

# **CHAPTER-1**

# **INTRODUCTION**

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## Introduction

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### 1.1 Introduction

Education is a process, which begins at cradle and ends at the coffin. Education is very much necessary for the overall development of human beings. Education is needed to be innovative, capable of evolving adapting to the rapidly changing world and assimilating change.

Education is lifelong perspective. It is a process of human transformation for attainment for a better and a higher quality of life. Education develops abilities, talent and potential to optimum and further enriches them. To realise this, attempt is made at every level to provide planned and systematic learning experiences.

Education is divided into various subjects on basis of objectives. Every subject has its own importance for the cognitive development of an individual. Similarly, mathematics has its own importance in every Walk of life. Therefore, it is important to have a look on various aspects of mathematics.

### 1.2 Mathematics Education

Mathematics education is a dynamic discipline. It develops general ability for reasoning. Mathematization is the main goal of mathematics education.

The narrow aim of school mathematics is to develop useful capability is particularly those relating to numeracy, number operation, measurement, decimals and percentages.

The higher aim in mathematics is to develop child's resources to think to reason mathematically to pursue assumption to their logical conclusion and to handle abstraction. It includes a way of doing things and ability and attitude to formulate and solve problems.

Mathematics is the oldest subject with a history dating back to 4000 years and it is an exact science. Common man can sometimes get on very well without learning how to read and write, but he can never manage without learning how to count and calculate. Any person ignorant of Mathematics will be at the mercy of others and is likely to be easily cheated.

The knowledge of the fundamental processes of Mathematics and the skill to use them are the preliminary requirement of a human being. Elementary level Mathematics such as counting, addition, subtraction, multiplication, division, weighing, measuring, selling, buying etc. are simple and fundamental processes of Mathematics, which have an immense practical value in life. Knowledge and understanding of elementary mathematics can be applied in an effective and systematic manner only when the teaching of Mathematics at elementary level helps the children to attain the competencies.

### **1.3 Nature of Mathematics**

Mathematics is a symbolic language. It is a subject, which has to be learnt by doing rather than by reading. It is a study of abstract systems built of abstract elements. These elements not described in any concrete fashion. All that known about them is contained in the unambiguously specified relations among them. Mathematics derives its main strength from its following features:

1. Abstractness
2. Generalization
3. Logical consistency
4. Depth
5. Precision
6. Seriousness
7. Elegance
8. Economy
9. Thoroughness
10. Significance
11. Clarity
12. Performance

### **1.4 Meaning and Definitions**

Mathematics is defined as the science of quantity, measurement and spatial relations. It is a systematized, organized and an exact branch of science. It deals with quantitative facts, relationships as well as problems involving space. It is a logical study of shape, arrangement, and quantity.

According to the Oxford Dictionary, Mathematics means "that abstract science which investigates deductively the conclusions implicit in the elementary conceptions of spatial and numerical relations".

Various definitions by different authors may also be quoted in this connection:

- Bertrand Russel (1901) defined Mathematics as "The subject in which we never know what we are talking about, or whether what we are saying is true or fundamentally significant.
- According to Berthelot(1964) "Mathematics is the indispensable instrument of all physical researches".
- Kulbirsingh Sidhu (1984) has stated: "Mathematics is called the science of logical reasoning. It approaches everything with a question mark in our mind".
- In the opinion of Courant Richard and Robins Herbert (1941),"Mathematics is expression of human mind, reflecting the active will, the contemplative reason and the desire for aesthetic perfection. Its basic elements are logic and intuition, analysis and construction, generally and individually."
- Mathematics has an artistic dimension also. In the word of White, L.F. (1902) "The beautiful has its place in mathematics, for here are triumphs of the creative imagination, beautiful theorems, proofs and processes whose perfection of form has made them classic. He must be a 'practical' man who can see poetry in Mathematics".
- Maths is a systematized organised and exact branch of science also called science of reasoning.
- Mathematics is the science of number and space.
- Mathematics is science of measurement, quantity and magnitude.
- Mathematics is Queen of all the Sciences and mother of all the Technologies.
- Mathematics is the science that deals with the logic of shape, quantity and arrangement.
- Maths is all around us, in everything we do. It is the building block for everything in our daily lives, including mobile devices, architecture (ancient and modern), art, money, engineering, and even sports.

### **1.5 Importance of Mathematics**

According to Socrates" Mathematics is the key to all sciences."

