CHAPTER-4

DATA ANALYSIS AND INTERPRETATION

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4.0.0 Prologue

In the previous chapter the methodology adopted for the study was presented. The present chapter is devoted to analysis and interpretation of data.

Data analysis is the most important phase in any research process. It is considered to be important step and heart of the research in research work. Data is collected and analysed to answer questions, test hypotheses or disprove theories. Data analysis summarizes collected data. It is the process of systematically applying statistical techniques and logical reasoning to explain, illustrate, summarize, revise, inspect, evaluate, transform, and remodel the data, with a view to reach a certain conclusion for a given situation or a problem. It provides a meaningful base to crucial decisions. The researcher studies the collected data from different angles and explores new facts. Once the analysis has been made, the researcher proceeds to the stage of interpretation of results. Interpretation needs careful, logical and critical examination of the results obtained from the analysis. Each section of the analysis has been supported with tables and graphs for better understanding and visualization.

This chapter analyses and interprets the data related to different objectives of the present study using Quantitative data analysis which is associated with finding evidence to either support or reject the hypotheses and also the conclusions are drawn. The analysis aims to assess if there is a notable difference in students' responses before and after the intervention, as well as to evaluate how much the mathematics kit impacted their motivation and understanding of mathematical concepts. The details of the testing of hypotheses and their interpretation would be discussed in the following pages.

This chapter ultimately provides the foundation for discussion, conclusions.

4.1.0 Objective: "To study the effect of teaching-learning through Mathematics kit on the Attitude towards Mathematics among class 8th students by comparing attitude before and after Intervention".

To achieve above objective, data was collected through a standardized tool—Attitude Scale in Mathematics developed by Dr. Ali Imam and Dr. Tahira Khatoon. The scale is a well-validated instrument consisting of statements related to various dimensions of students' attitude. The interpretation of the data was done using descriptive statistics, which includes Mean, Standard Deviation, and graphical representation which has been presented in tables and figures. The inferential statistics't' test was used.

4.1.1 Analysis and Interpretation of Objective using Descriptive Statistics

The descriptive statistics used for analysis and interpretation of objective one includes mean, standard deviation and graphical representation, which has been presented in the form of table and figure.

Table 4.1: Mean of Pre-test and Post-test Attitude Scores of the students towards Mathematics

Tests	N	Mean	S.D.
Pre-test	40	66.85	5.08
Post-test	40	79.75	5.09

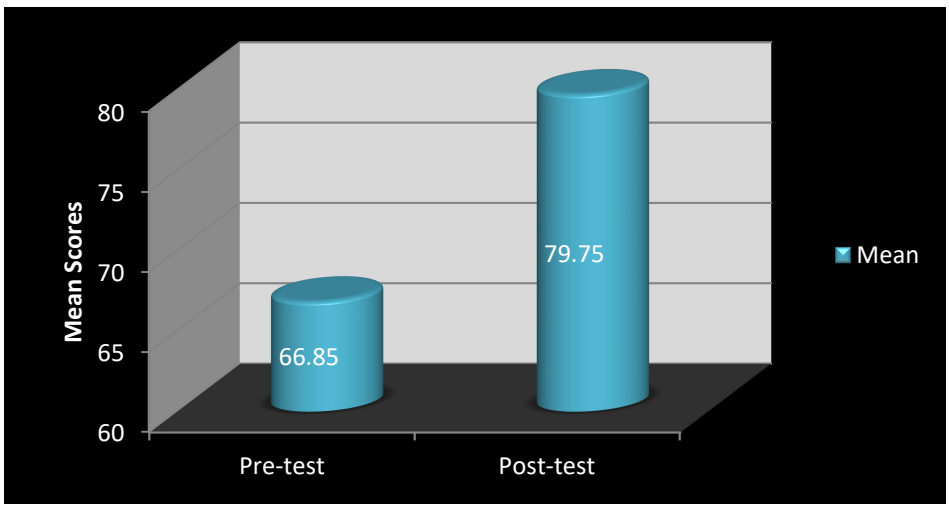

Figure 4.1: Graph Representing the Pre-test and Post-test Attitude Scores of the students towards Mathematics

From the Table 4.1 and Figure 4.1 it is observed that the mean scores of students on Attitude towards Mathematics are higher in Post-test than Pre-test score.

