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Education

A STUDY OF GENDER DIFFERENCE IN PROBLEM SOLVING ABILITY OF MATHEMATICALLY GIFTED STUDENTS

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ABSTRACT The present study was done to study the gender difference in problem solving ability of mathematically gifted and non-gifted studentsof higher secondary level students. The sample was consisted of 600 students studying in class XI of different higher secondary schools of Jabalpur. The collected data has been studied and subjected to statistical analysis. The result of the study revealed that there are gender differences in relation to giftedness in mathematics. Boys and girls differ in problem solving ability except mathematically gifted students of Private schools.

KEYWORDS : Gender, Problem solving ability, High school students

INTRODUCTION:

Problem solving skills empower children to think themselves and others and encourage them to develop on understanding of self. With the help of thinking, reasoning and concept and attempt to solve a number of problems from simple to complex. People who have learned effective problem-solving techniques are able to solve problems at higher level of complexity than more intelligent people who have no such trainings. **-Kalusmeier and Goodwin (1993)**"Problem solving is the highest form of learning, since the individuals defines new ideas based on this process. It is in the well-known that when faced with problem one need knowledge of rules on the one hand and capacity to use then on the other thus achieving transfer of learning."

RATIONALE OF THE STUDY:

Mathematics subject always been important areas for students in higher secondary school. How mathematically gifted students are related with problem solving ability? Is there any relationship between problem solving ability of mathematically gifted and non-gifted students? Is there any gender difference in problem solving ability exists? The present study answering these questions.

Problem Solving Ability and Gender Difference:

Chouhan, P and Sharma, N (2015) showed that the gifted boys had higher problem solving ability than the gifted girls. **Kumari, P and Pujari, L(2012)** found that gender and type of school significantly affect the problem solving ability of students.

OBJECTIVES:

To study gender difference in Problem Solving Ability of mathematically gifted students of higher secondary school.

Hypotheses of the study:

There is no significant gender difference in Problem Solving Ability of mathematically gifted students of higher secondary school.

MATERIALS & METHOD:

Descriptive survey method was used to study the Problem Solving Ability of the mathematically gifted students of higher secondary school. The students were selected with the help of stratified random sampling technique. The difference between boys and girls with regard to their Problem Solving Ability studied.

Sample:

600 students of class 11th studying in different government and private higher secondary schools of Jabalpur, Madhya Pradesh were selected randomly. Out of them 300 were boys and 300 were girls. The final sample after screening on the bases of total CGPA and Grade in mathematics in class 10th consisted of 54 mathematically gifted students and 68 mathematically non-gifted students.

Tools:

Following tools were used to collect data:

1. Mathematically Gifted-Criteria of more than 9.5 CGPA + 'A'grade in mathematics in class X Board examination.
2. Mathematically Non-Gifted-Criteria of less than 7.5 CGPA + 'C'grade in mathematics in class X Board examination.
3. Problem Solving Ability Test by Roop Rekha Garg.

Statistical analysis:

Mean, Standard Deviation t-test/ Critical Ratio was computed toanalyse the data and testing the hypotheses.

RESULTS AND DISCUSSION:

Table No. 01: Comparative results of gender difference in Problem Solving Ability in relation to mathematically gifted students

Nature	Gender	N	M	S.D.	t/ C.R.	'P' Value
Mathematically Gifted	Boys	20	12.95	2.52	3.21	< 0.01
	Girls	34	10.15	3.38		
Mathematically Non-Gifted	Boys	18	10.89	2.99	7.50	< 0.01
	Girls	50	6.36	1.84		

Degree of freedom – 52,66
Value for significance at 0.05 level – 2.00, 1.99
Value for significance at 0.01 level – 2.66, 2.64

From the results presented in the above table, it is clear that for mathematically gifted and non-gifted Students that there are extremely significance gender differences in their Problem Solving Ability. The obtained t/C.R.-values are 3.21 and 7.50 respectively, which are significantly higher than the minimum value for significance at 0.01 level.