In the school curriculum mathematics play an important role. Everybody needs some knowledge of mathematics. One or the other way mathematics has practical value in life. Counting, addition, subtraction, division, weighing, measuring, selling, buying and many more are simple and fundamental processes of mathematics, which have got an immense spectacle value in daily life.

Apart from the personal life mathematics has an important in social life as well. Mathematics does not have a practical value, it has cultural and disciplinary value also and that is why it occupies an important place in school curriculum.

Any sub area of study that evokes wide emotional comment, it is mathematics.

For the school going children, there is a General opinion in our society that those students who scored poor marks in mathematics are poor students even if they score good marks in other subjects on the other hand if a student scores good marks in mathematics and poor marks in other subjects, he is considered to intelligent and bright. That is to say that at school level child intelligence is judged on the basis of marks obtained in mathematics.

Aim of school education is to develop inner resources of growing child and mathematics is the subject which full fill this aim of education. Each and every child should learn necessary mathematics.

#### **1.5.1 NPE 1986 gave importance to mathematics as follows:**

Mathematics should be visualised as vehicle to train, to think, reason to analyse logical. Maths is considered as one of the important subject at primary school curriculum. One main goal of maths is mathematisation of child's thought processes. Maths develops the child's inner resources.

#### **1.5.2 Vision statement of NCF (2005) for School Mathematics**

- Children learn to enjoy mathematics rather than fear it.
- Children learn important mathematics: Mathematics is more than formulas and mechanical procedures.
- Children see mathematics as something to talk about, to communicate through, to discuss among themselves, to work together on.
- Children pose and solve meaningful problems.
- Children use abstractions to perceive relation-ships, to see structures, to reason out things, to argue the truth or falsity of statements.
- Children understand the basic structure of Mathematics: Arithmetic, algebra, geometry and trigonometry, the basic content areas of school Mathematics, all offer a methodology for abstraction, structuration and generalisation.
- Teachers engage every child in class with the conviction that everyone can learn mathematics.
  - Thus we see that policy makers also give special concern about mathematics learning.

#### **1.6 Mathematics in the School Curriculum**

As human knowledge rapidly increases, the information density of the mathematics curriculum rapidly increases at all levels. What was once an eighth grade skill is now a sixth grade skill, a sixth grade skill is now a fourth grade skill, and so on. Moreover, virtually all state education systems are moving to high stakes testing with a limited tolerance for deviation from meeting the established standards.

In order to meet the increased expectations and to retain multiple career options, children must now learn more mathematics since there is more mathematics to learn. Unfortunately, there is no extra time or energy for learning it. Everybody needs some knowledge of mathematics in one way or the other, but it is felt that for an ordinary man, the mathematics learned during the primary and middle stage will suffice. But the study of mathematics is also very basic to the understanding of other areas of study.

The Indian Education Commission (1964-1966) has envisaged a course of compulsory mathematics in Primary and secondary course. Diversification of courses has been recommended at Higher Secondary level with the result that mathematics at higher secondary stages is optional and is meant only for those who want to study higher mathematics or to take up vocations and professions requiring a specialized knowledge of mathematics.

Mathematics syllabus for each class is designed in a spiral approach. So the Mathematical competency of one class is a pre-requisite to proceed to learn the mathematics syllabus of the next class.

### **1.7 Aims of Teaching Mathematics at Elementary Level**

Every subject in the school curriculum is introduced with certain aims and objectives. Mathematics occupies a special place as a core subject at the curriculum.

As the Tamil saying in Thirukural goes, numbers and letters are important like the two eyes of a human being. Therefore, it is imperative that every mathematics teacher should acquaint himself with the aims and objectives of teaching mathematics.

In order to give a strong foundation to the children's mathematical approach to life, these aims can be stated as follows:

- To give a good start to the students in learning mathematics.
- To enable the child to solve mathematics problems in daily life situations.
- To create in them an enduring interest and faith in the subject and to develop a love for it.
- To introduce them to mathematical games, puzzles, recreations, hobbies and activities and to unravel before them the mysteries of the subject.
- To develop in them a taste and confidence in mathematics.
- To ensure in them accuracy and efficiency in fundamental processes and develop appreciation for accuracy.
- To acquaint them with the relation of mathematics with their present as well as future life.
- To develop in them the habits like regularity, practice, patience, self-reliance and hard work.

