

# **CHAPTER-1**

# **INTRODUCTION**

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### 1.1 Introduction

Mathematics education is a dynamic discipline. The main goal of mathematics education in schools is the mathematisation of the child's thinking. The **narrow aim** of school mathematics is to develop useful capabilities, particularly those relating to numeracy numbers, 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.

#### 1.1.1 Vision for school mathematics

**According to the National Curriculum Framework (NCF 2005),**

**School mathematics takes place in a situation where:**

- ❖ Children learn to enjoy mathematics rather than fear it.
- ❖ Children learn important mathematics: mathematics is more than formulas and mechanical procedures.
- ❖ Mathematics is a part of children's life experience which they talk about.
- ❖ Children pose and solve meaningful problem.
- ❖ Children use abstractions to perceive relationships and structure.
- ❖ Children understand the basic structure of mathematics.
- ❖ Teacher expects to engage every child in class.

On the other hand, mathematics education in our schools is beset with problems. We identify the following core areas of concern:

- ❖ **Fear and failure:** A sense of fear and failure regarding mathematics among a majority of children.
- ❖ **Disappointing curriculum:** A curriculum that disappoints both a talented minority as well as the non-participating majority at the same time.
- ❖ **Crude assessment:** Crude methods of assessment that encourage perception of mathematics as mechanical computation.
- ❖ **Inadequate teacher preparation:** Lack of teacher preparation and support in the teaching of mathematics.

### 1.1.2 What is mathematics?

“Mathematics is the science of number and space while the other has defined it as the science of measurement, quantity and magnitude”. **According to new English dictionary** “Mathematics in a strict sense is the abstract science which investigates deductively the conclusions implicit in the elementary conception of spatial and numerical relations”. Mathematics is also called the science of reasoning. **According to Locke**, “Mathematics is a way to settle in mind a habit of reasoning”. Mathematics is considered one of the important subjects in primary school curriculum. It is more closely related to our daily life as compared to other subjects. It is also highlighted in **National Policy of Education-1986** as follows-“Mathematics should be visualized as the vehicle to train child to think reason, analyze articulate logically. Apart from being a specific subject it should be treated as a concomitant to any subject involving analysis and meaning”.

### 1.1.3 Rational of the study

The ultimate aim of education is to develop all round personality of an individual. Mathematics learning is important not only is to achieve certain cognitive objectives but it is also instrumental in learning other subjects.

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.

Low achievement in mathematics is a problem of great concern for parents, teachers and researcher for several decades and is subjected to many rigorous for several decades and subjected to many rigorous investigations.

Researcher wants to find out the reason behind why a child may have difficulties in computation or reasoning a problem on concept of fraction.

### 1.1.4 Fraction

Fraction means that unity (one) is dividing into any number of each part, then one or more of these parts are called a fraction. Thus if we divide unity into seven equal parts (of  $\frac{1}{7}$  each) and take four of these parts, we have a fraction equal to four sevenths  $\frac{4}{7}$

$$\text{Fraction} = \frac{\text{numerator}}{\text{denominator}}$$

## Types of Fraction:

**Like fraction:** Fractions having the same denominator but different numerator. For example  $\frac{4}{7}$ ,  $\frac{12}{7}$

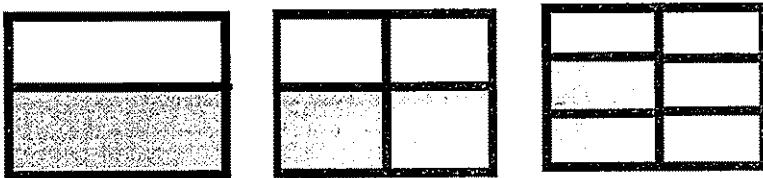
**Unlike fraction:** Fractions having different denominator. For example  $\frac{1}{7}$ ,  $\frac{3}{4}$

**Proper fraction:** A fraction whose numerator is less than its denominator. For example  $\frac{3}{13}$

**Improper fraction:** A fraction whose numerator is greater than its denominator. For example  $\frac{7}{3}$

**Mixed fraction:** Mixed fraction is a fraction which has a whole number and a proper fraction together. For example  $5\frac{1}{2}$

## Equivalent fraction:



From the above it is clear that the shaded portion represents the same part of a whole such as  $\frac{1}{2}$ ,  $\frac{2}{4}$ ,  $\frac{3}{6}$  are equivalent fractions.

