A decorative graphic of a scroll with a black outline and a grey stippled texture. The scroll is partially unrolled, with the top corners and a vertical strip on the left side visible. The text is centered within the unrolled portion of the scroll.

CHAPTER-V
FINDINGS,
DISCUSSION,
SUMMARY AND
IMPLICATIONS

CHAPTER- V

FINDINGS, DISCUSSIONS, SUMMARY AND IMPLICATION

5.0.0 INTRODUCTION

In this chapter a brief summary of the study is presented under relevant headings. This chapter concludes with implications of the study and suggestions for Further, study.

5.1.0 FINDINGS OF THE STUDY

- 1) Teaching by constructivist approach was **effective** interms of students' achievement in mathematics when their scores of pre-test were taken as covarite.
- 2) The treatment produced a **significant effect** on the **achievement** of students' in mathematics when their scores of pre-test were taken as covariate.
- 3) There was **no significant effect of gender** on the achievement of students' in mathematics when their scores of pre-test were taken as covariate
- 4) There was **no interactional effect of treatment and gender** of students' in achievement in mathematics of class VII students' when their pre-test were taken as covariate.

5.2.0 DISCUSSION OF FINDINGS ON STUDENTS' MATHEMATICS ACHIEVEMENT

The results of the study indicated statistically significant change in mathematics achievement of VII grade students' who participated in the instruction based on 5-E learning cycle by using two way ANCOVA at the level of 0.05 significance level. In other words, there was a statistically significant adjusted mean difference between prior achievement and post achievement in the favour of post achievement.

This finding was consistent with Hiccan (2008) who reported that the 5-E learning cycle had a statistically significant effect on conceptual and procedural knowledge, Baser (2008) who reported that the students' who studied with the activities of 5-E model learnt better than the students' who studied with traditional teaching methods and Ozdal, Unlu, Catak and Sari (2006) who found that the students' understood Pi and could apply it to new situation when taught using the sequences of 5-E. When they compared the result of the present study with another study conducted in science, they also found that the 5-E learning cycle had a positive effect on achievement (e.g. Balci, 2005; Campbell, 2000; Cardak, Dikmenli & Saritas 2008; Demircioglu, Ozmen & Demircioglu 2004; Lee, 2003, Lord, 1999; Ozsevgec, Cepni & Bayri, 2007; Saygin, Atilboz and Salman, 2006; Whilder & Shuttleworth, 2004; Yildirim, Nas, Senel & Ayas, 2007).

The activities implemented in the present study could be one of the reasons for this development. The materials used helped to draw the student's' interest and attention throughout the lesson and increased their curiosity about the subjects in the lessons. Moreover, the materials used made the student's' learning easier and made them have fun.

The basic advantage was that the students' were not taught the mathematical facts directly; rather students' constructed the knowledge in the discussions with their peers in this constructivist instruction. While students' were sharing their ideas with their peers, the students' made an association between their pre-knowledge and present conceptions. The students' took part in constructing knowledge in an active manner. In every phase of 5-E learning cycle, the students' were engaged. The students' were allowed to create discussions with their classmates, and the discussion was in all phases to maximize the interaction of student-student and student-teacher. Concerning the analyses outcomes, we could reach a conclusion that a better understanding of mathematics subjects was provided by 5-E learning cycle.

5.3.0 NEED AND JUSTIFICATION OF THE STUDY

Our vision of excellent mathematical education is based on the twin premises that

All students' can learn mathematics and that

All students' need to learn mathematics

It is therefore, imperative that we offer mathematics education of the very highest quality to all children. Mathematics has the ability to confuse, frighten and frustrate learners of all ages. If a child has negative experience in mathematics, that experience would affect his/ her achievement towards mathematics during adulthood. The obvious question is whether student's' failure to learn mathematics can be ascribed to problems of curriculum, problem of teaching, or the student, or perhaps the combination of these (Carnine, 1997). There are many possible reasons as to why students' fail in mathematics.

