



GENDER DIFFERENCES IN ATTITUDE TOWARDS MATHEMATICS AND MATHEMATICAL ACHIEVEMENT OF PRIMARY STUDENTS: A COMPARISON OF GOVERNMENT AND PRIVATE SCHOOL STUDENTS

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Abstract

Mathematics is an indispensable instrument, equipped with signs and symbols, to bring about precision in comprehending the complicated problems. Achievement in mathematics depends much on attitude of the students towards the subject. To develop positive attitude of pupils towards mathematics, much stress is placed on learning styles in the curriculum. The present study emphasizes on the comparison between government and private primary school students with respect to attitude towards mathematics and mathematics achievement. Random sampling technique was used. A sample of 150 students of grade 5th was taken from randomly selected schools. The Scale of attitude towards mathematics by Kalpana Thakur was administered on selected sample. The mathematics achievement scores of previous class were also used. Descriptive and differential statistics were used for data analysis. The findings revealed that attitude towards mathematics of government and private primary school students are positively and significantly correlated with their mathematical achievement. There is no significant difference in attitude towards mathematics and mathematical achievement of government and private primary school students. Also, no gender differences are found in attitude towards mathematics and mathematical achievement of government and private primary school students.

Introduction

Courant and Robbins (1941) stated that Mathematics as an expression of the human mind reflects the active will, the contemplative reason, and the desire for aesthetic perfection. Its basic elements are logic and intuition, analysis and construction, generality and individuality.

Mathematics has practical and utilitarian value. It disciplines the mind; plays an important role in the advancement of culture and civilization; develops all our intellectual powers; teaches truthfulness, honesty, patience, self-control and self-confidence; develops power of reasoning; gives shape and definiteness to the properties of matter. Such being the power of mathematics, it is strange that not many people are keen on mastering this subject. Apart from this, their performance in this subject is poor.

Mathematics has its own language, its own tools and mode of operations. That is why mathematics is taken as a chest filled up with so many valuable tools concerning the operations like measuring, weighing, counting etc. and helps in proper understanding of the nature's work and complicated problems of life by converting them into its language of signs and symbols.

Benson (2000) stated that mathematics explore such concepts, aiming to formulate new conjectures and establish their truth by rigorous deduction from appropriately chosen axioms and definitions.

Attitude

Behaviour is composed of so many attributes. One of these attributes is attitude. One's behaviour to a great extent depends upon his attitude towards the things, ideas, persons or objects in his environment. Like other aspects of personality, attitudes are acquired. No one is born with an attitude; they are learned in a culture in course of individual's development. Attitudes result from personal desires and group stimulation also. They actually are a part of individual's own personality.

Attitude is complex of man's inclinations, feelings, biases, ideas, fears, threats etc. Opinion is verbal expression of attitude. Some attitudes are so deeply ingrained as to appear permanent, while others are nearly transitory and may change overnight. (Thurstone & Chave, 1929)

Crow and Crow (1991) stated that Attitudes are personal and relate to feelings of a person.

Mathematical Attitude

Attitude provides us with a personal outlook on the world through our feelings, biases, preconceived notions, ideas, fears, threats and convictions. At the same time attitude of the student towards mathematics provides knowledge to the teacher about the student's state of readiness to learn the subject, his motive power, internal frame of mind and beliefs, potential to face new situations or challenges. The attitude rests upon fundamental faith. Faith in the value of the subject causes one to learn effectively. Faith guides the action of a person. Majority of the pupils when given an opportunity to discuss their school subjects like mathematics declared that mathematics is hard and difficult. A pupil may possess both positive as well as negative attitude towards mathematics. Positive attitude of pupils towards mathematics indicates that this academic discipline is valued or

prized. Learners need to trust the self that with continued success in ongoing lessons and units in mathematics, they are becoming increasingly confident. If pupils do well to do work in mathematics, they should be praised for actual accomplishments. If pupils possess negative attitude, the teacher needs to be very observant and should assist learners to be successful in each specific step of learning. Otherwise, negative attitudes will hinder pupils from learning as much as they could.

To develop positive attitude towards the subject, much stress is placed upon learning styles in the curriculum. All individuals have some feelings towards the objects in their environment: Positive or Negative. These feelings may range from very mild responses which barely affect a person to strong emotional reactions which exert a marked directive effect on the individual and his behavior (Laycock & Munro, 1966).

Thakur (2006) in her study on effect of cooperative learning on attitudes, achievements and social skills of seventh graders with different cognitive styles found that there was difference in the attitudes exhibited by students when exposed to different instructional treatment (cooperative learning and conventional group learning). Students exposed to cooperative learning exhibited better attitudes than those in conventional learning.

