IMPACT OF GENDER DIFFERENCES ON MATHEMATICAL ABILITIES OF SECONDARY LEVEL STUDENTS

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ABSTRACT

In addition to attempting to verify gender difference, this study aim to study mathematical abilities of male and female student of secondary level. The sample comprised 240 students. The result conform the collected data were organized by using the t. test was empted to find out the Gender difference of mathematical abilities male and female student conclusion has come out that gender is not a affecting factor of mathematical abilities, Male do a teeny bit better is some states, and Female do a teeny bit better in other, But when we average them all.

Keywords: Gender differences, Mathematical Ability Secondary level student.

INTRODUCTION

Education is the process of developing the capacities and potentials of the individual so as to prepare that individual to be successful in a specific society or culture. From this perspective, education is serving primarily as an individual development function. Education begins since birth and continues throughout life. It is constant and ongoing. Schooling generally begins somewhere between the ages four and six when children are gathered together for the purposes of specific guidance related to skills and competencies that society deems important. In the past, once the formal primary and secondary schooling was completed, the process was finished. However, in today's information age, adults are quite often learning in informal setting throughout their working lives and even into retirement.

India has a long history of teaching and learning mathematics dating back to the Vedic Age (1500 to 200 BC). In post-independent India, great emphasis has been placed on mathematics teaching and learning. The Education Commission (1964-66) recommended mathematics as a compulsory subject for students at school level.

Math, as seen by many school aged children and even some adults, is considered boring and useless. There are many areas in life where math can help you, Mathematics is used throughout the world as an essential tool in many fields, including natural science, engineering, medicine, and the social sciences.

NEED OF THE STUDY

These were some questions in the mind of researcher, whose answers were to find out in significant manners. In view of the questions, researcher has taken present topic for research. In present study researcher have tried to find out that does gender significantly affect mathematical abilities of students, if does, what the reasons of that, biological, sociological or any other.

STATEMENT OF THE PROBLEM

"Impact of Gender Differences on Mathematical Abilities of Secondary Level Students."

SIGNIFICANCE OF THE STUDY

There has not been much of research work carried out on gender differences since the concept itself is of recent origin. There is not even a single study. which attempted to study the **"gender differences on mathematical abilities".** It is in this context that the present study examines the impact of gender differences on mathematical abilities.

The findings of the study will add to the existing body of knowledge about student's abilities in aspects of mathematics. Using this knowledge teacher of mathematics and other educators may understand better how boys and girls differ in their abilities in mathematics. Other researchers may use these findings to guide them conduct further research in order to add more knowledge about gender j and mathematical abilities.

PURPOSE OF THE STUDY

The main purpose of the study was to determine whether there are differences in mathematical abilities of male and female students in selected secondary schools of Muzaffarnagar District of Uttar Pradesh. The aim of the present study was to expand our understanding of the factors underlying gender differences in mathematical abilities among secondary level students.

OJECTIVES OF THE STUDY

The study has been conducted to achieve the following objectives:

- To study mathematical abilities of male students.
- To study-mathematical abilities of female students.
- To compare mathematical abilities of male students to female students.
- To study the impact of gender as a factor on the mathematical abilities of male and female students.

HYPOTHESES OF THE STUDY

To achieve the objectives of the present study, following Null hypotheses were formulated and tested:

1. "There is not significant difference in Mathematical abilities of male and female students."
2. "There is not significant difference in Mathematical abilities of male and female students of high group"
3. "There is no significant difference in Mathematical abilities of male and female students of low group"

DELIMITATIONS OF THE STUDY

Due to the limited time, money and other resources of the researcher, the present study has been delimited to:

- Sample drawn from three schools of secondary level situated in Muzaffanagar district of U.P.
- In this study, Mathematical ability is tested on the basis of three areas of mathematics i.e., Arithmetic, Algebra and trigonometry being taught in class IX of commerce stream in the secondary schools affiliated to U.P. board, Allahabad.

METHODOLOGY:

Selection of research method depends on the nature of research work. Normative Survey method was found appropriate for present study.

POPULATION

The population for the present study consists of the all students of the IX class of commerce stream study mathematics in secondary schools affiliated to U.P. Board, Allahabad situated in District Muzaffarnagar of U.P.

SAMPLE

In present study **Simple Random sampling** is found suitable for this study so to obtain a sample representative of its population, Random sampling technique is employed. The most common method of sampling is known as simple random sampling.
Pick a number out of a hat!" Gay provides a good example of this type of sampling. Random sampling procedure is the one in which each element of the populations has an equal and unbiased probability of being selected.