As per NCF 2005, some problems in school Mathematics education are:

- A majority of children have a sense of fear and failure regarding Mathematics. Hence, they give up early on, and drop out of serious mathematical learning.
- The curriculum is disappointing not only to this non-participating majority, but also to the talented minority by offering them no challenges.
- Problems, exercises and methods of evaluation are mechanical and repetitive, with too much emphasis on computation. Areas of Mathematics such as spatial thinking are not developed enough in the curriculum.
- Teachers lack confidence, preparation and support.

NCF- 2005 has strongly recommended the use of constructivist approach to teaching learning in schools. In a recent study, constructivist instruction is found to be more effective than the direct instruction for achievers (Kroesbergen and

Van Luit, 2012); Kroesbergen and Van Luit, (2012); P. Zubair, M. Gayathri (2012); Vasan, Gafoor (2014); Kadem (2013). Therefore, there is a need to shift from the behavioural approach to constructivist approach of teaching.

Mathematics teaching should always be made an interesting one. Any learning aims at enabling the child to acquire the concepts. It depends on the context and situation in which the child learns. If the context and conditions are supportive it will create interest in learning. Activities should be performed by the students themselves; in this it will create a lot of difference. This will ultimately help in acquisition of knowledge in children. The mathematics teaching should involve a scientific method that will help the child to think critically and develop scientific skills in them.

The present study gives importance to students' achievement in mathematics and their reaction. Achievement in mathematics can measure the understanding of the learner. The study plans to find out whether children taught through constructivist approach has there any difference in their achievement and reaction compare to children taught through conventional method.

The present investigation is undertaken with an objective that the findings will help to stress the importance of constructivist approach in classroom teaching, especially in mathematics teaching, wherein the attempts for strengthening the constructivist approach can be supported.

5.4.0 STATEMENT OF THE PROBLEM

“Effectiveness Of Constructivist Approach On Mathematics Achievement Of Class VII Students”

5.4.0 OBJECTIVES OF THE STUDY

The present study has the following objectives:

- 1) To study the effectiveness of Constructivist Approach in terms of

- c) Achievement of the students' in mathematics and
 - d) Reaction of the students' towards the approach.
- 2) To study the effect of treatment, gender and their interaction on students' Achievement in mathematics by taking pre-test scores of mathematics as covariate.

5.5.0 HYPOTHESES OF THE STUDY

The following hypotheses are formulated for the present study:

- 1) There is no significant effect of treatment on the students' achievement in mathematics when their pre-test scores were taken as covariate.
- 2) There is no significant effect of gender on students' achievement in mathematics when their pre-test scores were taken as covariate.
- 3) There is no significant interaction of treatment and gender on students' achievement in mathematics when their pre-test scores were taken as covariate.

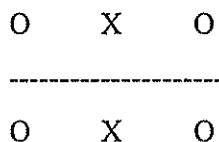
5.7.0 DELIMITATIONS OF THE STUDY

The present investigation was conducted under the following constraints:

- 1) Lesson plan was developed in English language.
- 2) The treatment of seven days was given
- 3) Only one unit of the mathematics was taught.
- 4) The textbook of CBSC syllabus was followed.
- 5) The school was selected only from the Bhopal city.

5.8.0 DESIGN OF THE STUDY

Non equivalent control group design:



5.9.0 SELECTION OF THE SAMPLE

While selecting the sample for the present study, the researcher adopted purposive sampling method. Then researcher gave pre-test for selected sample. Then by purposive sampling method researcher divided the class in two groups. One was experimental and other was control group. After dividing class in two groups researcher gave treatment to both the groups. For experimental group, researcher used constructivist approach (5-E Instruction model) and for control group traditional method.