- To prepare them for the learning of other subjects intimately related with mathematics.
- To prepare them for the learning of mathematics of higher classes.
- To acquaint them with mathematical language and symbolism. 12. To initiate and develop the required discipline in the learner's mind

### **1.8 Problems in mathematics learning**

- Boring classroom environment.
- Faulty pedagogies.
- A sense of fear and failure regarding mathematic.
- Lack of teacher preparation and support in teaching maths.
- Teacher centred maths curriculum.
- Crude method of assessment that encourages perception of maths as mechanical computation.
- Disappointing curriculum a curriculum that disappoints both are talented minority as well as non participating majority at the same time.
- So many other problems are also there.

### **1.9 How To Arise and Maintain Interest in Mathematics:**

To complete the aims and objective of teaching mathematics, it is indeed necessary to make mathematics learning joyful and interesting. Child's attitude to learning is important in his or her education. When children dislike any subject, they don't want to learn it thus they can't progress in it. Teacher should teach in such a way that children could enjoy and aurose interest for a particular subject.

Nowadays all educationalist and educational policymakers are more concerned regarding the qualitative development of education. To achieve this goal National Policy of Education 1986 clearly states that“ A warm welcoming and encouraging approach in which all concerned share a solicitude for the need of child, is the best motivation for the child to attend the schools and learn. A child centred and activity based processes of learning should be adapted at the primary stage which are concerned with various teaching learning strategies which make learning environment interesting and joyful.

Arose and maintain the student's interest in mathematics is a major problem for teachers. Teacher knows that loss of interest is the major cause of student's failure. In order to maintain and arrows interest following points should be kept in mind:

- Teaching should be child centric.

- New knowledge and experience should be given according to the need and mental level of the student.
- Use of adequate material aid while teaching.
- Praising and appreciating students time to time.
- To arose competitive feeling among students.
- Providing opportunities for constructive and creative work in mathematics,
- Dealing students with affection sympathy and helping them,
- While teaching innovatory practices must be used.
- The teacher should keep an eye on the pace of the lesson.
- Lessons should go smoothly so that the students remain interested in it.
- Teacher must encourage students for active participation.

In short, it can be concluded that children will enjoy mathematics in comparison with other subjects if brainstorming, games, puzzles, activities and different alternative instructional materials are used.

#### **1.10 Existing Trends in Teaching of Mathematics**

While teaching any competency the teacher should adopt teaching strategy based on the objectives, which in turn based on the aims of teaching Mathematics at the elementary level.

But due to various constraints, the teachers give only a little importance to the concepts. Therefore, the teaching learning process becomes evaluation oriented instead of being objective oriented.

As a result, the principles of Minimum Levels of learning remain unfulfilled and compel the children of primary classes into rote learning and memorizing.

#### **1.11 Methods of Teaching Mathematics:**

There are many methods of teaching mathematics, some of them are:

- Discovery method
- Enquiry teaching
- Demonstration approach
- Maths lab approach
- Practical work approach activity based
- Individualized instruction approach using modulus
- Problem solving approach



- Cooperative learning approach
- ICT Teaching Approach etc.

### **1.12 Need for Innovative Methods in Teaching Mathematics**

The children of the elementary schools in India belong to different categories like rural, semi-urban and urban and from low, average and high income groups of families. Most of the children in village schools are first generation learners. Their levels of intelligence also differ.

Effective teaching of mathematics in Indian class- rooms will be there possible only with the effective method.

The Kothari Commission Report (1960) states that if science is poorly taught and badly learnt, it is little more than burdening the mind with dead information and it could degenerate even into new superstitions.

With the development of science and technology the subject mathematics becomes so vitally important for everyone in the technological age, that any advance in the techniques of teaching is to be welcomed.

As proposed by the National Policy on Education (1986), there is an urgent need to modify the curricula and methodologies of learning through appropriate research and development to incorporate elements of problem solving, activity and relevance.

For this study researcher has selected activity based teaching learning strategy for seeking effect in mathematics achievements of the students.

In the constructivist approach, the importance is given to activities, which will help the students to construct knowledge. The activity based strategies as opposed to the traditional strategies emphasis 'learning by doing'. The activity based strategy in Mathematics learning involves doing, reading, working, thinking, planning, co-operating and intelligently operating with the natural forces in the school and community. The use of Activity methods give a broad scope to this natural curiosity and initiative in the child. They help the pupils to develop keenness of observation and thinking, cognitive activity and independence of mind.

