CHAPTER- III

METHODOLOGY

3.1 Introduction

This chapter deals with the methodology employed to achieve the objectives of the study mentioned in chapter one. In this study the steps involved were Research design, population, selection of the sample, variables, development of tools, preparation of material for teaching students through cooperative learning methods, pilot testing of the tool and method of data analysis.

Table 3.1(a) Control

Characteristics	Group	Experimental Gp
Nature Situation	Control teaching	Experimental teaching
Entry Status	Pre test	Pre test
Treatment	Traditional teaching	Cooperative learning
Terminal	Post-test	Post-test

3.2 Research Design

According to Borg &Gall(1983),"research design refers to the procedure used by the researcher to explore relationships between variables to form subjects into groups, administer the measures, apply treatment conditions and analyze the data"(P.351). This study used Experimental research design, As this research was an experimental research, the investigator used pretest control group design to find out the effect of cooperative learning strategy in mathematics among students of class VII.

Two groups of students were selected for the studies. One of the groups called experimental group was exposed to cooperative learning stratagy and other one control groups was taught by the conventional method of teaching.

3.3 Population

Frankel(73) The group to which the researcher would like the results of a study to be generalizable is called population. It includes all individuals with certain specified characteristics(P.554)

In this study strictly speaking the students of one school from the population for the study. The researcher took all the students of class VII.

3.4 Sample

According to Borg&Gall(1983),"The larger group we wish to learn is called a population, whereas the smaller group we actually study is called sample"(P.238). Thus sample is a portion of the population which represents the population in question.

The most scientific technique for selecting the sample is the random selection technique in which each individual has a chance to be included inthe sample. However this technique could not be used in selection of the sample on account of limited number of students in two sections of the school under investigation. The researcher had used purposive sampling in selecting the sample for this study for the reasons mentioned earlier. Therefore purposive sampling was used in selecting the sample for this study.

Kerlinger(79) stated that purposive sampling is charecteised by theuse of judgement and a deliberate effort to obtain representatives samples by including presumably typical areas on groups in the sample(P.129)

Effort was made to select the school for this study using randon selection technique but it could not be used for various reasons. For instance some of the Govt. schools. had the problem of absenreeism of students where as private school generally select students which had least possible of absenteeism and purposive sampling technique was used in selection of the school for this study

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Sample:

The subjects of the study were the students of class VII. The sample consisted of 64 students, 32 for experimental group and 32 for control group. There were 16 boys and 16 girls in both the experimental and the control group.

Table 3.4(a) Sample of Study

Treatment Group	Class size	Final sample size
Control Group	32	32
Experimental Group	32	32

The sample included 16 boys and16 girls of grade VII. Demographically the sample elements hailed from middle class families. Socio economic status of samples were approximately same.

3.5 Variables

#According to Borg&Gall(1983),"A variable can be thought of as a quantitative expression of a construct. Variables usually take the form of scores on a measuring instruement"(P.17).

#According to Kerlinger, :Variable is a property that takes on different values is something that varies.... is a symbol to which numerals for values are assigned(P.32).

In this study the following were the independent and dependent variables.
#Independent Variable was gender.
#Dependent variable was cooperative learning.

According to Best(77) variable are the conditions or characteristics that the experimenter manipulates controls or observes. The independent variables are the conditions or characteristics that the experimenter manipulate in his or her attempt to ascertain their relationship to observed phenomena. The depend-

ent variables are the conditions or characteirstics that appear disappear, or change as the experimenter introduces, removes or changes independent varaible(P.59-60)

Some variables called extraneous variables were not directly under investigation, but can effect the study if not controlled properly. These extraneous variables were discipline, dist·urance and anxiety.

To control these extraneous variables the investigator took following steps:

#Discipline: Discipline can pose a serious problem to the study if it is not maintained properly. Initially, there was curiosity among the students, regarding the new approach of learning and about the investigator whom they saw for the first time. The investigator explained thepurpose if this research and its importance in their learning process and the students were discipli ned and cooperated in this research work.

#Disturbance:Occassionally, when some teachers were not present in other classes the students of those classes were making a lot of noise which could disturb the learning process. To control this variable the investigator requested the headmaster of the school to help in controlling noise of the students and he was very cooperative in this matter.

#Anxiety:Anxiety which may be there for differnet reasons can affect the learning process of the students. Anxiety may be due to new learning approach or on account of some family problems. To control this extraneous varable the investigator used to talk to talk to students regularly and tried to solve their problems if possible. Research studies in the west have revealed that taking helps reduce stress. The investigator also realised that talking to students helped them to feel comfortable.

3.6Tools

Tool is a device through which data is collectd. It is always better to use standardized tools or instruements because their reliabilty and validity is established by the test makers in order to find a suitable standardized achievement test various boks were searched, but no suitable achievement tests but they could not be used for the purpose of this research. In addition to books other stand-

ardized achievement tests were also examined and were found unsuitable for this study. Therefore th investigator decided to develop a tool in accordance with the needs of this study.

The tool used for the present study was achievement test in Geometry. The concept of triangle was selected for making different test items. Pos tively worded and negatively worked items wer included in the test.

While planning about the test items in the tool Bloom's Taxonomy of cognitive domaini.e, knowledge, understanding, application and skill kept in mind. Accordingly the investigator prepared the testitems. The items were discussed with the head master, teachers of the school in which study was conducted and the supervisor to establish the validity of achievement test.

3.7 Pilot Testing of the Tool

To analyse the items interms of their clarity, time duration and appropriateness to find out the discriminating power the items and difficulty index the pilot study was undertaken. Pilot study was conducted in order to establish the reliability and validity of the test items. The achievement test consisting of 40 items was administered to 20 students of class VII of one school. This school was different fron one selected for the main study. The test scores were analysed to find out questions which could not be attempted by the students. The students took 45 minutes to complete the test and therfore it was decided that 45 minutes time could be giben to students for completing the test in the main study.

3.8 Administration of Test

Before starting the study the students were explained about the pretest that they wer supposed to take. The experimental group was exposed to cooperative learning strategy. The control group was taught by traditional method i.e, through lecture mehtod. They were given achievement test and asked to tick the answer which they thought correct. Clear insrtuctions weregiven to students as

how to perform the test. Pretest to experimental and control groups was conducted seperately. After completing the test, the test papers were collected.

The experimental group was given treatment of cooperative learning approach whereas control group was taught through lecture mehtod. After completion of the treatment both the Experimental and control group wer given post test(the same last administered as pretest) to measure learning gains if any.

3.9 Methods of data Analysis

The achievement test of each individual was scored. After that the data so collected was subjected to analysis by computing mean, standard deviation and gain score. The significance levelfor testing the hypothesis given in chapter one.