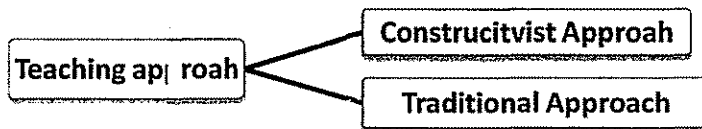
Table 5.7.0: Group-wise and Gender-wise Distribution of sample

Sr. No.	Group	Male	Female	Total
1	Experimental	13	10	23
2	Control	14	11	25
	Total	27	21	48

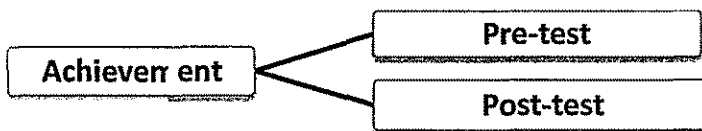
5.10.0 VARIABLES TO BE STUDIED

Following variables were studied:

Independent variable:



Dependent variable :



5.11.0 TOOLS USED FOR THE STUDY

The variables measured in the study were Achievement in mathematics. It was assessed with the achievement test developed by the Investigator.

5.11.1 Achievement test: For assessing the achievement in mathematics of students' in achievement test were developed by the investigator. The achievement test was related to the "Visualising Solid Shapes" which was covered during experimentation.

5.11.2 Reaction scale: To find out the reactions of the students' towards the approach the reaction scale was generated by the administered. The reaction scale consisted of 10 statements to be filled out by students'. For each items, there were five options that is strongly agree, agree, undecided, disagree and strongly disagree.

5.12.0 PROCEDURE FOR DATA COLLECTION

Out of 48 student's, 23 (13 male and 10 female) were in experimental group and remaining 25 (14 male and 11 female) were in control group. Firstly all the student of both experimental and control group were pre-tested by administering achievement test.

After completing the pre-testing of student's, the first lesson was taught to the experimental group through the material developed on the lines of 5-E model emphasizing on its five phases: Engagement, Exploration, Explanation, Elaboration and Evaluation. On the other hand, same lesson was taught to the control group through traditional method on the same day.

This procedure continued till all the lesson plan of the Unit "Visualising Solid Shapes" was completed. After completion of the unit, the post-test was administered to both the experimental and control group immediately.

5.13.0 STATISTICAL TECHNIQUES FOR DATA ANALYSIS

The obtained data were analyzed by percentage, Mean, Standard deviation and 2×2 Factorial design of ANCOVA of unequal cell size

5.14.0 EDUCATIONAL IMPLICATIONS OF THE STUDY

- It is found that constructivist approach is far more effective than the existing conventional method of teaching mathematics in fostering achievement. Here the learner constructs his own knowledge from prior knowledge.
- The study focuses on innovative and democratic classrooms where the child is given freedom to discover, ask questions, etc. A variety of learning experiences can be provided in this approach where the child learns to construct his own knowledge through 'hands-on-experience and so on.
- It lays emphasis on spiral curriculum where they continuously reflect on their earlier learning experiences, students' find their ideas gaining in complexity and power, and they develop increasingly strong ability to integrate new information to the already learnt knowledge. The teacher's role is to encourage this learning and reflection process.
- Pupil preferred group activities in which they had a scope to share their knowledge among peers and constructed and reconstructed their knowledge related to the concepts under the study.
- The study gives importance to learner- centeredness where children are given opportunity to explore and discover things on their own.

5.15.0 SUGGESTIONS FOR FURTHER, STUDY

- 1) The study in future can be conducted in other subjects.
- 2) The study can be conducted in testing big sample.
- 3) Research can be conducted in different locations.
- 4) Further, research can be conducted on students' of different age group.
- 5) Effect of constructivist approach can be evaluated on another variable also.

- 6) Effect of constructivist approach can be evaluated at different levels of Blooms Taxonomy.
- 7) Further, research can be done taking sample from Government and Private schools.
- 8) Other than 5-E model, different strategies like PQ4R strategy, IDEAL strategy, KWL strategy can be taken for study.