A STUDY OF ACADEMIC PERFORMANCE AND PROBLEM-SOLVING ABILITY WITH SPECIAL REFERENCE TO SECONDARY SCHOOL STUDENTS

Ashish*

Open Scholar, Department of Mathematics, Haryana, India

Email ID: ashish.parashar567@gmail.com

Accepted: 07.04.2022 **Published**: 01.05.2022

Keywords: Academic Performance, Problem Solving Ability, Secondary School Students.

Abstract

Mathematics is a subject that should be studied carefully since it plays a crucial role in our everyday lives, despite the fact that it can initially appear to be intimidating. It is reasonable for teachers to be concerned about their students' ability to succeed in mathematics given the variety of factors that could influence their academic performance. A few instances of this include the identities of the students, their attitudes toward mathematics, and their talents to solve problems. Without having a solid idea of one's own capabilities, it is impossible to be successful in mathematics. If kids at your school loathe and find math unpleasant, it is possible that they will experience anxiety when performing arithmetic, which will have a negative impact on the performance of your school. On the other hand, children who have a positive attitude toward mathematics and believe that it is enjoyable to complete are more likely to develop outstanding problem-solving skills. mathematic prowess coupled with outstanding performance on standardised tests in the subject area Anxiety over mathematics has been associated by some previous study as the primary factor contributing to poor mathematical achievement. The lack of problem-solving abilities and self-confidence among students is a contributing factor in the students' poor performance in mathematics. In light of this, students should make expanding their mathematical knowledge and skills a top priority in addition to all of the other academic activities they participate in.

Paper Identification

**Corresponding Author*

1. INTRODUCTION

Academic performance in Mathematics

The educational system's primary focus is on the students' academic growth and development, including their learning results, behavioural changes, and intellectual growth. The Achievement Test is often used to evaluate development in these areas. An achievement exam may be used to gauge a student's level of knowledge. Interactions in the classroom are primarily focused on fostering students' cognitive, emotional, and motor skill development. It is clear from the results of the accomplishment assessments that the cognitive objectives are given more priority than the other two. The cognitive objectives take precedence over the other two. Standardized assessments of mathematics performance are one indicator of students' mathematical development.

Mathematical success, as described by Pandey (2017), is the student's demonstrated aptitude for and enjoyment of mathematics. It is the result of previously taught mathematical material or knowledge, as well as understanding, talents, and practises that were created throughout a given era. The amount of points achieved on the mathematics test exam acts as its indication.

Problem-solving Ability

According to Albert Einstein, *If I had an hour to solve an issue, I would spend 55 minutes identifying the problem, and the remaining 5 minutes would be spent finding a solution.*

The primary reasons for scholastic failure in scientific disciplines like mathematics, physics, and chemistry (Perez & Terragosa, 1983). Capacity to solve problems is a kind of general intelligence that distinguishes human activity from other animal activities. Reasoning and inventive thinking come into play throughout the problem-solving process, which is also known as the paradigm or routine. We find solutions to problems brought to us from throughout the world by young people. By working through situations, we are able to pick up new knowledge and file it away in our memories. This memory assists us in finding solutions to subsequent challenges that we face in our day-to-day lives at school, on the job, in the playground, and so on. Every individual have a problem-solving skill that may be used to discover and implement answers to challenges. The capacity to identify, find, or develop adaptive or practical solutions for dealing with issues in day-to-day life is referred to as dilemma ability. This skill is referred to as the started mechanism by which a person attempts to discover, locate, or devise such strategies.

There is an obstacle of some kind in the way of achieving a goal. If the way to the objective is clear and unobstructed, there shouldn't be any problems (Woodworth & Marquis:1948). Problem-solving seems to be a psychological response that constitutes the conclusions part a more extended problem-solving method that involves problem having found and dilemma forming. The dilemma is characterized by a state of interest in food for attaining a clear target from a current configuration that either does not immediately moving towards the target, is far away from it, or requires more complex elements for tracking down a lost detail of instances or steps towards the objective. Problem trying to find and drawback forming are the first two steps there in problem-solving procedures. Problem (Robertson). Problem-solving requires a series of mental calculations; hence, a definition of issue-solving has to explain the exact mental procedure that is used to repair a problem, as well as the strategies that problem breakers use for choosing and directing their thought development. (Gardener, 1985). According to Skinner's (1986), creative reason and thinking take place within the context of problem-solving as a framework or pattern. Finding a means out of a challenge, a route around an impediment, and reaching a goal it wasn't clearly reachable, is how Polya (1968) characterised problem-solving. According to Hafner and Stewert (1995), Problem-solving is a complicated, multifaceted talent. They assert that the factors that affect how problems are solved are as follows:

1. Lack of consistency in belief (Guilford 1986)
2. Manufacturing of various mental processes (Johnson-Laird 1993)
3. Never stop looking for innovative new ideas.