SAMPLING PROCEDURE

Present study is related to mathematical ability of male and female students of secondary schools. For this research, student of commerce stream from three schools of Muzaffarnagar Districts of Uttar Pradesh have been chosen. First of all, 240 students are selected by simple random sampling method in which half students are Male and other half Female. To obtain an appropriate sample, a **Group Mental Ability Test of Dr. S. S. Jalota** has been administered on the group of 120 students to classify the students in high group and low group on the basis of I.Q. level. As per norms of GMAT, students of more than 100 I.Q. have been selected in high group and less than 100 I.Q. have been selected in low group. In each group 60 students were selected in which 60 are male and 60 are female students so in entire sample 240 students have been selected, half of them girls and other half boys.

The distribution of students in the sample has been provided in following table:

Table 1
Table showing the Distribution of Students in Sample

Groups	No. of Students		Total Students
	Boys	Girls	
High	60	60	120
Low	60	60	120
Total	120	120	240

The name of three schools from which students are selected for the study is given as follows:-
1.	D.A.V. Inter College, Muzaffarnagar.
2.	S.D. Inter college, Muzaffarnagar.
3.	M.M. Inter College, Muzaffarnagar.

TOOLS USED
The researcher developed the test on mathematics called (mathematical ability test). This test was used as an instrument for collecting data and measuring of students' mathematical abilities. It contains sixteen (16) items and was a two hour test, mathematics ability test (MAT) was constructed by the researcher based on the prescribed senior secondary (IX class) curriculum to cover the basic areas of Arithmetic, algebra and Trigonometry.

STATISTICAL TECHNIQUES USED
Statistics is a field of mathematics that pertains to data analysis. Statistical methods and equations can be applied to a data set in order to analyze and interpret results, explain variations in the data, or predict future data. The major statistical techniques adopted in the present study are the following:

DATA ANALYSIS AND INTERPRETATION
The researcher collected the necessary data and then it was classified under different categories and was to analyze the data according to the nature and objectives of the study. The main objective of the study was to find gender difference in mathematical ability at secondary level.
Statistical analysis and interpretation of hypotheses are:
Analysis and testing of scores related to mathematical ability of males and females have been done according to hypothesis.

Hypothesis – 1
"There is no significant difference in mathematical abilities of male and female students"
The t-test analysis has been used to test the significance of mean difference.
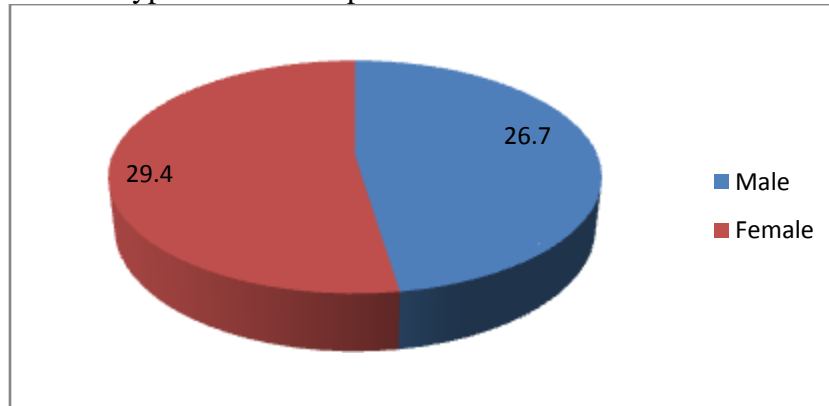**Table 2**
t-Test Comparison of Students' Mathematical Abilities Classified By Gender

S.No.	Variables	N	M	S.D.	D	D	t (calculated value)	d.f.	t (table value) At .05 level	At .01 level	Decision at both levels
1.	Male	120	26.7	4.66	2.7	1.81	1.49	58	2.00	2.66	Not Significant
2.	Female	120	29.4	8.77	2.7	1.81					

Table 2 shows that in low group, for 120 male students, the mean, standard deviation for mathematical ability test is 25.5, 4.56 respectively and for 120 female students, the meand standard deviation for mathematical ability test is 27, 4.69 respectively. The calculated 't' value for both is .89. Table value for d.f. 28 at .05 significance level is 1.98 and at .01 levels is 2.63 .The calculated 't' value is less than the table value of 't' at both level this means that

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Page | 111

There is no significant difference in mathematical ability of male and female students of low group therefore hypothesis is accepted at both level..

