hypothesis is 'There is no significant difference in the mean achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation of 9th standard students studying in English and Hindi medium of instruction.' On the basis of the results shown in Table-2 this hypothesis is rejected with regard to achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation. English medium students are high on achievement in mathematics, mathematical creativity and attitude toward mathematics and achievement motivation as compared to Hindi medium students. Students of both groups do not differ from each other on test anxiety.

Table-3

Means, S.D and t-ratio showing differences in achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation among students studying in Government and aided schools.

Variable	Types of Schools	N	Mean	S.D	t-ratio
Achievement in Mathematics	Government	200	15.8550	5.4629	12.33
	Aided	320	23.4000	8.4869	
Mathematical Analysis	Government	200	51.1950	15.5368	3.919
	Aided	320	56.2550	13.5160	
Test anxiety	Government	200	61.6200	11.7313	4.307
	Aided	320	66.0594	10.9493	
Attitude towards Mathematics	Government	200	106.1750	13.1300	0.777
	Aided	320	107.122	14.1324	
Achievement Motivation	Government	200	1.6250	4.3473	3.313
	Aided	320	2.9313	4.4174	

The third hypothesis is 'There is no significant difference in the mean achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation of 9th standard students studying in government and aided schools.' On the basis of the results shown in Table-3 this hypothesis stands rejected with regard to achievement in mathematics, mathematical creativity, test anxiety, and achievement motivation. It means that the students studying in aided schools are high on achievement in mathematics, mathematical creativity, test anxiety and achievement motivation as compared to government schools. Students of Government and aided schools do not differ from one another on attitude towards mathematics.

Table-4

Means, S.D and t-ratio showing differences in achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation among students studying in Government and unaided schools

Variable	Types of Schools	N	Mean	S.D	t-ratio
Achievement in Mathematics	Government	200	15.8550	5.4629	14.60
	unaided	280	23.8357	6.4657	
Mathematical Analysis	Government	200	51.1950	15.5368	6.453
	unaided	280	65.7857	18.8445	
Test anxiety	Government	200	61.6200	11.7313	2.063
	unaided	280	64.3893	10.8994	
Attitude towards Mathematics	Government	200	106.1750	13.1300	3.420
	unaided	280	101.5714	16.3091	
Achievement Motivation	Government	200	1.6250	4.3473	2.073
	unaided	280	2.4786	4.5853	

The fourth hypothesis is ‘There is no significant difference in the mean achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation of 9th standard students studying in Government and Unaided schools.’ On the basis of the results shown in Table-4 this hypothesis stands rejected with regard to achievement in mathematics, mathematical creativity, and test anxiety, attitude towards mathematics and achievement motivation. It means that the students studying in unaided schools are high on achievement in mathematics, mathematical creativity, test anxiety and achievement motivation as compared to students of Government schools. Students of Government schools are high on attitude towards mathematics than students of unaided schools.

Table-5

Means, S.D and t-ratio showing differences in achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation among students studying in aided and unaided schools.

Variable	Types of Schools	N	Mean	S.D	t-ratio
Achievement in Mathematics	Aided	320	23.4000	8.4869	0.712
	Unaided	280	23.8357	6.4657	
Mathematical Analysis	Aided	320	51.1938	15.5368	10.26
	Unaided	280	65.7857	18.8445	
Test anxiety	Aided	320	66.0594	10.9493	1.868
	Unaided	280	64.3893	10.8994	
Attitude towards Mathematics	Aided	320	107.1219	14.1324	4.424
	Unaided	280	101.5714	16.3091	
Achievement Motivation	Aided	320	2.9313	4.3743	0.8189
	Unaided	280	2.4786	4.5853	

The fifth hypothesis is ‘There is no significant difference in the mean achievement in mathematics, mathematical creativity, test anxiety, attitude towards mathematics and achievement motivation of 9th standard students studying in aided and unaided schools.’ On the basis of the results shown in Table-5 this hypothesis stands rejected with regard to mathematical creativity and attitude towards mathematics. It means that the students studying in unaided schools are high on mathematical creativity of aided schools. Students of aided schools are high on attitude towards mathematics as compared to students of unaided schools. Students of both groups do not differ from each other on achievement in mathematics, test creativity and achievement motivation.

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