Types of Problem-Solving Ability

Ability to solve problems may be broken down into two primary categories:

1) Social problem-solving ability: Our day-to-day social lives, such as at home, the classroom, or the office, provide us with a variety of challenges, and in order to overcome these challenges, we rely on our social skills. Our life because to these social abilities. The capacity to solve problems in social situations may be broken down into two main categories:

Problem orientation: Problem oriented is the significant component of dilemma abilities that is responsible for providing the motivation. In addition, a broader cognitive and behavioural reaction set that even a person takes to a new issue scenario. This response set is essentially the product of previous experiences in which the individual solved problems. The problem orientation aspect of problem-solving skills doesn't somehow contain the specific cognitive behavioral abilities that are required for practical issue-solving in a given context. This is because problem orienting does not focus on the problem itself. However, it has broad cognitive and behavioural abilities that may be applied to the difficult scenario that we have accessible.

Problem-solving skills: The capacity to solve problems socially is comprised of a problem-solving skills component, which is comprised of four distinct goal-directed activities that allow a person to tackle a specific issue effectively. These tasks are as follows, and they are provided in order:

- The development of several approaches to the problem.
- Decision making.
- The execution of the solution and its verification

2) **Ability to solve mathematical problems**

The capacity to find solutions to mathematical puzzles can be one of the most difficult skills for students to hone over their academic careers. It requires experience, and many students grow disappointed when they are unable to discover a solution to their problem quickly after being presented with it.

Problem comprehension: Mathematical problem-solving requires a number of different skills, one of which is issue understanding. In the field of mathematics, students commonly come across vocabulary and grammar. They have a difficult time understanding mathematical difficulties. To find a solution to this issue, you will need to read it again and over again until you fully grasp what is taking place.

Problem-solving abilities: The capacity for logical thought is the foundation for problem-solving skills. Problems may be solved by a person thanks to the problem-solving talents they possess. There is more than one response to the mathematical difficulties, but there are various answers to the social ones. These crucial aspects of a person's capacity to solve mathematical problems may be shown by that person in varied degrees of strengths and flaws depending on the individual. In addition, it's possible that these factors are essential to every issue (e.g. simple versus complex).

Problem-Solving Techniques

Analogies method - A solution to a problem may be found via the use of an analogy, which compares the current situation to one that has already been addressed. As a result, the nature of the solution can now be seen in its purest form.

Method of Restatement - It is easier for the learner to find a solution to an issue if they are able to reframe it using other symbols and vocabulary. The restatement technique is the name given to this particular approach.

Determination of Dependencies – This approach resolves the issue by focusing on the aspects of the predicament that are interdependent on one another. The analysis of the component parts of the issue offers light on the aspects of the circumstance that are reliant on one another. The right answer may be found by analysing the inter - relationships between the different factors.

Graphic Technique - In this approach, the issue at hand is portrayed using flowcharts and graphical representations. Students are offered assistance in creating basic linkages between the material that is provided to them, as well as in identifying additional facts and relationships that are necessary to solve the issue that has been presented to them. This approach is beneficial for proving conclusions, resolving problems, and addressing difficulties connected to cycles, Pythagoras's theorem, set analysis, groups, and relations, amongst other things.

2. LITERATURE REVIEW

Prema and Sathiskumar (2021) conducted studies on ninth-graders' problem-solving abilities and mathematical achievement. The study's main finding was that students in public schools were not very good at solving problems.

Limbong (2021) The concern learning paradigm was investigated by scientists during the Covid-19 pandemic as a means of improving students' problem-solving skills and motivation to pursue more complex mathematical endeavours. The results showed that when the real concern learning approach was used, pupils displayed more sophisticated levels of thought and problem-solving. Consider the many mathematical education models that recommend problem-based instruction as a means of fostering critical thinking and problem-solving skills.