The mean of the both mathematically gifted and non-gifted Boys are higher than that of Girls. Thus, from the above results, it may be inferred that there is significant gender difference exist in Problem Solving Ability of both mathematically gifted and non-gifted students.

Table No. 02: Comparative results of gender difference in Problem Solving Ability in relation to mathematically gifted Government school students

Nature	Gender	N	M	S.D.	t/ C.R.	'P' Value
Mathematically Gifted	Boys	12	13.42	2.84	3.27	<0.01
	Girls	17	9.71	3.12		
Mathematically Non-Gifted	Boys	11	13.00	1.48	9.76	<0.01
	Girls	31	6.81	1.90		

Degree of freedom – 27,40
Value for significance at 0.05 level – 2.05, 2.02
Value for significance at 0.01 level – 2.77, 2.71

From the results presented in the above table shows that for both mathematically gifted and non-gifted students of Government school, there are significance gender difference in Problem Solving Ability, the obtained values of t/ C.R. are 3.27 and 9.76 respectively, which are higher than the minimum value for significance at 0.01 level.

Thus, from the above results, it may be inferred that there are significance gender differences between Boys and Girls in Problem Solving Ability of Government school. Boys and Girls of Government school differ in Problem Solving Ability. Mathematically gifted and non-gifted Boys are better than Girls in Problem Solving Ability.

Table No. 03: Comparative results of gender difference in Problem Solving Ability in relation to mathematically gifted Private school students

Nature	Gender	N	M	S.D.	t/ C.R.	'P' Value
Mathematically Gifted	Boys	08	12.25	1.91	1.20	>0.05
	Girls	17	10.59	3.66		
Mathematically Non-Gifted	Boys	07	7.57	0.79	3.26	<0.01
	Girls	19	5.63	1.50		

Degree of freedom – 23,24
Value for significance at 0.05 level – 2.07,2.06
Value for significance at 0.01 level – 2.81, 2.80

From the results presented in the above table it is clear that for mathematically gifted groups, the obtained t/ C.R. value is 1.20, which is lower than the minimum value for significance at 0.05 level. Further, the results in the above table shows that for mathematically non-gifted groups, the obtained t/C.R. value is 3.26 which is greater than the minimum value for significance at 0.01 level. The mean of mathematically non-gifted Boys is higher than that of non-gifted Girls.Thus, from the above results, it may be inferred that mathematically gifted Boys and Girls of Private school did not differ significantly in their Problem Solving Ability. Whereas, in case of non-gifted groups, Boys and Girls differ significantly in Problem Solving Ability

Gender difference in Problem Solving Ability of mathematically gifted and mathematically non-gifted students of total samples, Government schools and Private schools show that there are gender differences in relation to giftedness in mathematics. Boys and girls differ in problem solving ability except mathematically gifted students of Private schools. The different values of t/C.R. show that for both mathematically gifted and mathematically non-gifted groups are 3.21 and 7.50 for total samples respectively (reference table no. 01), 3.27 and 9.76 for Government schools (reference table no.02) respectively and 1.20 and 3.23 for Private school (reference table no.03) respectively.

The mean values for all the groups for boys' students are higher than that of girl's students, except mathematically non-gifted students of Private schools, which shows that boys are better than girls. The probable reason for gender differences in Problem Solving Ability might be that difference is not biologically determined while it is influenced by the combined impact of factors like- biological, psychological and environmental in nature. This difference may be due to difference in nurturing practices and environment provided to both boys and girls students in home and schools. It has been observed and is often reported that even today when both boys and girls are to be treated equally, the parents give preference to their sons more in comparison to their daughters. Boys get good nurturing practices and home environment which makes them able to cope with computation than girls. The result of the study is in line with previous findings of Kumari (2012) who found that boys were better than girls in mathematical problem solving ability. Findings of the study are also in concurrence with the findings of Chauhan (2015).

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