

CHAPTER – IV

METHODOLOGY OF INVESTIGATION

4.1 Introduction

The purpose of this study was to examine the effect of Cooperative Learning on academic achievement of the students of Standard VIII in teaching Science. In order to test relative effect of independent variable, i.e. instructional paradigm (Cooperative Learning), the choice for most suitable design experimental research was used.

4.2 Research Method

The research is Experimental in nature. Experimental Research is generally recognized as the most appropriate method for drawing causal conclusion about instructional intervention, for example, which instructional method is more effective for which type of students under which conditions. Experimental research may be able to tell that one method of instruction is better than conventional practice. Experimental researcher should be sensitive to this limitation, by using complementary methods in addition to experiments that provide new kinds of evidence. It includes a hypothesis, a variable that can be measured, calculated and compared. Most importantly, experimental research is completed in a controlled environment. The researcher collects data and results will either support or reject the hypothesis. This method of research is also referred to as hypothesis testing.

4.3 Research Design

The present experimental study has been conducted utilizing two group post test, delayed post test design. It can be illustrated as under-

C X O₁ O₂

E X O₁ O₂

C – Controlled group

O₁ – Post test

E – Experimental group

O₂ – Delayed post test

X – Treatment

4.4 Population of the Study

The population of the present study comprised of all the students studying in standard VIII in CBSE schools of Anand District.

4.5 Sample and Sampling Procedure

The sample of the present study comprised of 30 students in control group and 30 students in experimental group of standard VIII of The H.M.Patel English Medium School affiliated to CBSE. In control group as well as in experimental group 13 were girls and 17 were boys. To select the representative sample for the present study, convenient sampling method was used.

Table 4.1 Sample of the Study

Name of the School	Groups	Number of Girls	Number of Boys	Total Number of Students
The H.M.Patel English Medium School, Dharmaj	Control Group	13	17	30
	Experimental Group	13	17	30
	TOTAL	26	34	60

4.6 Tools

Research tools play a vital role in any worthwhile study, as it is the significant factor in procuring the sound data which in turn helps in arriving at database conclusions about the study in hand. Self constructed tools namely Achievement Test and Feedback Form were used as tools in the present study for the purpose of data collection.

4.6.1 Achievement Test

For measuring the achievement of two groups the researcher prepared an Achievement Test which was used as post test and delayed post test in the present study. The test was prepared by the researcher keeping in mind the content of the selected chapter. The post test was divided in five sessions. After teaching the content in each session, researcher conducted a test. The total weightage of the test was of 50 marks. In all the time allotted for the post test was 50 min., 10 min for each session. The test paper objective and short answer type questions. The test was given to the experts in the field of Education for their comments and suggestions. As per the valuable guidance the test was modified and finalized. **(SEE APPENDIX-A)**

4.6.2 Feedback Form

The investigator prepared feedback form for the students to know about the views of the students on ‘Cooperative Learning’. Investigator took into consideration different aspects like group activities, videos, graphics and synchronization of audio-visual aids and methods adopted in Cooperative Learning. The feedback form was prepared in consultation with the guide and then modified according to the suggestions given by experts. **(SEE APPENDIX-B)**

4.7 Plan and Procedure

The planning and procedure of the conduction of the experimental programme can be divided into the following three phases-

4.7.1 Pre-Implementation Phase

In the very first phase, researcher met the Science teacher of the selected school and discussed the syllabus of standard VIII. As per the syllabus to be covered in the school, the teacher gave the chapter titled Transport of Substances in Animals and Plants to be taken up by the researcher. Then the researcher discussed with mentor and collected basic and very useful information about how to prepare lesson plans based on cooperative learning and which type of activities would be included in lesson plans. After this the lesson plans were prepared according to the STAD

strategy. For preparing effective lesson plans researcher had taken help of mentor and also collected the data from various resources to give detailed knowledge to learners. After preparation, lesson plans was sent to the experts for the suggestions and views. The necessary suggestions were incorporated and the final module of lesson plans was implemented on the students. (SEE APPENDIX-C)

4.7.2 Implementation Phase

In this phase, researcher had gone to the decided school to teach the selected chapter through Cooperative learning technique. Implementation of the lesson plans had taken approximately seven days. Each session of 60 minute was taken up by the researcher to implement lesson plans. After each teaching session through Cooperative learning, researcher had taken post test and after completion of the module after approximately 15 days, the researcher administered the same test, this time compiled together to the students. This was considered as the delayed post test. This was done to know about the retention and permanence of learning among learners. The day wise schedule of the implementation phase has been discussed as under-

Day-1

On the first day, the researcher had gone to the school and tried to build a rapport with students. Researcher gave a group task to students so that group learning atmosphere could be established in the class. The task was in the form of a game which was about identifying the jumbled words related to science concepts. Each group had to identify the correct word, discuss about it in a group and presents their views /information before the rest of the class.

Day 2

On the second day, researcher took a session to teach the first sub topic i.e. Transportation in Unicellular Organisms and gave a group activity. The activity was about clarifying the concepts of unicellular organisms. Researcher provided handouts of taught concept having some loopholes; students were instructed to discuss it in a group and present their views. Researcher asked the students to play the roles such as Time keeper, Question Presenter, Record Keeper and Leader to the students.

Day 3

On the third day, researcher administered a test of 10 marks based on previously taught content and also revised it to link it to the present content. On this day again the researcher taught about the Transportation in Multicellular Organisms through power point presentation. Group activity was given to the students and the activity was about identifying the different types of blood cells and their functions. The roles assigned were the same as of first day.

Day 4

On the fourth day, researcher again administered a test of 10 marks of taught content on third day and also revised it for the students. On the fourth day researcher taught the subtopic i.e. Heart. Researcher showed the video clip on functioning of Heart. Group activity was also assigned to the students. Activity was to identify different parts of functioning of Heart and state their functions in blood circulation.

Day 5

On the fifth day again researcher administered a test of 10 marks on Human Excretory System and evaluated the understanding level of students. On this day researcher taught the last sub topic of chapter i.e. “Transpiration and Excretion in Plants”. Pictures were given in a group to students about the Transportation in Plant. Students had to write about aims of the experiment depicted in the picture, material required and conclusion derived from the pictures.

Day 6

On the sixth day researcher again administered a test of 10 marks based on Functioning of Heart and revised it to make the concept clearer. On same day researcher took a session to teach the sub topic “Excretory System of Human”. To teach this topic researcher showed an animated video of Human Excretory System. As a group activity researcher prepared some Cue Cards having questions on taught concept and asks students to question each other in group until all the students gave correct answers. The roles were assigned to the students as that of interviewer, interviewee, recorder and timekeeper.

Day 7

On the last day researcher administered the last test of 10 marks on Transpiration and Excretion of Plant and revised the whole chapter. Researcher also distributed the Feedback Form to know the views of students about Cooperative Learning. The same schedule was followed for the control group as well.

In detail handouts for the whole chapter was prepared by the researcher and given to the students. **(SEE APPENDIX-D)**

4.7.3 Post Implementation Phase

In this phase once again the researcher went to the school after fifteen days and administered the delayed post test of 50 marks which was the compilation of all the five tests administered earlier.

4.8 Data Analysis

Data was analysed by using Statistical Method. Post test and Delayed post test scores were analysed by using the t- test. For Feedback Analysis Percentage (%) Score were calculated.

The detailed analysis and interpretation of the data have been presented in the next chapter.