Achievement

The word achievement means the end gains or level of success attained by an individual or group on the completion of a task whether it is academic, manual, personal or social. Academic or scholastic achievement means the attained level at which the student is functioning in school tasks such as Hindi or mathematics or science as measured by school marks or grades earned.

Wideman (2002) described achievement as a measure of performance or accomplishment to date.

Achievement is the quality and quantity of a students work. (Merriam Webster's dictionary, 2008)

So, achievement is operationally defined as the measurement of what a person knows or has learned from formal instruction, usually in school or what one can do after training.

Mathematics is one of three R's (Reading, Writing and Arithmetic). Knowledge, skill and attitudes as objectives to achieve are vital for each student. Pupils possess different intelligence and diverse learning styles. In any classroom, there are highly motivated pupils who work hard and do well in attaining vital goals. At the same time there are less motivated pupils and their attention remains divided between the lesson and distractions in the classroom. Learners need quality objectives, learning opportunities and evaluation procedure to achieve as optimally as possible in mathematics. Difference in mathematical achievement among pupils may be due to the reason that pupils grow up in different home environment with some parents providing more educational benefits.

Statement of the Problem

Gender Differences in Attitude towards Mathematics and Mathematical Achievement of Primary Students: A Comparison of Government and Private School Students.

Objectives

- To study the attitude towards mathematics of primary school students studying in government and private schools.
- To study the mathematical achievement of primary school students studying in government and private schools.
- To study the attitude towards mathematics of primary school students studying in government schools with respect to gender.
- To study the attitude towards mathematics of primary school students studying in private schools with respect to gender.
- To study the mathematical achievement of primary school students studying in government schools with respect to gender.
- To study the mathematical achievement of primary school students studying in private schools with respect to gender.
- To study the correlation between attitude towards mathematics and mathematical achievement government and private schools.

Hypotheses

- There is no significant difference in attitude towards mathematics of government and private primary school students.
- There is significant difference in mathematics achievement of government and private primary school students.
- There is significant difference in attitude towards mathematics of males and females primary school students studying in government school.
- There is significant difference in attitude towards mathematics of males and females primary school students studying in private school.
- There is no significant difference in mathematics achievement of male and female primary school students studying in government school.
- There is no significant difference in mathematics achievement of male and female primary school students studying in private school.
- There is significant difference in attitude towards mathematics of government and private school students in relation to their mathematical achievement.

Sample

Sample was drawn randomly from government managed schools and having private management. Two schools each of government and private were randomly selected. Following schools were chosen for collection of data. Following schools were chosen for the collection of data. Students of grade 5th were taken for collection of data from these schools.

S.No.	Name of the School	Government / Private	Males	Females	Total
1	Govt. Model School, Sec 32, Chandigarh	Government	19	19	38
2	Govt. Model School, Sec 20, Chandigarh	Government	19	19	38
3	Guru Nanak Khalsa Sr. Sec. School, Sec 30, Chandigarh	Private	18	19	37
4	G.G.S. Khalsa Collegiate School, Sec 26, Chandigarh	Private	19	18	37
		Total	75	75	150

Tools Used

- Scale of attitude towards mathematics by Kalpana Thakur.
- Achievement scores in mathematics were taken from the school records.

Statistical Techniques Used

Descriptive statistics (i.e. mean, standard deviation), Differential statistics i.e. t-test, Product moment correlation were used for data analysis.

Table 1

Mean and Standard deviation of variable Attitude towards Mathematics and Mathematical Achievement

Variable	Total Sample	Mean	Standard Deviation
Attitude towards Mathematics	150	158.77	21.08
Mathematical Achievement	150	72.88	15.39

Table 1 shows the mean and standard deviation of variables attitude towards mathematics and Mathematical Achievement of total Sample of 150. The mean and standard deviation of variable attitude towards mathematics are 158.77 and 21.08 respectively. The mean and standard deviation of variable achievement in mathematics are 72.88 and 15.39 respectively.

Table 2

Mean, Standard deviation and t-ratio of Attitude towards Mathematics of Government School Students and Private School Students

School	Number of Students	Mean	Standard Deviation	t-ratio
Government School	76	158.96	21.48	0.093
Private School	74	158.58	21.25	

Table 2 shows that t-ratio of attitude towards mathematics of government and private school students come out to be 0.093. The t-ratio of attitude towards mathematics of government and private school student is not significant at both 0.01 and 0.05 level of significance.

Therefore, the null hypothesis that there is no significant difference in attitude towards mathematics of government and private primary school students is accepted.

