

**MATHEMATICS PERFORMANCE IN RELATION TO ATTITUDE TOWARDS
MATHEMATICS OF HIGHER SECONDARY SCHOOL STUDENTS**

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Abstract

In this study, an attempt has been made to study the mathematics performance in relation to attitude towards mathematics of higher secondary school students. The Mathematics Performance Test (MPT) is constructed and validated by the investigator and Attitude towards Mathematics Scale (ATTMS) developed by Dr.S.C. Gakhar and Dr. Rajni (2012), were used to collect the data from a sample of 590 higher secondary school students studying in Cuddalore District of Tamilnadu State in India. The survey method had been followed and simple random sampling technique was used in administration of the research tools. The result of the analysis reveals that the mathematics performance is average and high favourable attitude towards mathematics of higher secondary school students, there is significant difference in the gender and of higher secondary school students with respect to their academic mathematics performance and attitude towards mathematics, there is no significant difference in the mathematics performance of higher secondary school students with respect to their locality of the school, there is significant difference in the attitude towards mathematics of higher secondary school students with respect to their locality of the school and there is significant and positive relationship between mathematics performance and attitude towards mathematics of higher secondary school students.

Key Words: *Attitude towards Mathematics, Gender, Locality of the School, Mathematics Performance*

1. Introduction

Mathematics, by its very nature is highly logical and sequential. It is a highly systematically organized and exact branch of science. A neglect of the study of mathematics makes one to be highly disorganized and chaotic. In fact it is the numerical part of man's life and knowledge.

According to Kulkarni (1970), “Mathematical performance refers to understanding of mathematical concepts, application of knowledge to new situations and logical reasoning as involved in interpretation of data, interpretation of missing links ,etc.”

Attitude towards mathematics has been defined by researchers and thinkers in numerous ways and there is no exact definition of it (Akinsola & Olowojaiye, 2008).

2. Need and Importance of the Study

Mathematics is a science that is important for all students to learn, from elementary school to high school even in college. Many reasons for the need for students to learn mathematics, among others, because mathematics is a means of logical and mathematical thinking, a means of developing creativity, a means of recognizing patterns of relationships and generalization of experience and a means of solving problems in everyday life. The Mathematics curriculum is a vast curriculum because it is the basis of all sciences, arts and much related to daily life. The number of failures in mathematics in secondary school level examination is more comparable to that of other subjects because mathematics is a highly abstract subject. If secondary students have a positive attitude towards mathematics, their mathematics performance is very well otherwise very low. So their attitude is the main role of learning mathematics.

3. Review of Literature

Moyuri Sarma and Minakshi Rabha (2021) investigate students’ attitude towards learning mathematics in the higher secondary schools of Assam, India. A sample of 102 students (56 boys and 46 girls) were selected through Stratified Random sampling technique. One Provincialized, one Government and two Private schools were selected based on purposive sampling technique. The study revealed that achievement level of the male students in Mathematics at higher secondary level is more than that of their female counterparts. The achievement of the students in Mathematics at higher secondary level depends on the school environment. The achievement level of the students in private schools is better than the Government schools. 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.

Priti Kalsia (2017) investigated the significance of relationship between mathematical achievement and academic anxiety of senior secondary school students. The investigator selected a sample of 200 students of 11th (Non-Medical) class from Government/ Government aided Senior secondary schools of Ludhiana district from the state of Punjab. Marks of 10th class board examination were taken as achievement in Mathematics and for the academic anxiety scale for children (2009) developed by Singh and Gupta was used to collect the data. The results of the study revealed that an inverse relationship was found between the mathematical achievement and academic anxiety of senior secondary school students.

4. Operational Definitions of the Study

Mathematics Performance

Mathematics may be briefly defined as that field of knowledge which devotes itself to exploration in number, form, abstract structures and order relationships. In this study it refers the mathematics taught at higher secondary school students.

Attitude towards Mathematics

It is a predisposition to perceive, feel or behave towards specific objects or certain people in a particular manner. In the present study it refers to the perception and feeling of a student towards the subject of mathematics.

5. Objectives of the Study

1. To find out the level of the mathematics performance of higher secondary school students.
2. To find out the level of the attitude towards mathematics of higher secondary school students.
3. To find out whether there is any significant difference in the mathematics performance of higher secondary school students with respect to their gender.
4. To find out whether there is any significant difference in the mathematics performance of higher secondary school students with respect to their locality of the school.
5. To find out whether there is any significant difference in the attitude towards mathematics of higher secondary school students with respect to their gender.
6. To find out whether there is any significant difference in the attitude towards mathematics of higher secondary school students with respect to their locality of the school.

7. To find out whether there is any significant relationship between mathematics performance and attitude towards mathematics of higher secondary school students.

