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IMPACT OF PROBLEM SOLVING SKILLS TO ACHIEVE IN MATHEMATICAL ABILITY OF THE FEMALE STUDENTS OF SECONDARY LEVEL OF EDUCATION

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Abstract : Education is the stepping stone among the pupil at large. While secondary level is a stage ahead in this wide sense. Problem solving skills enhance achievement orientation specifically in the context at mathematics and its ability to explore in the female students. The purpose of the study is to find out the problem solving skills on achievement in mathematics, female students of secondary level of education. To maintain the eventuality, 400 samples were collected from four high schools at Habra Block II, North 24 Parganas district and Haringhata block, Nadia district. These samples were taken from class ix and class x of the age group 14-17 years. Stratified random sampling method were followed for collection of Data. The statistical methods Mean, Standard deviation, Pearson product moment of correlation coefficient are applied. Finally this study concludes that the problem solving skills has a positive impact on achievement in Mathematics of the Female students of secondary level of education.

Keywords-- Achievement, Education, Mathematics, Problem, skill.

1. INTRODUCTION:

Modern technology cannot be developed without mathematics. It is a basic science for developing the creative and logical thinking. It is also science of calculation, measurement and magnitude. Its major role for development in every field of life. It involves to solve a problem for getting solution. Thorough the learning and solving mathematics, everyone improves reasoning, problem solving skills and thinking skills. Mathematics makes major role for academic achievement of student. Education system does not progress without progress of mathematical knowledge.

Problem solving skills help everyone to identify the source of a problem and also evaluate the problem. There are lot of importance of problem solving skills in mathematics. It makes the major role to develop the skills of solving mathematical problem. By problem solving skills, different types of problem can be solved in different ways. It is used to solve in different problem in different subjects like mathematics, physics, chemistry, biology, economics etc. The important role of problem solving skills is the teaching in mathematics. Therefore the development of any one's problem skills has been executed to solve new mathematical problem. Teacher need to help the students to develop their problem solving skills.

2. REVIEW OF RELATED LITERATURE:

Many researchers explored Problem solving skills as a specific ground to develop mathematical ability of students of secondary level of education.

Ganesan (2000), describes in his thesis on the topic of the research was based on the topic of effective of problem solving modelling in enhancing students achievement in mathematics. The study was emphasized upon problem solving modelling make a positive role in achievement of student in mathematics.

Louange and Bana (2010) describes in his thesis on the topic of the research was based on the relationship between the number sense and problem solving abilities of the age of 7 years students that emphasized upon that very powerful correlation between the number sense and problem solving capability of the student of the age of 7 years.

Dhyani Vidhi (2014) emphasized the intelligence and problem solving abilities of secondary level students. It was revealed that the intelligence and problem solving ability of secondary level student was correlated.

Kalaimathi and Hemlata (2015) studied on relationship between problem solving ability and working memory of secondary school students. The study was revealed that the problem solving ability helps students in increasing attention and working memory

Susilowati and Anam (2017) studied on the improving the scientific reasoning and problem solving of student by 5E (engagement, explanation, exploration, elaboration, evaluation) leaning model. The study was revealed that there was a good correlation between scientific ability and problem solving skills.

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Problem solving makes of an effort to find out the difficulties of different types of problem. Sometimes it is difficult to achieve the solution of problem immediately (Nisraeni&Arifanti,2018).

3. OBJECTIVES:

i) To study the impact of Problem Solving Skills of Female students at secondary level at Education.
ii) To find out the Achievement of Mathematics of Female students at secondary level of education.
iii) To find out the impact of Problem Solving Skills with Mathematical achievement.

4. HYPOTHESIS:

i) There is any significant impact of problem solving skills of achievement through mathematics of female students at secondary level of education.
ii) There is any significance difference of problem solving skills and achievement in mathematics of female students at secondary level of education..

