# PROBLEM SOLVING ABILITY IN MATHEMATICS OF XI STANDARD STUDENTS IN VILLUPURAM DISTRICT

*Research Paper*

## ABSTRACT

This study was undertaken with the objective of identifying the level of problem solving ability in Mathematics of higher secondary students in Villupuram district. A sample of 385 was drawn from nine higher secondary schools. Problem solving ability test in Mathematics was used to collect data. The study revealed that the level of problem solving ability in Mathematics of higher secondary students is low.

## INTRODUCTION

Problem solving has a special importance in the study of mathematics. A primary goal of mathematics teaching and learning is to develop the ability to solve a wide variety of complex mathematics problems. To many mathematically literate people, mathematics is synonymous with solving problems - doing word problems, creating patterns, interpreting figures, developing geometric constructions, proving theorems, etc. The art of problem solving is the heart of mathematics. The National Council of Teachers of Mathematics (NCTM, 1980) recommended that problem solving be the focus of mathematics teaching because, it encompasses skills and functions, which are important parts of one's everyday life. The council endorsed this recommendation (NCTM, 1989) with the statement that problem solving should underlie all aspects of mathematics teaching. Thus, mathematics instruction should be so designed that students experience mathematics as problem solving.

A mathematical problem, like any problem in life, is defined as a problem because it causes much difficulty in attaining a solution. If the solution or even the procedure for solving it is obvious then it becomes just an exercise. According to George Polya, "To have a problem means to search consciously for some action appropriate to attain some clearly conceived but not immediately attainable aim. To solve a problem means to find such an action".

Problem solving is a process of overcoming difficulties that appear to interfere with the attainment of a goal. Simple problems can well be solved by instinctive and habitual behaviours. Difficult problems require a series of solution attempts, until the successful solution is reached. Problems that are still more difficult require a degree of understanding and a perception of the relationships between the significant factors of a problem.

## OBJECTIVES OF THE STUDY

i) To identify the level of problem solving ability in Mathematics of XI standard students

ii) To find out, if any, the significant difference between the XI standard students in their problem solving ability regarding the background variable sex, type of school, locality, subject group, extra coaching, community, parental educational qualification and parental occupation.

## METHODOLOGY

As the present study is chiefly empirical in nature, the investigator has found the survey method most suitable for the study. In Villupuram district nine higher secondary schools were selected randomly. The sample consists of 385 students. It represents the various sub groups; boys and girls, urban and rural students, private and government school students, and sub groups based on community, parental educational qualification and parental occupation.

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The data were collected by using the Problem Solving Ability Test developed and standardized by L. N. Dubey. There are 20 problems in the test. Each problem has four alternative answers. Out of these four answers only one is correct. If the pupil writes the correct answer he should be given one mark, and if he writes a wrong answer zero should be given. In the end all the marks should be added.

## TABLE 1

### MEAN, MEDIAN, MODE AND S. D OF PROBLEM SOLVING ABILITY SCORES OF WHOLE SAMPLE

| Variable | N | Mean | Median | Mode | S.D. |
|---|---|---|---|---|---|
| Problem solving ability | 385 | 8.94 | 9 | 10 | 2.86 |

From table 1, it is observed that as per the manual of test the mean score of problem solving ability scores falls in the low interval. Hence, the level of problem solving ability in Mathematics of XI standard students is low.

## TABLE 2

### DIFFERENCE IN THE PROBLEM SOLVING ABILITY OF XI STANDARD STUDENTS WITH RESPECT TO BACKGROUND VARIABLES

| Background variable | Subgroup | N | Mean | S. D | t' value | Level of Sig. (0.05) |
|---|---|---|---|---|---|---|
| Sex | Boys | 199 | 8.98 | 2.82 | 0.3 | Not Significant |
| | Girls | 186 | 8.89 | 2.91 | | |
| Type of school | Private | 190 | 8.91 | 2.77 | 6.99 | Significant |
| | Government | 195 | 7.99 | 2.64 | | |
| Locality | Urban | 234 | 9.41 | 2.79 | 4.11 | Significant |
| | Rural | 151 | 8.21 | 2.83 | | |
| Subject group | Biology | 197 | 8.58 | 2.73 | 2.54 | Significant |
| | Computer science | 188 | 9.31 | 2.95 | | |
| Extra coaching | Tuition | 119 | 9.98 | 2.7 | 4.94 | Significant |
| | No tuition | 266 | 8.47 | 2.82 | | |

From table 2, it is observed that except the subgroups of the background variable sex the other subgroups viz., private and government schools, urban and rural, biology and computer science groups students

and students who go for tuition and students who go for tuition significantly do not go for tuition significantly differ in their problem solving ability in Mathematics as their mean differences are sign 0.05 level of significance.

## TABLE 3

### DIFFERENCE IN THE PROBLEM SOLV ABILITY OF XI STANDARD STUDENTS RESPECT TO BACKGROUND VARIAB

| Variable | Sources of variation | Sum of squares | df | Mean squares | F ratio |
|---|---|---|---|---|---|
| Community | Between groups | 131.34 | 2 | 65.67 | 8.31 |
| | Within groups | 3017.17 | 382 | 7.9 | |
| | Total | 3148.5 | 384 | | |
| Parental Educational Qualification | Between groups | 366.44 | 4 | 91.61 | 12.5 |
| | Within groups | 2782.07 | 380 | 45.537.32 | |
| | Total | 3148.5 | 384 | | |
| Parental Occupation | Between groups | 386.03 | 2 | 193.02 | 26.7 |
| | Within groups | 2762.47 | 382 | 7.23 | |
| | Total | 3148 | 384 | | |

From table 3, it is inferred that the stud different community, students whose parents have di educational qualifications and different occupation significantly in their problem solving ability.

## CONCLUSION

1. The problem solving ability in Mathema XI students is low. They do not posses the ability of solving any type of problem in Mathe

2. Except sex, the other variables namely type of locality, subject group and extra coaching influence on problem solving ability in Mathe It is found that private schools, urban, con science group students and students who tuition in Mathematics have better problem ability in Mathematics.

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