

# Chapter - I

## **INTRODUCTION**

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## 1.1 INTRODUCTION

Mathematics is considered to be an important subject in the school curriculum. If any subject are of study evokes wide emotional comments it is the mathematics. Developing children's abilities for mathematisation is the main goal of mathematics education. The narrow aim of school mathematics is to develop useful capabilities particularly those relating to numeracy - number operations, measurements, decimals and percentages. The higher aim is to develop the child's resources to think and reason mathematically to pursue assumptions to their logical conclusion and to handle abstraction. It includes a way of doing things and the ability and the attitude to formulate and solve problems. The cognitive abilities like open mindedness problem solving and reasoning plays an important role in the mathematics achievement of a student.

But these cognitive abilities are not given enough emphasis in mathematics & science teaching. Students who have difficulty in mathematics are often those who cannot use problem solving ability to solve the problems. They usually need help to improve their problem solving ability to solve problems and think critically is a valuable asset enhancing higher cognitive abilities.

## 1.2 WHAT IS MATHEMATICS ?

According new English dictionary (1948) "Mathematics in a strict sense is the abstract science which investigates deductive the conclusion implicit to the elementary conceptions of spatial and

numerical relation". In Hindi we call mathematics as 'Ganita' which means science of calculations. It is a systematised organised and exact branch of science. Mathematics is also called to science of reasoning. According to Locke (1949) "Mathematics is a way to settle in mind a habit of reasoning". Mathematics is considered as one of the important subjects in primary school curriculum. It is more closely to our daily life as compared to other subjects. It is also highlighted in National Policy on Education - 1986 as follows "Mathematics should be visualized as the vehicle to train a child to think reason, analyze, articulate logically. Apart from being a specific subject it should be treated as a concomitant of any subject involving analysis and meaning.

### **1.3 PROBLEM SOLVING**

From birth onwards everybody in the world is beset with some problem or the other. There are needs and motives that are to be satisfied. For this purpose definite goals or aims are set. In an attempt for their realization one experiences obstacles and interferences in one's attempt to achieve them. This creates problems and serious and deliberate efforts have to be made to over come these impediments.

The productive work involves the evaluation of situation and the strategy worked out to reach one's set goal is collectively termed as problem solving. This is an essential exercise for individual advancement as also for the advancement of society. The meaning and nature of problem solving is further classified by the following definition.

According to Woods worth and Marquis (1948). "Problem solving behaviour occurs in a novel or difficult situation in which solution is not obtainable by the habitual methods of applying concepts and principles derived from past experience in very similar situation."

According to Skinner (1968) "Problem solving is a process of overcoming difficulties that appear to interfere with the attainment of a goal. It is a procedure of making adjustment in spite of interference".

According to Kemler (1978). "Problem solving is an orderly process. It begins with a definition of the problem, asking first of all if it is a real problem. Next comes working on the problem, organizing it in relation to principles. We got through the process of coming to a conclusion, determining the best possible one. Effective problem solving then involves doing something about the conclusion."

#### **1.4 MATHEMATICS ACHIEVEMENT :**

Achievement is a general term for the successful attainment of some goal requiring a certain effort. It is the degree of success attained in a test eg solving test. Achievement is the result of a certain intellectual or physical activities defined according to individual and or objective pre-requisites i.e. proficiency.

Scores obtained by the students in the mathematics test paper is taken as achievement of the students and performance in school or college in a standardized series of educational tests. The

term is used more generally to describe the performance in the subject of curriculum.

Achievement is what the mind has gained. It is task oriented behaviour and achievement in mathematics is the performance of the pupils accomplishment in the mathematics subject of study. The level of achievement reached by the students in the schools is called academic achievement. It is the amount of knowledge derived during the process of learning at school. It is the product of knowledge and intelligence derived from the environment. They are particularly helpful in determining individual or group status in academic learning.