5. METHODOLOGY:

Sample consisted of 400 female students from class ix and x of North 24 Parganas district and Nadia district. Stratified random sampling method were used for collecting data.The tools of the study were used
i) The 'Problem solving ability test' made by L. N. Dubey and Dr C.P Mathur.
ii)The ' Mathematics achievement test' made by L. N. Dubey.
Data are collected by going the girls' and conditional schools of North 24 Parganas and Nadia districts.

6. RESULTS AND ANALYSIS:

A) FOR FEMALE STUDENTS OF NORTH 24 PARGANAS DISTRICT

a) FREQUENCY ACHIEVEMENT OF FEMALE STUDENTS FOR NORTH 24 PARGANAS.

Table 1

Parameter	Categories of female achievement							
	A		B		C		D	
	Total	%	Total	%	Total	%	Total	%
Problem solving ability	22	11	48	24	55	27.5	75	37.5
Mathematical ability	23	11.5	51	25.5	48	24	78	39

A MEANS 80%-100% MARKS, B MEANS 60% -79% MARKS, C MEANS 40% -59% MARKS,. D MEANS BELOW 40% MARKS

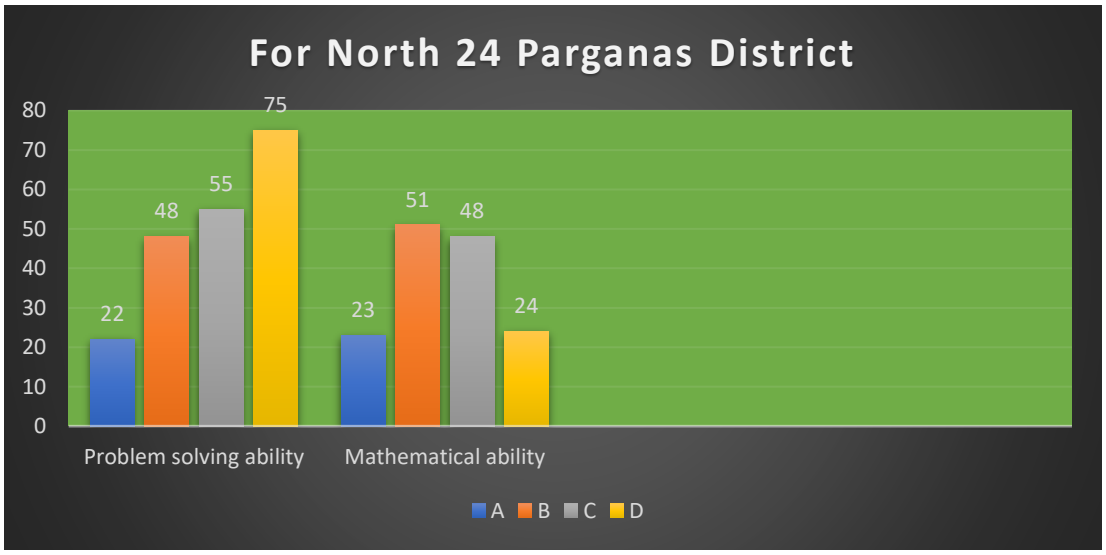

Figure. 1. frequency achievement of studied students

200 female students have been selected of class ix and class x of different coeducational and girls' schools in North 24 Parganas district. Two sets of questions paper of Problem solving ability test, Mathematical achievement test have been

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given to these students of class ix and x. From the table, A indicates 80% - 100% marks, B indicates 60%-79% - marks, C indicates 40% - 59% marks, D indicates below 40% marks. 200 students have answered the two sets of questions of Problem solving ability test and Mathematical achievement test. For Problem solving ability test, 22 i.e 11% students have scored A category marks, 48 i.e 24% students have scored B category marks, 55 ie 27.5% students have scored C category marks, 75 i,e 37.5% students have scored D category marks. For Mathematical ability test, 23 i.e 11.5% students have scored A category marks, 51 i.e 25.5 students have scored B category marks, 48 i.e 24% students have scored C category marks, and 78 i.e 39% students has scored D category marks.