Szab et al. (2020) To guarantee mathematics' continuing relevance in the 21st century, educational efforts should concentrate on helping students improve their problem-solving skills. The capacity to solve complex problems and find solutions to challenges is crucial in the modern world, the study's authors write, both for surviving in trying times and progressing professionally. The goal of this critical literature study was to assess, critique, synthesise, and extend the underlying theoretical framework for the topic at hand. Mathematical problem-solving is an efficient means of equipping students using 21st-century skills and giving them with cross-disciplinary situations with actual applicability. Several real-world examples were provided to illustrate how Polya's heuristic may be used on a broader scale to better equip students with the cutting-edge skills essential to today's competitive job market.

Bakar et al. (2019) looked at how students' belief systems affected their capacity to resolve mathematical issues and their entire mathematical achievement as tertiary-level students in Malaysia. According to the findings, there is a positively associated statistically significant interaction between prevailing views and mathematical aptitude. Mathematical proficiency was shown to be strongly correlated with exposure to challenging problems, processes, and understanding. This was a significant finding of the research. In addition, this multiple regression model demonstrated that learners' mathematical achievement was significantly influenced by their level of knowledge, the difficulty of the problems they encountered, and the stage they were in the learning process.

Devi and Hooda (2018) investigated via an empirical research the relationship between students' capacity mathematical proficiency in secondary school. The outcomes of the research showed that a student's problem-solving abilities as well as their gender had a

substantial major influence on the level of mathematical accomplishment they obtain in secondary school. On the other hand, there which will help the students enhance their accomplishment in mathematics.

Kurnaz (2018) examined the connections between high arithmetic achievement and the skills of gifted children in areas such as problem solving, logic, and spatial aptitude. The results showed that the children not only performed well mathematically, but also had above-average numeric thinking and concern skills. Gifted students' mathematical skill correlates strongly with their academic success in the subject, not only at the high and low ends of the spectrum. The three most crucial parts of statistics for the achievement of outstanding pupils are locational thinking, mathematics, and problem solving. Students' levels of achievement in mathematics are strongly correlated with their problem-solving, mathematical reasoning, and spatial thinking abilities.

Mareesh (2017) pupils at upper secondary schools were asked about their attitudes their achievements in mathematics as part of a meta-cognitive awareness project. The following findings emerged from the investigation: 1) Students at higher levels of secondary education demonstrated an average level of mathematical proficiency, metacognitive awareness, a favourable attitude towards mathematics, and the capacity to solve problems. 2. A statistically significant and favourably oriented association between all of the research variables was discovered. 3.

Chadha and Sidhu (2017) tested the students' problem-solving skills and looked at how they fared in ninth grade. Two hundred ninth graders were randomly selected as the population sample. Descriptive and inferential statistics were utilized in the data analysis. The results indicate a statistically significant distinction in drawback skills and academic achievement between children in the ninth grade based on gender, location, and school type.

Senthamarai and Senthilkumar (2016) conducted a study looking at the creative thinking abilities of 10th graders in the Tamil Nadu district of Dindigul. With this study, the researcher hopes to learn more about the mathematical problem-solving skills of tenth-grade pupils in the Dindigul region of Tamil Nadu. Students from both public and private high schools are represented in the sample's total of 80 participants, all of whom are in the tenth grade. The population was selected by a technique called as random sampling. To get the necessary data, a math aptitude test was administered. The research plan called for using a survey methodology. According to the results, tenth graders have about the same problem-solving skills in mathematics as students in the rest of the country.

Bala and Shaafiu (2016) looked at how well high school students did on standardised tests, taking into account their problem-solving skills and test-taking nerves. Findings indicated no significant difference between male and female students' grades, problem-solving abilities, or test-taking nerves. In addition, fear was inversely related to performance on standardised tests, whereas problem-solving skills were positively associated with academic success.

3. OBJECTIVES

1. To determine the level of problem solving ability of the secondary school students.
2. To find out the relationship between achievement in mathematics and problem solving ability at secondary level with regard to gender, locality and school type.

4. RESEARCH METHODOLOGY

Hypotheses of the study

There will be significant negative relationship between mathematical achievement and problem solving ability of the secondary school students with regard to gender, locality and school type.