This shows that students has performed better in Post-test than Pre-test. The height difference between two bars shows the difference between the scores before and after the Intervention. The significance of the difference was tested using the inferential statistics.

4.1.2 Analysis and Interpretation of Objective using Inferential Statistics

A null hypothesis was formulated in relation to objective. Inferential statistics was used to analyze and interpret the null hypothesis. The‘t’ value was calculated to find out the significant difference in the effect of using Mathematics kit on Attitude towards Mathematics among the students of class 8^{th}. In order to test the null hypothesis H_0 a hypothesis is formulated as given below:

H_0: There is no significant difference in the Attitude towards Mathematics of class 8^{th} students before and after being taught using Mathematics kit

The‘t’ test was used to test the null hypothesis and the results are given in table 4.2

Table 4.2:‘t’ Test Details of the Pre-test and Post-test Attitude Scores of the students towards Mathematics

Tests	N	Mean	S.D.	‘t” value	df	Level of significance
Pre-test	40	66.85	5.08	11.35	39	Significant at 0.05 level
Post-test	40	79.75	5.09			

From the Table 4.2 it is observed that the obtained‘t’ value is 11.35 which is more than the theoretical value 2.02 with degree of freedom 39 at 0.05 level of significance. Hence the null hypothesis was rejected. i.e. There is significant difference in the Attitude towards Mathematics of class 8^{th} students before and after being taught using

Mathematics kit. Further as the mean of the Pre-test Attitude Score is 66.85 and the mean of the Post-test Attitude Score is 79.75, the difference is in favour of the Post-test Attitude Score of Students. Hence it can be concluded that the Attitude towards Mathematics among students is higher in Post-test than Pre-test after the Intervention.

4.1.3 Conclusion

The present study shows that students have developed significantly high positive Attitude towards Mathematics before and after the Intervention. Therefore, from the above result it can be concluded that, Mathematics kit based learning is effective in developing Attitude towards Mathematics among the Students of class 8th.

4.2.0 Objective: "To study the effect of teaching-learning through Mathematics kit on the Interest towards mathematics among class 8th Students by comparing Interest before and after the Intervention".

To achieve above objective, data was collected through a standardized tool- the Mathematics Interest Inventory Test developed by L.N. Dubey was used as a standardized tool. The inventory consists of a series of items designed to measure different aspects of interest. The interpretation of the data was done using descriptive statistics, which includes Mean, Standard Deviation, and graphical representation which has been presented in the form of table and graph.

4.2.1 Analysis and Interpretation of Objective using Descriptive Statistics

The descriptive statistics used for analysis and interpretation of objective two includes mean, standard deviation and graphical representation, which has been presented in the form of table and figure.

Table 4.3: Mean of pre-test & post-test score of the students on Interest towards Mathematics