b) AGE WISE FREQUENCY DISTRIBUTION OF THE STUDIED STUDENTS

Table2

District name	Categories	For female	
		Total	%
North 24 Parganas	Age 14-16 years	118	59
	Age above 16 years	82	41

From this table it is shown that 118 i.e.59% female students of secondary level belong to age group of age 14 to 16 years in North 24 Pargana district and 82 i.e. 41% female students of secondary level belong to above are 16 years at the same district.

c) THE CORRELATION OF PROBLEM SOLVING ABILITY AND MATHEMATICAL ABILITY

Table 3

Categories	Mathematical Ability(X)	Problem solving Ability(Y)	X^2	Y^2	XY
A	23	22	529	484	462
B	51	48	2601	2304	2256
C	48	55	2304	3025	3025
D	78	75	6084	5625	5775
∑	∑X=200	∑Y=200	$\sum X^2$=11518	$\sum Y^2$=11438	∑XY=11444

We know, $r_{XY} = (N \sum XY - \sum X \sum Y) / \sqrt{(N \sum X^2 - (\sum X)^2).\sqrt{(N \sum Y^2 - (\sum Y)^2)}}$

N=4, ∑X=200, ∑Y=200, $\sum X^2$=11518, $\sum Y^2$=11438, ∑XY=11444

Putting these value we get r_{XY}= 0 .977

The correlation coefficient is very high. Both are highly correlated. The female students who have good mathematical ability has good problem solving ability and vice versa.

B) FOR FEMALE STUDENTS OF NADIA DISTRICT

a) FREQUENCY ACHIVEMENT OF THE FEMALE OF THE STUDIED SCHOOL

Table 4

Parameter	Categories of female achievement							
	A		B		C		D	
	Total	**%**	Total	%	Total	%	Total	%
Problem solving ability	22	11	47	23.5	50	25	81	40.5
Mathematical ability	27	13.5	47	23.5	55	27.5	71	35.5

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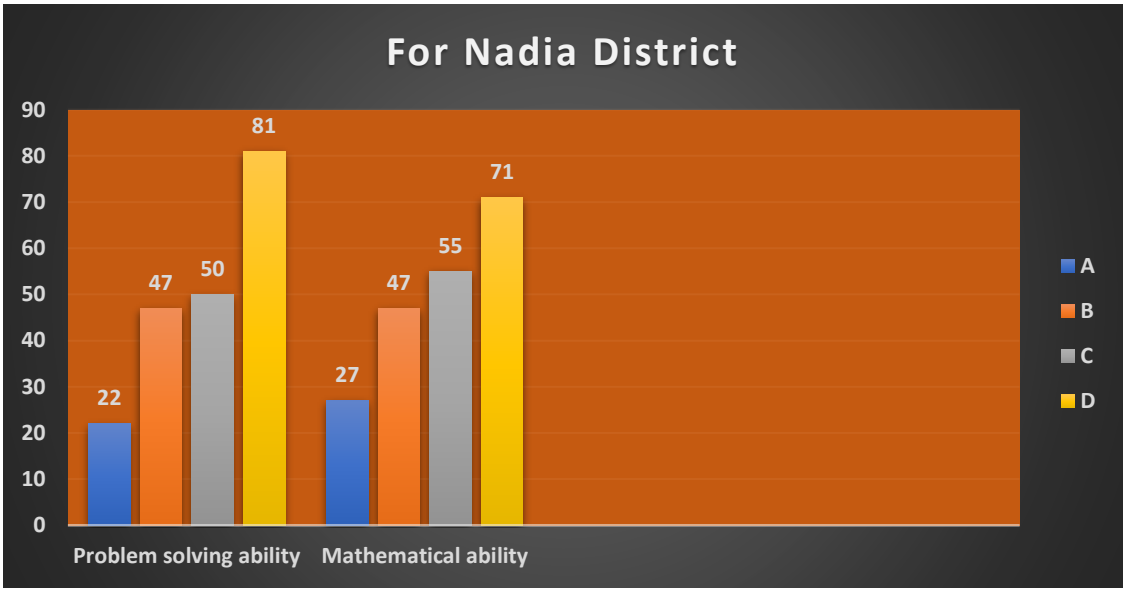

