



CHAPTER-IV
DATA ANALYSIS AND
INTERPRETATION

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4.1. INTRODUCTION

This chapter deals with analysis and interpretation of the data collected. The collected data was subjected to appropriate statistical procedures. Based on these results the hypotheses are accepted or rejected. What is thus done in this chapter is analysing the data, testing the hypotheses and then interpreting the results, that is taking decisions regarding the rejection or acceptance of the hypotheses.

4.2. SCHEME OF ANALYSIS

The numerical data gathered by the investigator from the experimental and the control group was organised, analysed and interpreted using various statistical methods. Statistical data describes group behaviour or group characteristics abstracted from a number of individual observations that are combined to make generalizations possible.

In the present study the data was collected from 48 students of class-VII. Among them 24 children were classified as the control group and another 24 children were classified as the experimental group. Their performances were also compared to find the effectiveness of cooperative learning.

The collected data was analysed by employing statistical methods to arrive at meaningful conclusions. The data collected was subjected to appropriate statistical procedure to test the hypotheses with which the study was initiated.

Descriptive Analysis was done. It provided information about the nature of a particular group. To compare the two groups of children who were taught in two different methods in terms of their achievement, mean and standard deviations were calculated.

Researchers find it important to determine whether the difference between two means is known as t-test. In the present investigation, T-test was used to test the significance of the difference between the means of two samples taught by different methods. The details of the statistical technique employed for the analysis of data, result obtained through the analysis regarding the acceptance and rejection of hypotheses is presented below.

4.2.1. Testing of Hypotheses

The Hypotheses formulated was tested for significant relationship that existed in the mean difference in scores of the children taught by activity-based teaching learning strategies and traditional approach.

4.2.2. Statistical Presentation of Data

Objective-1: To study the effectiveness of co-operative learning on academic achievement in science of class VII students.

Hyp. 1: There is no significant difference in the academic achievement in science of class-VII students.

Table No. 4.1: Computation of 't' value at the degree of freedom 46 with the mean scores of the students of Experimental group and Control Group.

Group	No. of Students	Mean Scores	Standard Deviation	df	't' Value	d-value	Remarks
Experimental	24	24.42	2.518	46	5.218	1.507	P<0.05
Control	24	19.54	3.822				

Interpretation

As the calculated value of 't' i.e., 5.218 is greater than table value at 0.05 level of significance for degree of freedom 46 i.e., 2.020, therefore, 't' value is **significant** and null hypothesis is **rejected**. Thus, it can be stated that there is a **significant difference** in the achievement scores of two groups taught by Cooperative Learning based teaching learning strategy and constructivist method respectively.

The table indicates that the 't' critical value is significant at 0.05 level with the degree of freedom 46. It indicates that the mean scores of students taught through Cooperative Learning based teaching learning strategies differ significantly from those taught through constructivist method of teaching. There is a significant statistical difference between experimental and the control group students' scores of the post-test in favor of the experimental group taught through Cooperative Learning based teaching. The mean score of the students in the experimental group is 24.42, which is higher than those of

the mean score of the students in the control group i.e., 19.54. The value of effect size ($d = 1.507$) indicates a large effect size. Thus, the cooperative learning-based teaching learning strategies has a large effect towards the constructivist method of teaching learning process.

Conclusion

It is evident from the table that experimental group has mean scores more than that of control group. Therefore, it can be concluded that Cooperative Learning based teaching learning strategies are better than the constructivist approach.

Objective-2: To study the effectiveness of co-operative learning on academic achievement in science of class VII on the basis of gender.

Hyp. 2: There is no significant difference in the academic achievement in science of class-VII students on the basis of gender.

Table No.4.2: Computation of 't' value at the degree of freedom 46 with the mean scores of the students of Experimental group and Control Group on the basis of gender.

Genders	No. of Students	Mean Scores	Standard Deviation	df	't' Value	Remarks
Male	25	21.88	3.644	46	0.175	p>0.05
Female	23	22.09	4.512			

Interpretation

As the calculated value of 't' i.e., 0.175 is less than table value at 0.05 level of significance for degree of freedom 46 i.e., 2.020, therefore, 't' value is **not significant** and null hypothesis is **accepted**. Thus, it can be stated that there is **no significant difference** in the achievement scores on the basis of gender taught by Cooperative Learning based teaching learning strategy and constructivist method respectively. The mean score of the male students is 21.88, which is little lower than those of the mean score of the female students in the control group i.e., 22.09.

Conclusion

It is evident from the table that experimental group has mean scores less than that of control group. Therefore, it is concluded that Cooperative Learning based teaching learning strategy does not affect on the basis of gender.

4.3. DISCUSSION AND CONCLUSION

The cooperative learning-based teaching learning strategy is found to be more effective in terms of achievements in science of class-VII. The result of the present investigation is an outcome of student-centred approach inherited in the cooperative learning-based teaching-learning strategies. This strategy is based on the constructivist approach which provide opportunities to the students to think freely and openly. The students interpreted the multiple prospective of a concept. This factor inherits in the students might have been enabling them to retain and reproduce large amount of information than those who studied through the only constructivist method of teaching. The students were motivated and stimulated to retain and improvement in their achievements. The element of novelty (new and different approach) might have also contributed towards the present result.

The cooperative learning-based teaching learning strategy activities, opportunities tools and environment were provided to encourage meta-cognition, self-analysis and reflection. Demonstration and pictures and live presentation of the processes and things involved including different activities conducted in classroom by the students aroused interest and motivation to study Science. Therefore, it is concluded that using activities and involving the students themselves actively to understand the lessons may result in increasing their creativity and scientific temper. In this approach of teaching problem solving, higher order thinking skills and deep understanding were emphasized.