Table 3

Mean, Standard deviation and t-ratio of Mathematical Achievement of Government School Students and Private School Students

School	Number of Students	Mean	Standard Deviation	t-ratio
Government School	76	73.11	16.53	0.181
Private School	74	72.65	14.29	

Table 3 shows that t- ratio of Mathematical achievement of government and private school students come out to be 0.181. The t-ratio of achievement in mathematics of government and private school student is not significant at both 0.01 and 0.05 level of significance.

Therefore, the hypotheses, 'there is significant difference in mathematical achievement of government and private primary school students' is rejected.

Table 4

Mean, Standard deviation and t-ratio of Attitude towards Mathematics on the basis gender of Government School Students

Government School Students	Number of Students	Mean	Standard Deviation	t-ratio
Male	38	160.53	22.04	0.625
Female	38	157.39	21.61	

Table 4 shows that t-ratio of attitude towards mathematics on the basis of gender of government school students come out to be 0.625. The t-ratio of attitude towards mathematics on the basis of gender of government school student is not significant at both 0.01 and 0.05 level of significance.

Therefore, the null hypotheses, 'there is significant difference in attitude towards mathematics of male and female primary school students studying in government school' is rejected.

Table 5

Mean, Standard deviation and t-ratio of Attitude towards Mathematics on the basis gender of Private School Students

Private School Students	No. of Students	Mean	Standard Deviation	t-ratio
Male	37	162.08	14.40	1.517
Female	37	155.08	24.08	

Table 5 shows that t-ratio of attitude towards mathematics on the basis of males and females of private school students come out to be 1.517. The t-ratio of attitude towards mathematics on the basis of males and females of private school student is not significant at both 0.01 and 0.05 level of significance

Therefore, the null hypotheses, 'there is significant difference in attitude towards mathematics of male and female primary school students studying in private school' is rejected.

Table 6

Mean, Standard deviation and t-ratio of Mathematical Achievement on the basis Gender of Government School Students

Government School Students	No. of Students	Mean	Standard deviation	t-ratio
Male	38	75.94	16.69	0.996
Female	38	70.26	15.54	

Table 6 shows that t-ratio of mathematical achievement on the basis of males and females of private school students come out to be 0.996. The t-ratio of achievement in mathematics on the basis of male and female of government school student is not significant at both 0.01 and 0.05 level of significance.

Therefore, the null hypothesis, 'there is no significant difference in mathematical achievement of male and female primary school students studying in government school' is accepted.

Table 7

Mean, Standard deviation and t-ratio of Mathematical Achievement on the basis gender of Private School Students

Private School Students	No. of Students	Mean	Standard Deviation	t-ratio
Male	37	75.13	13.88	1.469
Female	37	70.16	15.19	

Table 7 shows that t-ratio of mathematical achievement on the basis of males and females of private school students come out to be 1.469. The t-ratio of achievement in mathematics on the basis of males and females of private school student is not significant at both 0.01 and 0.05 level of significance.

Therefore, the null hypotheses, 'there is no significant difference in mathematical achievement of male and female primary school students studying in private school' is accepted

Table 8

Coefficient of Correlation between Attitude towards Mathematics and Mathematical Achievement

Variable	Total Sample	Mean	Correlation(r)
Attitude towards Mathematics	150	158.77	0.428**
Mathematical Achievement	150	72.88	

**Significant at 0.01 level

Table 8 shows that coefficient of correlation(r) between attitude towards mathematics and mathematical achievement come out to be 0.428. It is significant that 0.01 level of significance.

Hence, the hypotheses, "There is significant difference in attitude towards mathematics of government and private school students in relation to their mathematical achievement" is accepted.

Major Findings of the Study

1. There is no significant difference in attitude towards mathematics of government and private primary school students.
2. There is no significant difference in mathematical achievement of government and private primary school students.
3. There is no significant difference in attitude towards mathematics of male and female primary school students studying in government school.
4. There is no significant difference in attitude towards mathematics of male and female primary school students studying in private school.
5. There is no significant difference in mathematical achievement of male and female primary school students studying in government school.
6. There is no significant difference in mathematical achievement of male and female primary school students studying in private school.
7. There is significant difference in attitude towards mathematics of government and private school students in relation to their mathematical achievement.

Educational Implications

The present study has following educational implications for teachers, parents, students and administrators:

- The findings of the present study may help the teachers to make a positive attitude towards mathematics.
- It helps the teachers in adopting suitable teaching methods in order to improve mathematical achievement of students.
- The teachers and parents can motivate the children and guide them to channelize their efforts in order to improve their mathematical achievement.
- Parent teacher meetings should be brought about frequently at schools where the parents should be educated or provided with information regarding the nature of their interaction with their children and its problems result on the attitude towards mathematics and their mathematical achievement.

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