### **1.13 Activity Method**

Activity method is a technique adopted by a teacher to emphasize his or her method of teaching through activity in which the students participate rigorously and bring about efficient learning experiences. It is a child- centered approach. It is a method in which the child is actively involved in

participating mentally and physically. Learning by doing is the main focus in this method. Learning by doing is imperative in successful learning since it is well proved that more the senses are stimulated, more a person learns and longer he/she retains.

Pine G (1989) mentions that in an Activity based teaching, learners willingly with enthusiasm internalize and implement concepts relevant to their needs.

Therefore, our understanding on the activity method by now should mean any learning that carried out with a purpose in a social environment, involving physical and mental action, stimulating for creative action or expression.

### **1.13.1 Why do we need to use activity based learning method?**

The information processing theory in psychology views learners as active investigators of their environment. This theory is grounded in the premise that people innately strive to make sense of the world around them.

In the process of learning, they experience, memorize and understand. Students need to be provided with data and materials necessary to focus their thinking and interaction in the lesson for the process of analyzing the information. Teachers need to be actively involved in directing and guiding the students' analysis of the information.

It requires active problem solving by students in finding patterns in the information through their own investigation and analysis. With continued practice in these processes, students learn not the content of the lesson but also develop many other skills.

- It enhances creative aspect of experience.
- It gives reality for learning.
- It uses all available resources.
- It provides varied experiences to the students to facilitate the acquisition of knowledge, experience, skills and values.
- It builds the student's self-confidence and develops understanding through work in his/her group.
- It gets experiences, develops interest, enriches vocabulary and provides stimulus for reading.
- It develops happy relationship between students and students, teachers and students.
- An activity is said to be the language of the child. A child who lacks in verbal expression can make up through use of ideas in the activity.

- Subjects of all kind can be taught through activity.
- Social relation provides opportunity to mix with others.

### 1.13.2 Kinds of activities:

The activities used in this strategy can be generalized under three main categories:

*Exploratory* - gathering knowledge, concept and skill.

*Constructive* - getting experience through creative works.

*Expressional* - presentations.

### The Activities you could focus on:-

- **Experiencing:**

Watching, observing, comparing, describing, questioning, discussing, investigating, reporting, collecting, selecting, testing, trying, listening, reading, drawing, calculating, imitating, modeling, playing, acting, taking on roles, talking, writing about what one can see, hear, feel, taste, experimenting and imagining.

- **Memorizing:**

Sequencing ordering, finding regularities and patterns, connecting with given knowledge, use different modes of perception, depiction.

- **Understanding:**

Structuring, ordering, classifying, constructing, solving, planning, predicting, transferring, applying knowledge, formulating ones individual understanding, interpreting, summarizing, evaluating, judging, explaining and teaching.

- **Organizing activities:**

The process of organizing activities must be based on curricular aims bringing together the needs, ideas, interests and characteristics of the children with the knowledge, skill, experience, and personality of the teacher within a given environment. The extent to which the teacher works with students individually or in groups affect the relation the teacher has with each child.

### 1.13.3 Steps Required for Effective Organization of Activities.

- a. Planning.
- b. Involving children in the learning process.
- c. Each child is made an active learner.

d. For each activity ensure you follow the principles of:-

What?

How? Work directions step by step, including:

With whom? Where? How long?

What after?

Ensure that the teacher give clear instructions before each activity.It must focus on the above a, b, c, d

#### **1.13.4 Role of a Teacher in an Activity Based Method**

- A planner, an organizer and evaluator.
- Facilitator.
- Decision maker.
- Knowledge imparter
- Disciplinarian

Unless the students seriously focus on the key points delivered during the teaching, there is a definite reason for the knowledge to escape into thin air, and unlearnt by the pupils. At this juncture, it is appropriate to present a very practical statement by Confucius on how the human mind approaches the learning process:

**I hear, and I forget.**

**I see, and I remember.**

**I do, and I understand.**

..... Confucius.....

Hence, unanimously it is felt that there is need for a change in our mode of Teaching and learning as an activity- based method of teaching provides simple yet dynamic tools for an effective classroom teaching and taps into source of energy and good will that would enable students to innovate and manage change.

#### **1.14 Importance of Activity-based Teaching:-**

- It saves teacher's time and effort as it is easier to perform experiment than to supervise.
- It helps to promote relevant and useful discussions in the class -rooms and also provides opportunity to Question and to review.
- It is one of the best techniques of teaching to get the participation of the Students.
- Activity-based method of teaching helps the students keep busy in various activities like observing, taking notes, answering and questioning, drawing diagrams and so on.
- Activity-based method of teaching helps the students in the development of knowledge and skills.