### **1.5 SIGNIFICANCE OF THE STUDY :**

The quality of mathematics can be maintained only when it is ensured that students are achieving marks in mathematics due to their understanding of concepts and not due to rote learning of formulas or steps. As mathematics is a subject of sequence in which to understand the concept of higher level, all the concepts of lower level are equally significant one cannot escape from any concept of lower level. The mathematics achievement of a student depend upon their problem solving ability. If the students problem solving ability is high then their achievement in mathematics is also high.

### **1.6 STATEMENT OF THE PROBLEM :**

The present study is undertaken to find out the problem solving ability of student and their mathematic achievement and it is

titled as 'A study of problem solving ability and mathematics achievement of VII standard students.

### 1.7 OBJECTIVES :

- (1) To find out difference between students of government and private school students in respect to their problem solving ability.
- (2) To find out difference between student of government and private school students in respect to their achievement in mathematics.
- (3) To find out difference between boys and girls with respect to their problem solving ability.
- (4) To find out difference between boys and girls with respect to their achievement in mathematics.
- (5) To find the influence of school on the problem solving ability of the students.
- (6) To find the influence of school on the achievement of the students in mathematics
- (7) To find out the influence of father's education on the problem solving ability of the students.
- (8) To find out the influence of fathers' education on the achievement of the students in mathematics.
- (9) To find out the influence of fathers' occupation on the problem solving ability of the students.

- (10) To find the influence of fathers' occupation on the achievement of the students in mathematics.
- (11) To find the influence of mothers' education on the problem solving ability of the students.
- (12) To find out the influence of mothers' education on the achievement of the students in mathematics.
- (13) To find the influence of mothers' occupation on the problem solving ability of the students.
- (14) To find the influences of mothers' occupation on the achievement of the students in mathematics.

### **1.8 HYPOTHESES :**

- (1) There is no significant difference between students of government and private schools in respect to their problem solving ability.
- (2) There is no significant difference between students of government and private school in respect of their achievement in mathematics.
- (3) There is no significant difference between boys and girls in respect of their problem solving ability.
- (4) There is no significant difference between boys and girls in respect of their achievement in mathematics.

- (5) There is no significant difference between student belonging to different school in respect of their problem solving ability.
- (6) There is no significant difference between student belonging to different school is respect of their achievement in mathematics.
- (7) There is no significant difference between different categories of father education of the students in respect of their problem solving ability.
- (8) There is no significant difference between different categories of father education of the students in respect of their achievement in mathematics.
- (9) There is no significant difference between different categories of father occupation of the students in respect of their problem solving ability.
- (10) There is no significant difference between different categories of father occupation of the students in respect of on their achievement in mathematics.
- (11) There is no significant difference between different categories of mother education of the students in respect of their problem solving ability.
- (12) There is no significant difference between different categories of mother education of the students in respect of on their achievement in mathematics.

(13) There is no significant difference between different categories of mother occupation of the students in respect of their problem solving ability.

(14) There is no significant difference between different categories of mother occupation of the students in respect of their achievement in mathematics.

## **1.9 DEFINITION OF THE KEY TERMS :**

### **PROBLEM SOLVING -**

According to Woods worth and Marquis (1948). "Problem solving behaviour occurs in a novel or difficult situation in which solution is not obtainable by the habitual methods of applying concepts and principles derived from past experience in very similar situation."

### **MATHEMATICS ACHIEVEMENT :**

Achievement is a general term for the successful attainment of some goal requiring.

- A certain effect.
- The degree of success attained in a test.
- The result of a certain intellectual or physical activity defined according to individual and objective pre-requisites.
- Achievement is nothing but something accomplished successfully by means of exertion skills, practice or perseverance.

### 1.10 DELIMITATIONS :

- The study was limited to two types of schools that is government and private school and it was limited to Bhopal district only.
  - The study was limited to 7 school in which 4 were government and 3 were private.
  - From each school only one section of class was taken and the numbers of students present in both the papers were finally taken as the sample size which came out to be 300 ie the result of the study are on the basis of 300 students only.
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- The study was limited to a few demographic variables such as type of school, gender, father's education, father's occupation, mother's education and mother's occupation.
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