### **1.1.5 Learning difficulties:**

Contemporary approaches to explaining maths under achievement describe the learning characteristics of maths underachievers:

- ❖ Psychological descriptive approach: psychological difficulties that occur with maths difficulties.
- ❖ Error analysis approach: focuses on the types of errors made by students.
- ❖ Information processing approach: links verbal, memory and perceptual processing with maths difficulties.

Students were less efficient in their information processing. Information processing relates to the ways in which individual make sense of, or interpret, the information which they are exposed.

They do not have accurate number processing skills and have other components of the model in place.

### **1.1.6 Remedial Teaching**

The term remedial education does not imply the persistence of some new and magical educational formula which will enable us remove with a wave of the wind, all the problems that face the background child, and speedily restore him to his rightful place in the class.

The process of removing and reducing the severity of the causes diagnosed and thereby improving the academic achievement is called remedial teaching. The remedial teaching can be equated with the treatment given by the doctor for any illness. The teaching strategy and techniques used in remedial teaching are individualized i.e. made the child or client specific. The process of modification/ improvement in the academic achievement using individualized instruction as the basis is

called remediation. The teaching done using various innovations approaches and techniques of teaching like co-operative learning, activity based learning, child centered learning, programmed learning etc during the process of remediation is known as remedial teaching.

### **Importance of Remedial Programme:**

An average Indian school fails to bring out the potential talent in the individuals personality. It fails to direct the creative urges of standards in the five directions. In the contemporary Indian school the memorization of text books is given the prime attention as it leads to better academic achievement.

There are some standards in each class who have some difficulties in understanding and learning certain concepts. The difficulty varies from individual to individual, subject to subject grade to grade and institutions to institutions. In order to make teaching- learning process effective, it is essential to identify the learning difficulties of standards during instruction. This can be done by making use of diagnostic tests.

The process of finding the reasons for academic failure of a child or for some observed discrepancy between the achievement and potential is called educational diagnosis. The diagnostic tests consists items based on a detailed analysis of the specific skills involved in successful performance and a study of the most common errors made by standards. Thus a good diagnostic test will permit a standard to demonstrate all aspects of the skill being measured and will pin point the types of errors that he has made. These tests are available for different subjects and are designed for standards of below average performance such tests may provide only partial information for diagnosing a standards a standards difficulty therefore, supplementary information concerning the physical,

intellectual, social, emotional development of the standards is also needed before an effective remedial programme is initiated.

### **Aims of the Remedial Programme**

Once the child's error and difficulties have been located precisely, it then becomes possible to frame a remedial; programming at:

- ❖ Correcting basic errors.
- ❖ Re-establishment the child's confidence in himself and his ability to succeed in the subject.
- ❖ Improvement in teaching learning process of the diagnostic subject.
- ❖ Identifying the retarded learners who are having troubles in learning some important basic skills.
- ❖ Discovering hazards to the learning as learning difficulties or specific retrying needs.
- ❖ Suggesting the remedial teaching procedures for the effective as well as corrective learning of various important basic skills.
- ❖ Suggesting modifications and revisers in the text book and curricula.
- ❖ Introducing effective evaluation procedure for pupils of various language groups.

### **Principles of Remedial Education**

In framing the remedial programme, certain following basic principles have to be borne in mind-

- ❖ Good personal relationship must be established right from the start of remedial work.
- ❖ The plan to attack on the problem should be clearly defined and set out where treatment is to be given in a group situation.



- ❖ An open mind must be kept on the methods and procedure to be used.
- ❖ Great care must be exercised in the choice of materials to be used in remedial work, bearing in mind the age, ability, attainment and interest level of the child.
- ❖ Motivation should be optimum and all methods of enlisting interest should be used according to the child's age and attainment level.
- ❖ The programme should be so designed as to furnish the pupil with immediate opportunities of success.
- ❖ The pupil himself should be involved as much as possible in the remedial programme, which he has to follow.
- ❖ Treatment should be given individually or in small groups, if progress is to be rapid.

### **1.1.7 Diagnostic test:**

In order to make teaching- learning process effective, it is essential to identify the learning difficulties of standards during instruction. This can be done by making use of diagnostic tests.

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provide only partial information for diagnosing a standard a standards difficulty.

Diagnostic test has been defined by

**English and English (1958)** “one designed to locate the particular source of a person’s in learning especially in school subjects”.

Diagnostic tests serve as guides to locate the attainments of difficulties of the students and to help to group students for remedial of special coaching.

### **Importance of diagnostic evaluation**

Diagnostic evaluation provides the feedback to the teacher as well as to the students regarding their strengths and weaknesses. It helps teacher to modify their teaching-learning strategies so as to make more effective in the light of the feedback. Diagnostic evaluation is an integral part of overall evaluation.