- Activity-based method of teaching helps the students to develop competencies at mastery level in the teaching learning area minimizing the teacher's dominance in the class-room situations.
- Activity-based method of teaching facilitates self expressions among the students by providing adequate opportunities.
- Activity-based method of teaching helps the students in developing the desirable attitude towards learning with more attention, interest and motivation.
- Activity-based method of teaching provides a realistic, practical, learner centered and utilitarian values to the teaching learning process.
- Activity-based method of teaching helps the pupils to have clear conception of ideas, information, facts and principles. Students can have insight and better understanding of various complicated and difficult topics.
- Activity-based method of teaching helps to bring change in the atmosphere of the class. The traditional monotony goes away.
- In Activity-based method of teaching, the attitude of the teacher is very friendly. 13. Activity-based method of teaching helps the pupils to develop scientific The pleasant and natural atmosphere thus created, greatly helps proper learning. attitude and get training in scientific method.
- Activity-based method of teaching is most convenient, easy and natural way of learning.
- Large number of students can be taught at a time.

### 1.15 Need of the Study

Mathematics is vital to the future of the child and national development (Agwagah 2001).

Mathematics makes an essential contribution to a good rounded education, playing a vital role in modernization of this civilization. (ACME,(2011)al; Vorderman et al., (2011).

It is everywhere and affects the everyday lives of people.

Mathematics is the foundation of scientific and technological knowledge that is essential in social-economic development of the nation. It emerges from the real world.

Mathematics is one of the essential and basic areas of the curriculum which has a wide field of subject matter.

The teaching and learning of mathematics is a complex activity and many factors determine the success of this activity. Though mathematics is an important subject and occupies a central position since ancient period, still it has not been the interest of many students.

The gaps are found between abilities and achievement. Teaching pattern of mathematics is often not very interesting and pleasant especially for small children. Ideally speaking children should be given quality mathematical experiences in early education.

The level of mathematic skills in kindergarten have been shown to be a predictor of ability in mathematics in the future (Locuniak & Jordan, 2008; Ray & Smith 2010).

Children with early mathematical difficulties showed poor performance in both verbal and visuo-spatial work memory tasks as well as on language tests and a fluid intelligence test indicating a thoroughly lower cognitive base (Geary 2004 and Baddeley 1997).

Mathematics is a subject which can be evaluated more objectively. There is no chance for favoritism in evaluation.

Therefore, it can be safely inferred that children show poor performance in mathematics because they do not get interest in learning numeral concepts. Teaching pattern in classroom is often not interesting. however when students are taught through play activities they do not realize that they are learning but actually they are gaining knowledge through participating in different activities (Clegg 2007).

When children play with materials such as cards, buttons and blocks, they develop skills in logic. They experiment with counting and sorting things and solving problems. Activities like observing, comparing, working with shapes, sizes, and quantities forms the basis for understanding for all high order thinking.

Early learning affects later outcomes, whatever children learn at this stage will affect their career also because economy revolves around mathematics and their weak concepts will effect their ability to earn their livelihood.

Mathematics is a discipline that is vital in everyone's life. Children must learn major mathematical concepts in school so that they will be able to use these skills later in life (Sarama and Clements, 2009).

The importance of mathematics for employment and day-to-day living in the modern world is increasing, people have difficulty with mathematics because of steady increases in the quantitative knowledge needed to function in many jobs today, including many blue collar jobs (Parsons, Bynner. 1997).

Children feel problems in understanding of mathematical concepts like multiplication, division, size and shape concepts when they taught in classroom in regular way. As discussed earlier, if they learn through activity method they learn in a better way without any pressure and it makes the children happy and gets them interested to learn. Activities assist children to develop early numeracy skills. Young children need to experience a lot of 'doing' and 'saying' before they are able to understand numbers.

Maths is closely related to our daily life as compare to other subjects. Central goal of maths education is to develop an ability to think and to reason. But students have a fear of maths, they feel maths as a boring subject mainly due to faulty pedagogies.

To overcome drawbacks of faulty pedagogies new approaches should be adopted for qualitative improvement in education system. Research on various approaches to learning has been conducted in the West but such experiments in India are very few.