Study Area: North West district Delhi

Participants

The descriptive survey approach as well as the stratified sample methodology will be used in the current investigation. Students in the ninth and tenth grades from both public and private schools in rural and urban areas of the North West district of Delhi make up the study's population.

Sample of the study

Present research work includes 500 Students from govt and private schools in **North West Delhi.**

GENDER WISE DISTRIBUTION OF THE SAMPLE

Gender	No of students	percentage
Boys	**250**	**50**
Girls	**250**	**50**

School status-wise Distribution of the Sample

Status of the school	No of the student	percentage
Govt.	**250**	**50**
Private	**250**	**50**

VARIABLES UNDER STUDY

Independent variable

The independent variable is a factor that is modified and chosen by the researcher to identify the link to an observed phenomena. It is also known as the explanatory variable.

In an experimental research, the variable that you manipulate or alter in order to investigate, it is referred to as independent since it does not rely on the outcomes of any of the other variables being investigated in this research.

Other names for independent variables include the following:

- Explanatory variables
- Predictor variables
- Variables on the right hand side

In the field of statistics, in particular, when it is necessary to assess the degree to which a change in words are of particular relevance.

Dependent variable

In statistical analysis, the term dependent variable refers toward the data set that is expected to change as a result of independent variables. The term dependent variable is used to describe the factor in a test that is the subject of analysis. 1 For instance, in a study investigating whether tutoring improves test scores, individual participants' actual test scores would serve as the explanatory variables.

Not to be confused with the experiment's independent variable, which is unrelated to any of the other factors at play. In the example given, tutoring would serve as the independent variable. While test scores (the dependent variable) are subject to change as a consequence of controlling for other variables, tutoring remains constant.

Remember that the independent variable is what you'll use to help you identify the outcome variable. Adjustments to the additional factor are followed by an evaluation of the potential impact on the dependent variable.

Data collection

This is where the majority of the questionnaires is done, and it includes things like openly speaking to the individuals you're researching and asking questions to them. Other examples of this kind of analysis include focus groups and in-depth interviews. The strategy approach sampling is being implemented with the intention of reducing expenses that are not strictly essential.

Data Analysis (TOOLS & STATISTICAL TECHNIQUE)

Tools

- Mathematics Achievement test - L. N. Dubey
- Problem solving ability in Mathematics by

Roma Ralhan

Statistical Technique for data analysis

Mean:

Mean = Sum of the Given Data/Total number of Data

$\bar{x}=\sum x/n$

SD (Standard Deviation):

$$\sigma = \sqrt{\frac{\sum(x_i - \mu)^2}{N}}$$

σ = population standard deviation
N = the size of the population
x_i = each value from the population
μ = the population mean

Differential analysis (t-values, F-ratio)

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{s\left[\frac{1}{n_2} + \frac{1}{n_2}\right]^{\frac{1}{2}}}$$

Analysis of Variance (ANOVA)

It is a statistical instrument that is used to determine whether or not there are variations in a person's awareness and performance that are statistically significant and depend on the person's history, the author writes. It is used to determine whether or not there are variations in a person's awareness and performance. More specifically, the instrument is put to use in order to ascertain the degree to which there are variances in these regions. The reliability of this statistical approach has improved over the course of time; thus, you should make use of it while you still have the option to do so before it becomes obsolete. According to the theory of ANOVA, the median level of quality remains the same across all categories, regardless of how large the group is. This holds true regardless of the size of the group. This is true regardless of the size of the groups being compared.

Correlation Analysis

Correlation analysis is a statistical method that is used in the area of research to evaluate the strength of the linear connection that exists between two variables and to compute the connection that exists between them. This is done in order to determine the link that exists between them. The amount of change in one variable that can be attributed to the change in the other variable may be estimated by using correlation analysis. This can be done by comparing the two sets of data. When compared to a correlation that is low, a high correlation implies that there is a robust connection between the two variables, while a correlation that is low shows that there is just a tenuous connection between the variables.

SPSS (Statistical Package for the Social Science):

A quick-response, easily-modifiable programme. A variety of statistical operations are within its purview, since they were intentionally programmed into its architecture. The SPSS programme is available on all of the computers that are part of the various computer pools at the University of Melbourne, and it is utilised in a broad variety of academic disciplines.