6. Hypotheses of the Study

1. The level of the mathematics performance of higher secondary school students is low.
2. The level of the attitude towards mathematics of higher secondary school students is low.
3. There is no significant difference in the mathematics performance of higher secondary school students with respect to their gender.
4. There is no significant difference in the mathematics performance of higher secondary school students with respect to their locality of the school.
5. There is no significant difference in the attitude towards mathematics of higher secondary school students with respect to their gender.
6. There is no significant difference in the attitude towards mathematics of higher secondary school students with respect to their locality of the school.
7. There is no significant relationship between mathematics performance and attitude towards mathematics of higher secondary school students.

7 Method of the Study and Sample Used

The normative survey method was adopted in the present study. In order to collect the required data, Simple random sampling technique has been employed to collect the data from 590 higher secondary school students studying in government, aided and private schools of Cuddalore district.

8. Analysis of Data and Interpretation

The data collected were descriptively analyzed by employing the following statistical techniques:

1. Descriptive Analyses
 - i. Measures of central tendency (Mean)
 - ii. Measures of variability (Standard Deviation)
2. Differential Analyses ('t' test and 'F' test) and
3. Co-relational Analyses (Karl Pearson Product Moment Correlation)

Descriptive Analysis

Result of Hypothesis 1

The level of the mathematics performance of higher secondary school students is low.

Table 1
Mean and Standard deviation for the Mathematics Performance Scores of Higher Secondary School Students

| Variable | N | Mean | SD |
|-------------------------|-----|-------|------|
| Mathematics Performance | 590 | 31.40 | 6.49 |

From table-1, the calculated mean and standard deviation for mathematics performance scores of the entire sample is found to be 31.40 and 6.49 respectively. One can get a maximum score of 45 for mathematics performance. Hence, the framed hypothesis (1) is rejected and it is concluded that the average level of mathematics performance of higher secondary school students.

Result of Hypothesis 2

The level of the attitude towards mathematics of higher secondary school students is low.

Table 2
Mean and Standard deviation for the Attitude towards Mathematics Scores of Higher Secondary School Students

| Variable | N | Mean | SD |
|------------------------------|-----|--------|-------|
| Attitude towards Mathematics | 590 | 194.71 | 38.16 |

From table-2, the calculated mean and standard deviation for attitude towards mathematics scores of the entire sample is found to be 194.71 and 38.16 respectively. One can get a maximum score of 230 for attitude towards mathematics. Hence, the framed hypothesis (2) is rejected and it is concluded that the high favourable attitude towards mathematics of higher secondary school students.

Differential Analysis

Result of Hypothesis 3

There is no significant difference in the mathematics performance of higher secondary school students with respect to their gender.

Table-3

**Comparison of Mean Mathematics Performance Scores of Higher Secondary School
Students in respect of their Gender**

| Variable | Gender | N | Mean | SD | 't' Value | Level of Significance at 0.05 Level |
|-------------------------|--------|-----|-------|------|-----------|-------------------------------------|
| Mathematics Performance | Male | 334 | 33.46 | 7.30 | 2.82 | Significant |
| | Female | 256 | 30.88 | 6.13 | | |

It is seen from the table-3 that the 't' value calculated is 2.82, which is higher than the table value 1.96 at 0.05 level of significance. Hence, the hypothesis 3 is rejected and it is concluded that there is significant difference between the male and female higher secondary school students in respect of their mathematics performance. It is also inferred that male students are having more mathematics performance than the female students.

Result of Hypothesis 4

There is no significant difference in the mathematics performance of higher secondary school students with respect to their locality of the school.

Table-4

**Comparison of Mean Mathematics Performance Scores of Higher Secondary School
Students in respect of their Locality of the School**

| Variable | Locality of the School | N | Mean | SD | 't' Value | Level of Significance at 0.05 Level |
|-------------------------|------------------------|-----|-------|------|-----------|-------------------------------------|
| Mathematics Performance | Rural | 243 | 30.82 | 6.13 | 1.57 | Not Significant |
| | Urban | 347 | 31.52 | 6.30 | | |

It is seen from the table-4 that the 't' value calculated is 1.57, which is lesser than the table value 1.96 at 0.05 level of significance. Hence, the hypothesis 4 is accepted and it is concluded that there is no significant difference between the rural and urban higher secondary school students in respect of their mathematics performance.

Result of Hypothesis 5

There is no significant difference in the attitude towards mathematics of higher secondary school students with respect to their gender.