In the view of advantages of some new approaches to learning, it is essential that new learning approaches should be investigated in India.

There are various methods of learning mathematics. Activity based teaching learning method is very rare in Indian schools. Activity based teaching learning strategy gives more experience as well as encourages students' participation in classroom. . Activity based teaching learning strategies can play an important role in learning mathematics.

**As a researcher, I want to find out weather:-**

- Can Activity Based teaching learning strategy make maths learning interesting and joyful?
- Is it possible to present a lively and easy picture of maths with the help of activities?
- Can Activity Based teaching learning strategies increase the achievement scores in mathematics?
- Can Activity based teaching learning strategies help to sustain interest in maths classroom?

**1.16 Justification**

Poor mathematical competencies are common among children and result in low grades and difficulties in common day-to-day activities. Among students, about 7% of children have mathematical learning disability and another 10% show persistent poor performance in mathematics despite average abilities in other areas (Clark 2001). Children who show poor performance have deficits in understanding and representing numerical magnitude, difficulties retrieving basic

mathematics facts and delays in learning mathematical procedures (Clark 2001). These deficits and delays cannot be attributed to intelligence.

Activity method develops interest and motivation in mathematics class because through this method learning becomes interesting and easier. Early learning affects later outcomes so it is important to teach mathematics in a way that leads to development of students and understanding of the subjects.

Activity method of teaching has always been believed to create interest in subjects as it is activity based that makes abstract concept into concrete concepts. This makes the learning more effective. Since children take interest in play and group activities, this method of teaching can motivate the children to initiate, compete and perform.

If mathematics is taught by fun and interesting manner children can begin enjoy learning. Their concepts can become clear, memorable, and performance can be improved. During the early years of life, children learn concepts of size, number, shape, and quantity by play way method.

Activity method develops the skills necessary for critical thinking, leadership and concept development. It involves approaches that children will use throughout their lives. When children share materials and play together, they also learn to cooperate, listen to others, stand up for their own ideas, handle frustration, and empathize. Therefore, in addition to learning the concepts they also learn the rudiments of social behaviour and working in group.

Through Activity method, they learn to solve problems, think on abstract ideas, remain focused and work diligently and persistently. The Activity makes difficult and boring task, delightful and pleasurable. This however does not mean shirking from real work; it is introducing element of happiness and satisfaction into dull and irksome tasks (Bhatia and Bhatia 2012).

Activity method of teaching is an important pedagogical tool for educators. Activity is essential to early learning. Play is the main way by which children learn and develop ideas about the world. If learning is to be made memorable experience, fun filled this method probably is suited for children. In India where large classroom size heavy course load dominates the Education scenario, teachers remain restricted to finishing the course within the restricted time- frame. There is a tendency to attribute these two reasons to failure.

The present study hopes to be able to find a fun filled solution, which is result oriented, as well as motivating to both the teacher and the taught, the focus will remain on development of concepts but



the method employed will be entertaining, the teachers will be teaching but it would appear that she is playing with games. The tasks, which were repetitive drills will now become fun filled manipulations of the objects and numbers leading to understanding and comprehension.

Therefore, the researcher intends to perform an intervention study for improvement of performance in mathematics in children through Activity method.

### 1.17 Statement of the problem:

**“Effect of Activity Based Teaching Learning Strategies in Learning Mathematics: A Study”**

### 1.18 Operational Definitions:

**Effectiveness** - Effectiveness in this study may be defined as resulting state or condition as a consequence of using activity based teaching learning strategy.

**Traditional Method** - Methods and techniques of teaching, which are customarily used by regular teachers.

**Mathematics Achievement** - Scores obtained by the students in maths test paper is taken as achievement of students, the term is used more generally to describe performance in the maths subject.

**Activity based teaching learning strategies** - Activity method is a technique adopted by a teacher to emphasize his or her method of teaching through activity in which the students participate rigorously and bring about efficient learning experiences.

### 1.19 Objective

To study the effectiveness of activity based teaching learning strategies on achievements in mathematics of Class 7<sup>th</sup> students.

### 1.20 Hypothesis

There is no significant difference between achievement in mathematics taught by activity based teaching learning strategies and traditional teaching

### 1.21 Delimitations

- The study is limited to topic of congruence only.
- Lesson plans were developed in Hindi language only.
- School was selected from Bhopal city.
- The study was limited to only one school due to time constraint and lack of resources.
- The population was restricted to one class only.

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