5. DATA ANALYSIS

HYPOTHESIS: There will be significant negative relationship between mathematical achievement and problem solving ability of the secondary school students with regard to gender, locality and school type.

HYPOTHESIS A

H_0A:- There is no significant difference between gender and Problem solving ability.

H_1A:- There is a significant difference between gender and Problem solving ability.

In order to test the null hypothesis that there is no significant difference in Problem solving ability in different gender (male and female), the t- test between the two groups was computed as given below in Table 5.1 and graph 5.1.

Table 5.1 DESCRIPTIVE STATUS OF PROBLEM SOLVING ABILITY TYPE OF MALE AND

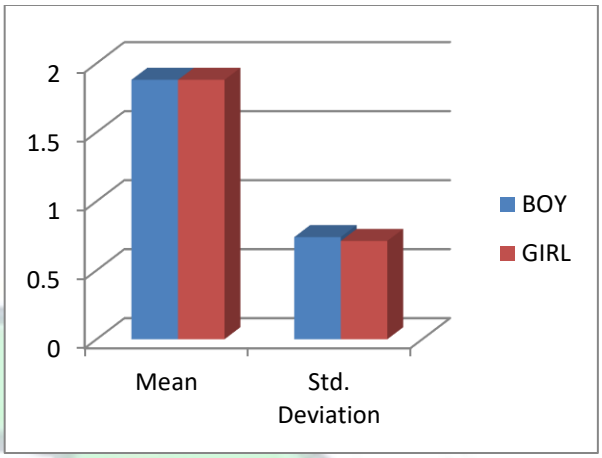
FEMALE OF SCHOOL STUDENTS OF NORTH WEST DELHI

Group Statistics					
Gender		N	Mean	Std. Deviation	Std. Error Mean
Problem Solving Ability	BOY	250	1.88	.740	.047
	GIRL	250	1.88	.712	.045

From the table and graph 5.1, "Descriptive status of problem solving ability type of boys and girls has been analyzed and it is found that mean score and standard deviation of girls with reference to problem solving ability type are equal to the mean score and standard deviation of boy with reference to problem solving ability type. It can be concluded from this descriptive statistical analysis that both genders has similar integrated problem solving ability type which shows there is no significance difference between boys and girls with reference to problem solving ability type.

Since P value > 0.05, null hypothesis is accepted in the case of problem solving ability type

Graph 5.1



INFLUENCE:- From the table no. 5.1.A it is analyzed that there is no significance difference between boys and girls with reference to problem solving ability type. Basic Significance value of data analysis is 0.05 but in this data analysis, its significance value is 1.000 that why null hypothesis is accepted.

Table 5.1.A STATISTICAL TOOLS USED:- INDEPENDENT T-TEST:-

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Problem Solving Ability	Equal variances assumed	.821	.365	0.000	498	1.000	0.000	.065	-.128	.128
	Equal variances not assumed			0.000	497.280	1.000	0.000	.065	-.128	.128

HYPOTHESIS B

H_0B:- There is no significant difference between Locality and Problem Solving ability.

H_1B:- There is a significant difference between Locality and Problem Solving ability.

In order to test the null hypothesis that there is no significant difference in Problem Solving ability in different locality, the t- test between the two groups was computed as given below in Table 5.2 and graph 5.2.

Table 5.2 DESCRIPTIVE STATUS OF PROBLEM SOLVING ABILITY TYPE OF LOCALITY OF SCHOOL STUDENTS OF NORTH WEST DELHI

Group Statistics					
Locality		N	Mean	Std. Deviation	Std. Error Mean
Problem Solving Ability	URBAN	261	1.89	.735	.046
	RURAL	239	1.87	.717	.046

From the table and graph 5.2, Descriptive status of problem solving ability type of different localities has been analyzed and it is found that mean score and standard deviation of rural with reference to problem solving ability type are lower than the mean score and standard deviation of urban with reference to problem solving ability type.