Figure. 2. Frequency achievement of studied students

200 female students have been selected of class ix and class x of different coeducational and girls' schools from Nadia district. Two sets of questions papers of Problem solving ability test, Mathematical ability test have been given to these student of class ix and x in different school. From the table, A indicates 80% - 100% marks, B indicates 60% -79% marks, C indicates 40% - 59% marks, D indicates 40% marks. 200 students have answered the two sets of questions of Problem solving ability test and Mathematical ability test. 22 i.e 11% students have scored A category marks, 47 i.e 23.5% students have scored B category marks, 50 i.e 25% students have scored C category marks, 81 i.e 40.5 students have scored D category marks. For Mathematical ability test, 27 i.e 13.5% students have scored A category marks, 47 i.e 23.5 % students have scored B category marks, 55 i.e 27.5 % students have scored C category marks, and 71 i.e 35.5% students have scored D category marks

b) AGE WISE FREQUENCY DISTRIBUTION OF THE STUDIED STUDENTS

Table 5

District name	Categories	For female	
		Total	%
Nadia	Age 14-16 years	125	6 2.5
	Age above 16 years	75	37.5

From this table, it is shown that 125 i.e. 62.5% female students of secondary level belong to age group of age 14 to 16 years in Nadia district and 75 i.e 37.5. % female student of secondary level belong to above age 16 years at the same district.

c) ABILITY THE CORRELATION OF PROBLEM SOLVING AND MATHEMATICAL ABILITY

Table 6

Categories	Problem Solving Ability(X)	Mathematical Ability(Y)	X^2	Y^2	XY
A	22	27	484	729	594
B	47	47	2209	2209	2209
C	50	55	2500	3025	2750
D	81	71	6561	5041	5751
∑	∑X=200	∑Y=200	$\sum X^2$=11754	$\sum Y^2$=11004	∑XY=11304

We know $r_{XY} = (N\sum XY - \sum X \sum Y) / \sqrt{(N\sum X^2 - (\sum X)^2).\sqrt{(N\sum Y^2 - (\sum Y)^2)}}$

Here $N=4, \sum X=200, \sum Y=200, \sum X^2=11754, \sum Y^2=11004, \sum XY=11304$

Putting these values we get $r_{XY} =$ 0.982

The correlation coefficient is very high. Both are highly correlated. The female students who has good problem solving ability, has good mathematical ability and vice versa.

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9. DISCUSSION:

As a result to this research of above two correlation coefficient table from North 24 Parganas district and Nadia district, the correlation coefficient between problem solving ability and mathematical ability is very high. Those female students who are very strong in problem solving skills, are also strong in mathematical ability. It is said that problem solving ability has good impact on mathematics achievement of female students. For development of subject of mathematics, every student should develop of problem solving skills. Good performance of mathematics is very necessary for development of other subject of science and also for technology.

Finding by the analysis of correlation coefficient, it shows that

i) There is no significance difference of the Problem Solving skills and achievement of mathematics of female students of secondary level.

ii) There is a high impact of problems solving skills on achievement in Mathematics of Female students of secondary level.

10. CONCLUSION:

From the result of data analyses it can be shown that problem solving skills and achievement in mathematics are very correlated. If the problem solving skills of a student is poor then the mathematical ability of the student is also poor. It shows that there is improvement of achievement of mathematics of female students depending on problem solving skills. **Hence the research establishes that that the problem solving skills has a positive impact on Achievement in Mathematics of the Female students of secondary level of education**.

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