CHAPTER - 3

METHODOLOGY

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3.1.0 Introduction

The preceding chapter has given a broad overview of the researches investigating various constructivist-learning situations and to study the constructivist approach on achievement of class V student in geometry. On the basis of these research findings, certain generalization can be made which provided a rational of the present study. This chapter presents that methodology of the study.

The purpose of the educational research can not be completed without detailed design of investigation. Research mythology involves a systematic procedure, which starts from identification of problems to analyzing the obtained data. This chapter deals with...........

- Research design

- Sample

- Tool

- Variable

- Procedure of the Study.

3.2.0 Research Design

According to Borg & Gall (1983), "Research design refers to procedure used by the researcher to explore relationship between variable to from subject in to groups, administer the measure apply treatment conditions and analyze the data."

This study used experimental research design, the researches used single group pre test post test design to study the influence of constructivist approach on achievement of class V student in geometry.

The design of the study is specified in table below.

CHARACTERISTICS	EXPERIMENTAL GROUP
ENTRY STATUS	PRE TEST
TREATMENT	CONSTRUCTIVIST LEARNING SITUATIONS
TERMAINAL STATUS	POST TEST

3.3.0 Variables

The essential feature of experimental research is that the researcher deliberately manipulates controls or observes the condition or characteristics which determine the events in which researcher is interested. These condition or characteristics are called "Variables", According to Borg & Gall (1983) , " A variable can be through of as a qualitative expression of construct variable usually take the for of scores on a measuring instrument".

- Independent Variables

The independent variable are the conditions or characteristics that the researcher deliberately, manipulates and control to determine the events in which researcher is interested and its relationship to an observed phenomenon.

- Dependent Variables

The dependent variable is that factor which is observed and measured to determine the effect of independent variable. i.e. the factor that appears, disappears or varies, as the experimenter introduces removes or varies the independent variable.

- Background Variables

The scores/results of the study analyzed or interpreted through background variables. In this study,

Independent Variables   :   Constructivist Approach

Dependent Variables   :   Achievement in geometry

Background Variables   :   Gender, types of School

3.4.0 Sample

Data collection is an important part of the research. Data is collected from a selected sample and the sample is the representation of population. According to Borg and Gall (1983),

"The larger group we wish to learn is called population, where as the smaller group we actually study is called sample". Thus sample is a portion of the population which represents the population".

A good sample must be as nearly the representative of the entire population as possible and ideally it must provide the whole of the information about the population as from which the sample has been drawn.

In government School, there are two section of class V and each section has the strength of 60 students. The researches has taken 15 students from each section by adopting random sampling technique. so, the sample of government school consisted 30 students.

In private school, There are four section of class V. so, All the 40 students of that class consisted the sample.

3.4.1 Classification Of The Sample :

Thus , the total sample of 70 students was classified into sub-sample on the basis of criterion variable such as gender & types of school. The resultant classification of the final sample is summarized in table below :

Table: Classification of the final sample into sub-sample (n=70)

No	CRITERION VERIABLES	SUB-SAMPLE	NO. OF STUDENTS	TOTAL
1	GENDER	BOYS	35	70
		GIRLS	35	
2	TYPES OF SCHOOL	GOVT	30	70
		PRIVATE	40	

3.5.0 Research tools

A researcher requires many data- gathering tools or techniques. Each tool is suitable for the collection of certain type of information. One has to select from the available tools these which will provide data she seeks for testing hypothesis.

For the study, (influence of constructivist approach on students a constricting achievement test was prepared by researcher herself and administered on students of class V of the selected school.

3.5.1 Constructing Achievement Test

In education, the term " Achievement test" has been borrowed from medicine, where it is used to find out the root cause of a symptom such as fever, pain, etc. The achievement is followed by the appropriate treatment. The evaluation in the form of achievement testing could be both formative or summative evaluation. Achievement test is used to measure the achievement of the learners after a duration of the teaching learning process. The purpose of achievement test is to evaluate and accumulate data regarding the finding of the root cause. In education, achievement testing is a multi dimensional process that requires well planned efforts on the part of the teacher. When conducted in a systematic manner, it could help to identify the root cause of the problem and subsequently remove

subsequently remove learning impediments. As a result the learning could turn out to be more meaningful to the learners and satisfying to the teacher. A variety of strategies could be used to diagnose the learning impediments.