Graph 5.2

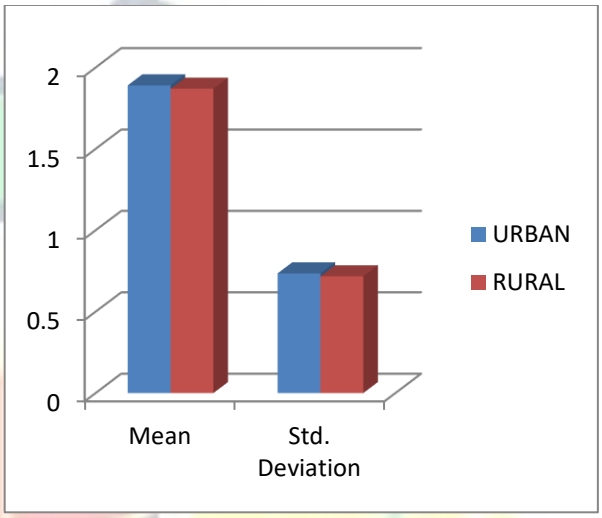


Table 5.2.A STATISTICAL TOOLS USED:- INDEPENDENT T-TEST:-

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Problem Solving Ability	Equal variances assumed	.245	.621	.163	498	.871	.011	.065	-.117	.138
	Equal variances not assumed			.163	496.053	.871	.011	.065	-.117	.138

It can be concluded from this descriptive statistical analysis that both localities has lower integrated problem solving ability type which shows there is no significance difference between both localities with reference to problem solving ability type.

Since P value > 0.05, null hypothesis is accepted in the case of problem solving ability type

INFLUENCE:- From the table no. 5.2.A it is analyzed that there is no significance difference between both localities with reference to problem solving ability type. Basic Significance value of data analysis is 0.05 but in this data analysis, its significance value is 0.871 that why null hypothesis is accepted.

HYPOTHESIS C

H_0C:- There is no significant difference between School and Problem Solving ability.

H_1C:- There is a significant difference between School and Problem Solving ability.

In order to test the null hypothesis that there is no significant difference in Problem Solving ability in different schools, the t- test between the two groups was computed as given below in Table 5.3 and graph 5.3.

Table 5.3 DESCRIPTIVE STATUS OF PROBLEM SOLVING ABILITY TYPE OF SCHOOL OF STUDENTS OF NORTH WEST DELHI

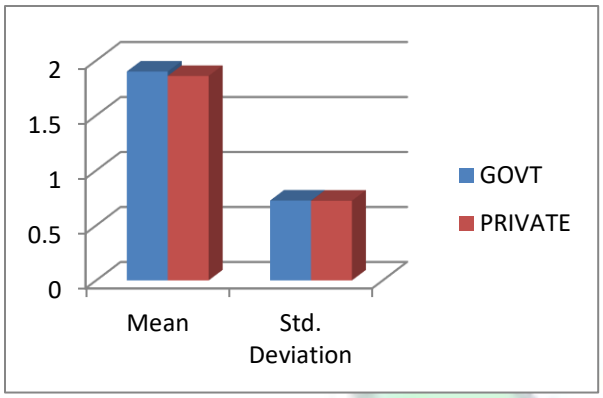
Group Statistics					
School		N	Mean	Std. Deviation	Std. Error Mean
Problem Solving Ability	GOVT	250	1.90	.727	.046
	PRIVATE	250	1.86	.725	.046

From the table and graph 5.3, Descriptive status of problem solving ability type of different schools has been analyzed and it is found that mean score and standard deviation of private with reference to problem solving ability type are lower than the mean score and standard deviation of private with reference to problem solving ability type. It can be concluded from this descriptive statistical analysis that both schools has lower integrated problem solving ability type which shows there is no significance difference between both schools with reference to problem solving ability type.

Table 5.3.A

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Problem Solving Ability	Equal variances assumed	.205	.651	.739	498	.460	.048	.065	-.080	.176
	Equal variances not assumed			.739	497.994	.460	.048	.065	-.080	.176

Graph 5.3



Since P value > 0.05, null hypothesis is accepted in the case of problem solving ability type'

INFLUENCE:- From the table no. 5.3.A it is analyzed that there is no significance difference between both schools with reference to problem solving ability type. Basic Significance value of data analysis is 0.05 but in this data analysis, its significance value is 0.460 that why null hypothesis is accepted.

HYPOTHESIS D

H_0D:- There is negative relationship among mathematical achievement and Problem Solving ability.

H_{1D}:- There is positive relationship among mathematical achievement and Problem Solving ability.