### **Uses of diagnostic test**

- ❖ Diagnostic tests serve as guides to the attainment of the students.
- ❖ Diagnostic tests serve as guides to locate the attainment of difficulties of the students.
- ❖ Diagnostic tests help in isolating difficulties of students individually.
- ❖ Diagnostic tests help to group students for remedial or special coaching.

## **Diagnosis in the subject area**

The first step in remedial work is to make a thought examination of the child's difficulties in the subject in which he/she is failing. This is an analytical examination design to locate:

- ❖ The level at which break down is occurring.
- ❖ The seriousness of the failure.
- ❖ The specific errors being made and
- ❖ The cognitive weakness

## **Steps in diagnosis**

- ❖ Identifying students who have learning difficulties.
- ❖ Determining the specific nature of the learning difficulty.
- ❖ Determining the factors causing learning difficulties.

## **1.2 Need of the study**

Article 45 on Indian institutions; it is the obligation of state to provide free and compulsory education for the children of age between 6-14 years. Universalization of elementary education is the aim of present education system.

Universalization of elementary education includes universal access, universal retention and universal success. The first two can be achieved to desire extent by providing certain basic physical facilities but the problem of universal success is very difficult to achieve success percentage of the students at different level of schooling exhibits dismal picture, stagnation in mathematics has been at the top among other school subjects. Various finding suggested that one of the reasons for stagnation has been faulty pedagogy that has been practiced in our school. Therefore, need for pedagogical practices and material or learning situations is largely felt.

In spite of qualities and appropriateness of the text book, there are certain limitations of the text book. They cannot fulfill the needs of every individual. Keeping this view in mind the need of material is being felt to create congenial environment for learning and to provide greater exposure to the target.

The elementary education in our country is in very bad shape. The prescribed curriculum is with a sense of load rather than with joy. The situation is more serious in elementary classes children have to face traumatic experiences every day. The feeling of success motives the children to remain in the school while the feeling of failure pushes them out of the system. In this case many children drop out to unattractive and uninteresting programs that school offer. Therefore we could not achieve our goal, which is given, in our constitution universalization of elementary education.

For the systematic learning of arithmetic (fraction) there is always a need of some sort of assistance in the form of educational learning situation. Hence in teaching learning fraction text books are used as powerful tool. Now a day, the material which is being produced helps in learning fraction. Some of the shortcomings of the past text books have been overcome. The remedial material present today is more interesting, relevant and the contexts is closer to the learners but in spite of above improvement present text books though take care of average and above learner's needs but because of certain limitations, the needs of poor learners are not taken care of.

### **1.3 Statement of the problem**

The present study is undertaken to find and minimize the learning difficulties in solving problems of fraction and it is titled as

**“A Study of Learning Difficulties in Arithmetic (Fraction) of Class V Students and Remedial Measures”**

### **1.4 Operational definition of key terms used:**

#### **Learning difficulties**

Contemporary approaches to explaining maths under achievement describe the learning characteristics of maths underachievers:

- ❖ Psychological descriptive approach: psychological difficulties that occur with maths difficulties.
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Students were less efficient in their information processing. Information processing relates to the ways in which individual make sense of, or interpret, the information which they are exposed.

They do not have accurate number processing skills and have other components of the model in place.

#### **Remedial teaching**

Remedial teaching is a process which involves those measures used to meet the educational needs of children with learning difficulties. It is essentially good teaching which, by careful diagnosis of defects of

students, takes him/her at his/her own level and by intrinsic methods of motivation leads him/her to increased standard of competence.

### **1.5 Objectives of the study:**

Following objectives are kept in view while conducting this investigation:

1. To identify the learning difficulties of class V students in solving problems of fraction.
2. To diagnose the causes of learning difficulties of class V students in solving problems of fractions.
3. To design and implement remedial measures in solving problems of fraction and study its effect.

### **1.6 Hypothesis**

The objectives stated above helped the researcher to formulate the major hypothesis of the study.

1. There is no impact of remedial measures on class V students in solving problems of fractions.
2. There is no significant difference between the learning difficulties of boys and girls.
3. There is no impact of remedial measures on boys.
4. There is no impact of remedial measures on girls.
5. There is no significant difference between boys and girls of class V students in their achievement after remedial measures.

### **1.7 Delimitations**

Following were the limitations of the study:

1. The study was limited to the achievement in fraction.

2. The researcher has delimited her study to private schools of Bhopal areas due to time constraints and lack of resources
3. The small sample of 80 students was taken due to limited scope and time of the study.
4. The study was conducted on one class i.e. class V of each of two school in Bhopal area.