In this study, the researcher prepared a achievement test for identifying error. For constructing it, the items were framed on the basis of selected content of unit, "geometrical concept-Angle" of mathematics of class V.

Before constructing the test, the teachers of mathematics were consulted regarding the type of errors that student make under this topic.

The sub topics included in the test are given below :

1   Angle

2   Kinds of Angle

3   Degree measures of Angle

4   Pair of Angle

      a. Compliment Angle

      b. Supplement Angle

      c. Linear pair

      d. Opposite Angle

The test consisted in two form of questions like multiple choice, True/false. These test items covered the above contents of the units. The number, type and marks of the test items are shown in the table below :

Table: Types, Number and marks

S.No	Types of Questions	No of questions	Total Marks
1	Multiple choice	15	15
2	True/False	10	10
	Total	25	25

3.5.2. Pilot Testing of the Tool :

To analyze the items in terms of their clarity, time, duration and appropriateness, to find out the discriminating power of the items and difficulty index, the pilot study was under taken. Pilot study was conducted in order to establish the reliability, validity, and usability of the test items. The achievement test of consisting 25 items was administered to students of class V of government and private school. This school was different from school selected for the main study. The test scores were analyzed to find out questions which could not be adopted by the students. The students took 30 minuets to complete the test was modified as per the analysis with respect to the language. There was no limit of the time in the administration of test.

The test paper was also discussed with the teachers teaching the students of class V and the subject expert of the collage and according to there suggestions, the necessary changes were made in the questions.

3.5.3 Administration Of The Tool

The researcher personally met the principal of the school and get acquainted with the teachers concerned and established rapport with the students. Prior to administration, the students were explained about the pre test that they were supposed to attempt.

The significance of the test and necessary instructions were given to them. The students were made clear that this test is designed to help them and is not for grade and the whole process had nothing to with their school achievement. After this, researcher administered the test on the students. The study was conducted on both male and female students. They were given question paper and asked to answer the questions which they thought correct. Adequate time was given to the students to complete the test. The students were observed during the test.

The atmosphere created at the beginning and during the test situation and the rapport achieved between taster and taste throughout the examination are of importance in respect to both the quantitative and qualitative results obtained. The investigator had friendly contact with the tastes and was strict to the instructions given below.

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1   Read these questions carefully as quickly as possible.

2   This test will not attend your final result in any manner.

3   There is no time limit, but try to finish the test in 40 minutes.

4   You may find some of the questions difficult. In such a case do not waste time, go on to the next questions.

5   Don't talk while answering the question paper.

6   All the working may be shown as the marks are in mutual in the test.

After completion of the test, the test papers were collected.

Now the experimental group was given treatment of constructivist learning situation. After treatment, the experimental group was given post test (the some test administered as pre test. The same test was used as pre test as well as post test.

3.6.0 Treatment

After identification of the students and their weak spots in the given topic, the proper constructivist learning situation were arranged. Various situations to be performed which developed the constructivist approach on achievement of class V student in geometry were planned and arranged.

The constructivist learning situations was given to students of class V by the investigator   herself. In this programme, proper constructivist learning situations are used. The researches herself taught them through these situations for a short duration of time that if for seven.

3.7.0 Data Collection

After treating with constructivist learning situations again the achievement test was administered on sample for finding the achievement on class V student in geometry. The same   achievement test was administered as given in pre test and same instructions were given. The details of the both the tests are given in the table below :

Table : Showing the details of pretest and post- test treatment.

S.No	School	Pre test	Treatment	Post Test
1	Noble private school Junagadh	10 Jan. 2007	11 Jan to 19 Jan 2007	20 Jan 2007
2	Swami Vivekanand Public School	10 Jan 2007	11 Jan to 19 Jan2007	20 Jan 2007

At the end of the test, on introspection report of few students was taken. The researcher expressed gratitude to the teachers and students for their cooperation.

3.8.0 Statistics Used

The data so collected was subjected to analysis by using 't test'. The analysis was done with a view to study influence of constructivist approach on students achievement. For the analysis and interpretations of the data raw scores were classified and tabulated into different categories.

In this study, the researches tried to study the achievement in mathematics of the students by using constructivist learning situations so descriptive statistics like mean, standard deviation and some quantitative analysis like 't' test were used. The significance of difference among the categories were determined by calculating 't' value.

3.9.0 Summary

This chapter has been devoted to description of experimental design, variables, sampling, tools, data collection and statistical treatment.