In order to test the null hypothesis that there is negative relationship between the mathematical achievement and Problem Solving ability, A Pearson product-moment correlation coefficient between the two groups was computed as given below in Table 5.4 and graph 5.4.

Table 5.4 DESCRIPTIVE STATUS OF MATHEMATICAL ACHIEVEMENT AND PROBLEM SOLVING ABILITY OF SCHOOL STUDENTS OF NORTH WEST DELHI

Descriptive Statistics			
	Mean	Std. Deviation	N
Mathematical Achievement	1.99	.686	500
Problem Solving Ability	1.88	.726	500

From the table and graph 5.4, Descriptive statistics of mathematical achievement with problem solving ability has been analyzed and it is found that mean score and standard deviation of problem solving ability are greater than the mean score and standard deviation of mathematical achievement.

Graph 4.32

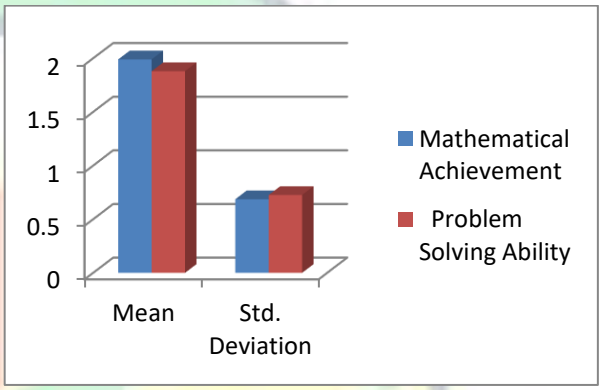


Table 5.4.A STATISTICAL TOOLS USED:- CORELATION ANALYSIS

Correlations			
		Mathematical Achievement	Problem Solving Ability
Mathematical Achievement	Pearson Correlation	1	.018
	Sig. (2-tailed)		.693
	N	500	500
Problem Solving Ability	Pearson Correlation	.018	1
	Sig. (2-tailed)	.693	
	N	500	500

INFLUENCE:- In statistics, correlation or dependence is any statistical relationship, whether causal or not, between two random variables or bivariate data A

Pearson product-moment correlation coefficient was computed to assess the relationship between mathematical achievement and problem solving ability. There is a positive relationship between the mathematical achievement and problem solving ability". The value of correlation is .018 it means the as the positivity goes on peak, relationship between all the variable will be positive.

6. FINDINGS

HYPOTHESIS A

H_0A:- There is no significant difference between gender and Problem Solving ability.'

DESCRIPTIVE STATUS OF PROBLEM SOLVING ABILITY TYPE OF GENDER OF STUDENTS

Descriptive status of problem solving ability type of boys and girls has been analyzed and it is found that mean score and standard deviation of girls with reference to problem solving ability type are equal to the mean score and standard deviation of boy with reference to problem solving ability type.

It can be concluded from this descriptive statistical analysis that both genders has similar integrated problem solving ability type which shows there is no significance difference between boys and girls with reference to problem solving ability type.

STATISTICAL TOOLS USED:- INDEPENDENT SAMPLE T-TEST

It is analyzed that there is no significance difference between boys and girls with reference to problem solving ability type. Basic Significance value of data analysis is 0.05 but in this data analysis, its significance value is 1.000 that why null hypothesis is accepted.

HYPOTHESIS B

H_0B:- There is no significant difference between Locality and Problem Solving ability.'

DESCRIPTIVE STATUS OF PROBLEM SOLVING ABILITY TYPE OF LOCALITY OF STUDENTS

It has been determined, via an examination of the descriptive status of problem-solving skill types in various regions, that the mean score and standard deviation of rural areas are lower than those of urban areas.

It can be concluded from this descriptive statistical analysis that both localities has lower integrated problem solving ability type which shows there is no significance difference between both localities with reference to problem solving ability type.

STATISTICAL TOOLS USED:- INDEPENDENT SAMPLE T-TEST

There is no statistically significant difference between the two regions in terms of the types of problem-solving skills people exhibit. The null hypothesis is accepted since the significance level is greater than 0.05, which it is in this data analysis.

HYPOTHESIS C

H_0C:- There is no significant difference between School and Problem Solving ability.