Table-5

Comparison of Mean Attitude towards Mathematics Scores of Higher Secondary School Students in respect of their Gender

| Variable | Gender | N | Mean | SD | 't' Value | Level of Significance at 0.05 Level |
|------------------------------|--------|-----|--------|-------|-----------|-------------------------------------|
| Attitude towards Mathematics | Male | 334 | 197.66 | 39.36 | 4.06 | Significant |
| | Female | 256 | 192.14 | 37.20 | | |

It is seen from the table-5 that the 't' value calculated is 4.06, which is higher than the table value 1.96 at 0.05 level of significance. Hence, the hypothesis 5 is rejected and it is concluded that there is significant difference between the male and female higher secondary school students in respect of their attitude towards mathematics. It is also inferred that male students are having more attitude towards mathematics than the female students.

Result of Hypothesis 6

There is no significant difference in the attitude towards mathematics of higher secondary school students with respect to their locality of the school.

Table-6

Comparison of Mean Attitude towards Mathematics Scores of Higher Secondary School Students in respect of their Locality of the School

| Variable | Locality of the School | N | Mean | SD | 't' Value | Level of Significance at 0.05 Level |
|------------------------------|------------------------|-----|--------|-------|-----------|-------------------------------------|
| Attitude towards Mathematics | Rural | 243 | 193.48 | 36.37 | 2.35 | Significant |
| | Urban | 347 | 196.65 | 39.58 | | |

It is seen from the table-6 that the 't' value calculated is 2.35, which is higher than the table value 1.96 at 0.05 level of significance. Hence, the hypothesis 6 is rejected and it is concluded that there is significant difference between the rural and urban higher secondary school students in respect of their attitude towards mathematics. It is also inferred that urban school students are having more attitude towards mathematics than the rural school students.

Correlation Analysis

Result of Hypothesis 7

There is no significant relationship between mathematics performance and attitude towards mathematics of higher secondary school students.

Table-7

Co-Efficient of Correlation between Mathematics Performance and Attitude towards Mathematics

| Variables | N | ‘r’ Value | Level of Significance |
|--|-----|-----------|-----------------------|
| Mathematics Performance and Attitude towards Mathematics | 590 | 0.456** | Significant |

** . Correlation at 0.01 level (2-tailed)

* . Correlation at 0.05 level (2-tailed)

Table-7 shows, the co-efficient of correlation between mathematics performance and attitude towards mathematics of higher secondary school students is found to be N=590, r=0.456 at 0.01 level which indicates that there is a positive correlation between mathematics performance and attitude towards mathematics of higher secondary school students scores. Therefore the null hypothesis is rejected and it is concluded that there is significant and positive relationship between mathematics performance and attitude towards mathematics of higher secondary school students.

9. Findings of the Study

- The mathematics performance of higher secondary school students is average.
- The high favourable attitude towards mathematics of higher secondary school students.
- There is significant difference between the male and female higher secondary school students in respect of their mathematics performance.
- There is no significant difference between the rural and urban higher secondary school students in respect of their mathematics performance.
- There is significant difference between the male and female higher secondary school students in respect of their attitude towards mathematics.
- There is significant difference between the rural and urban higher secondary school students in respect of their attitude towards mathematics.
- There is significant and positive relationship between mathematics performance and attitude towards mathematics of higher secondary school students.

10. Conclusion

In the present study of the mathematics performance in relation to attitude towards mathematics of higher secondary school students, findings revealed that the mathematics performance is average and high favourable attitude towards mathematics of higher secondary school students, there is significant difference in the gender and of higher secondary school students with respect to their academic mathematics performance and attitude towards mathematics, there is no significant difference in the mathematics performance of higher secondary school students with respect to their locality of the school, there is significant difference in the attitude towards mathematics of higher secondary school students with respect to their locality of the school and there is significant and positive relationship between mathematics performance and attitude towards mathematics of higher secondary school students.

11. References

1. Agarwal, J.C. (2002), Theory and Principles of Education, Shipra Publications, New Delhi.
2. Agarwal, Y.P. (1986). Statistical Methods Concepts, Application and Computation, Delhi: Sterling Publishers.
3. Allen L. Edwards (1946). Statistical analysis for students in psychology and education, New York : Rinehart & Company inc.,
4. Allen L. Edwards (1956). Statistical methods for the behavioral sciences, New York : Holt, Rinehart and Winston.
5. Allen L. Edwards (1960). Statistical analysis, New York: Holt Rinehart and Winston.
6. Freeman, W. H. (1976). An introduction to linear regression and correlation, San Francisco,
7. Guilford, J.P. (1939). General psychology. New York, NY: D. Van Nostrand Company, Inc.
8. Henry E, Garret, (2008), Statistics in Psychology and Education”, Surjeet Publishing House, Delhi.
9. Kundu, C.L. & Tutoo, D.N. (1991), Educational Psychology, Sterling Publishers Private Limited, New Delhi.