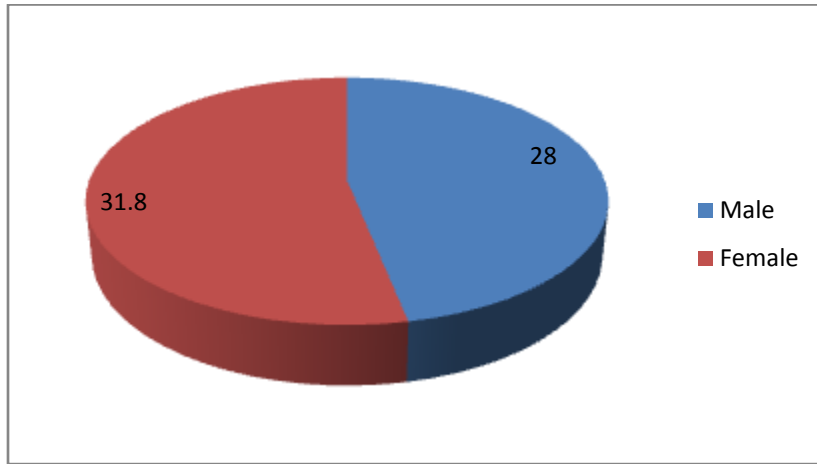**Thus all three hypotheses are completely accepted.**
Hypothesis – 2
"There is no significant difference in mathematical abilities of male and female students of high group"

Table 3
t-Test Comparison of Students' Mathematical Abilities of High Group Classified by Gender

S.No.	Variables	N	M	S.D.	D	D	t (calculated value)	d.f.	t (table value) At .05 level	t (table value) At .01 level	Decision at both levels
1.	Male	60	28	4.41	3.8	2.05	1.85	28	2.04	2.46	Not Significant
2.	Female	60	31.8	6.58							

The above table shows that the calculated 't' value is 1.85. Table value for d.f. 28 at .05 significance level is 1.98 and at .01 levels is 2.63. The calculated 't' value is less than the table value of 't' at both level this means that there is no significant difference in mathematical abilities of male and female students of high group therefore hypothesis is accepted at both level. This implies that gender does not have any significance effect on mathematical abilities of students.
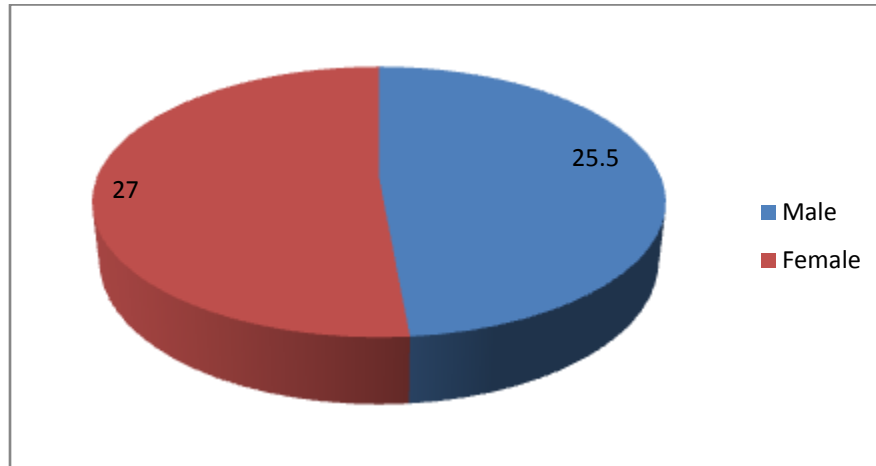
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Page | 112

Hypothesis – 3

"There is no significant difference in mathematical abilities of male and female students of low group"

Table 4
t-Test Comparison of Students' Mathematical Abilities of Low Group Classified by Gender

S.No.	Variables	N	M	S.D.	D	D	t (calculated value)	d.f.	t (table value) At .05 level	t (table value) At .01 level	Decision at both levels
1.	Male	60	25.5	4.56	1.5	1.69	.89	28	2.04	2.46	Not Significant
2.	Female	60	27	4.69							

Table 4 shows that the calculated 't' value for both is .89. Table value for d.f. 28 at .05 significance level is 1.98 and at .01 levels is 2.63 .The calculated 't' value is less than the table value of 't' at both level this means that There is no significant difference in mathematical ability of male and female students of low group therefore hypothesis is accepted at both level.

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Page | 113

Thus all three hypotheses are completely accepted.

CONCLUSIONS

        In the present chapter, the investigator has put forward the conclusions related to hypothesis, formulated in the first chapter. The investigator concluded the result of the study based on collected data and interpretation of data by applying statistics in the previous chapter. Following are the conclusions:

- On the basis of testing first hypothesis, it is inferred that there is no significant difference in mathematical ability of male and female students of high group. It is that gender does not affect the mathematical abilities of students therefore null hypothesis has been rejected.
- On the basis of testing second hypothesis, it is inferred that there is no significant difference in mathematical ability of male and female students of low group. Results shows that in low group girls perform at the same level as the boys it means that intelligence is a factor that affects mathematical ability of students therefore null hypothesis has been rejected.
- Third hypothesis in which mathematical ability of all students (male and female) has been tested, conclusion has come out that gender is not a affecting factor of mathematical ability, Boys do a teeny bit better in some states, and girls do a tenny bit better in others, But when we average them all, we essentially get no difference therefore null hypothesis has been rejected.

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Page | 114

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Page | 115