DESCRIPTIVE STATUS OF PROBLEM SOLVING ABILITY TYPE OF SCHOOL OF STUDENTS

Descriptive status of problem solving ability type of different schools has been analyzed and it is found that mean score and standard deviation of private with reference to problem solving ability type are lower than the mean score and standard deviation of private with reference to problem solving ability type.

It can be concluded from this descriptive statistical analysis that both schools has lower integrated problem solving ability type which shows there is no significance difference between both schools with reference to problem solving ability type.

STATISTICAL TOOLS USED:- INDEPENDENT SAMPLE T-TEST

It is analyzed that there is no significance difference between both schools with reference to problem solving ability type. Basic Significance value of data analysis is 0.05 but in this data analysis, its significance value is 0.460 that why null hypothesis is accepted.

HYPOTHESIS D

H_0D:- There is negative relationship among mathematical achievement and Problem Solving ability. ‘

DESCRIPTIVE STATUS OF MATHEMATICAL ACHIEVEMENT AND PROBLEM SOLVING ABILITY OF STUDENTS

It has been determined, by an examination of the descriptive statistics of mathematical accomplishment and problem-solving ability, that the mean score and standard deviation of problem-solving ability are higher than those of mathematical achievement.

STATISTICAL TOOLS USED:- PEARSON CORRELATION

Any non-trivial statistical link between two independent variables or two sets of data is called a correlation or dependency in the field of statistics. For this purpose, we calculated a Pearson product-moment correlation coefficient between math proficiency and analytical prowess. Academic success in mathematics correlates positively with aptitude for finding solutions to problems. In other words, correlation has a value of. Meaning that when the positivity rises to its highest point, there will be nothing but positive associations between all of the variables.

7. CONCLUSION

Mathematical competence and problem-solving abilities were found to be somewhat high within this group, as shown by the study's findings. Students' mathematical abilities were shown to vary depending on a number of factors including their gender, where they lived, the level of education their parents had, and the management style of their teachers. Gender, geography, and administration style all played major roles in shaping students' sense of self-worth.

Students' problem-solving skills were shown to be substantially negatively associated to their academic achievement in mathematics (= 0.726). Therefore, it is evident that teachers, parents, and other concerned parties should do all possible to assist pupils go from a moderate to no fear of mathematics to advanced problem-solving abilities and mathematical success.

8. REFERENCES

1. Prema, K., & Sathiskumar, M. (2021). Problem solving ability and academic achievement on mathematics among IX standard students. International Research Journal of Education and Technology, 2(4), 1-10.
2. Limbong, E. M. (2021). Improving Students' Problem-Solving Ability and High-Level Thinking in Mathematics Through Problem Based Learning Model in The Covid-19 Pandemic. FMIPA Universitas Negeri Medan.
3. Szabo, Z. K., Körtesi, P., Guncaga, J., Szabo, D., & Neag, R. (2020). undefined. Sustainability, 12(23), 10113. https://doi.org/10.3390/su122310113
4. Abu Bakar, S., Fauzi Mohd Ayub, A., Gopal, K., & Raidah Salim, N. (2019). The influence of students' beliefs on mathematical problem solving towards mathematics achievement among Malaysian matriculation students. Universal Journal of Educational Research, 7(10), 2243-2247. https://doi.org/ 10.13189/ujer.2019.071025
5. Devi, R., & Hooda, M. (2018). Effect of Problem-Solving Ability on Mathematics Achievement among Secondary School Students: An Empirical Study. Research Review International Journal of Multidisciplinary, 3(8), 653-658.
6. Kurnaz, A. (2018). Examining effects of mathematical problem- solving, mathematical reasoning and spatial abilities on gifted students’ mathematics achievement. World Scientific Research, 5(1), 37-43. https://doi.org/10.20448/journal.510.2018.51.37.43

7. Mareesh, R. (2017). A study on meta-cognitive awareness in relation to attitude towards mathematics, problem solving ability and achievement in mathematics of higher secondary school students. Ph.D. thesis, Annamalai University Tamilnadu, India. http://hdl.handle.net/10603/144831
8. Chadha, M., & Sidhu, R. K. (2017). Problem Solving Ability in Relation to Academic Achievement of Ix Grade Students. International Inventive Multidisciplinary Journal, 4 (7), 35-41.