Tests	N	Mean	S.D.
Pre-test	40	23.85	3.641
Post-test	40	28.95	2.669

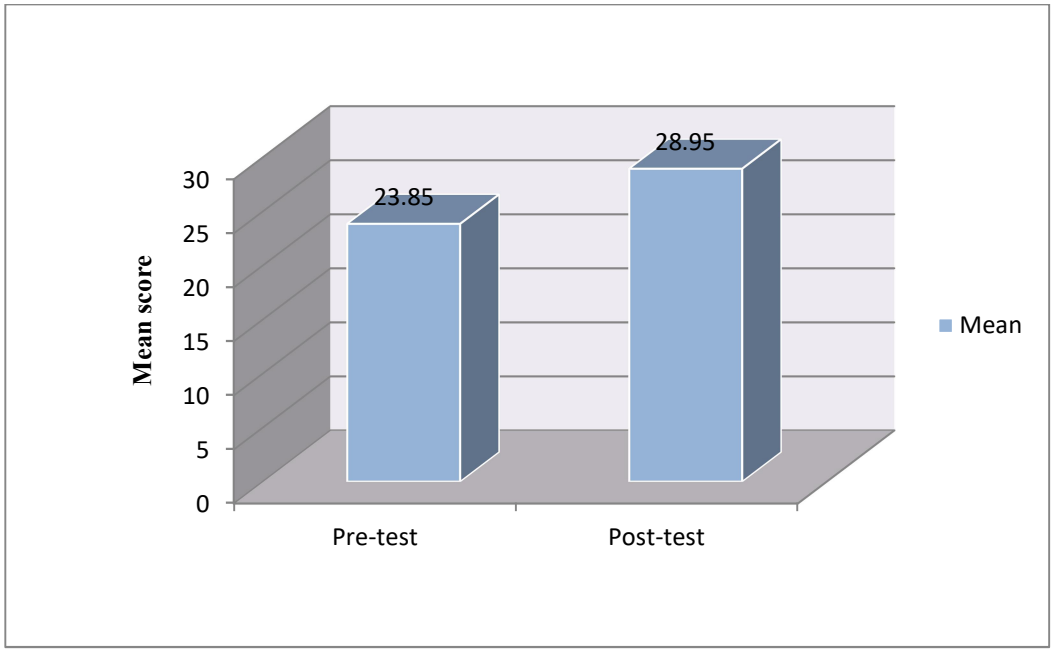

Figure 4.2: Graph Representing the Mean scores of students on Interest towards Mathematics

From the Table 4.3 and Figure 4.2 it is observed that the mean scores of Interest towards Mathematics of class 8th students are higher than in post-test scores as compared to pre-test scores.

This shows that students has performed better in post-test score than in pre-test score. The height difference between two bars shows the difference between the scores. The significance of the difference was tested using the inferential statistics.

4.2.2 Analysis and Interpretation of Objective using Inferential Statistics

A null hypothesis was formulated in relation to objective. Inferential statistics was used to analyze and interpret the null hypothesis. The‘t’ value was calculated to find out the significant difference in the effect of using Mathematics kit on the Interest in Mathematics among the students of Standard Eight. In order to test the null hypothesis $\mathbf{H_0}$, an hypothesis was formulated as given below.

H_0: There is no significant difference in the Interest towards Mathematics of class 8th students before and after being taught using Mathematics kit.

The‘t’ test was used to test the null hypothesis and the results are given in Table 4.4

Table 4.4:'t' Test Detail of the Pre-test and Post-test scores of the students on Interest towards Mathematics

Test	N	Mean	S.D.	df	t	Result
Pre-test	40	23.85	3.641	39	10.206	Significant at 0.05 level
Post-test	40	28.95	2.669			

From the Table 4.4 it is observed that the obtained't' value is 10.206 which is more than the theoretical value 2.02. Hence the null hypothesis was rejected. i.e. There is significant difference in the Interest towards Mathematics of class 8th students before and after being taught using Mathematics kit Further as the mean of the pre-test is 23.85 and the mean of the post-test is 28.95, the difference is in favour of the post-test mean scores of the students. Hence it can be concluded that the Interest towards Mathematics among of students is higher in post-test score than pre-test scores.

Conclusion

The present study shows that the students has performed better in post-test as compared to pre-test before and after the intervention. Therefore, from the above result it can be concluded that, NCERT Mathematics kit has significantly improved Interest towards Mathematics among class 8th students.

4.3.0 Objective: "To study the effect of teaching-learning through Mathematics kit on Achievement in Mathematics among class 8th class students by comparing Achievement before and after the Intervention".

To achieve above objective, data was collected through a self-made Achievement Test in Mathematics developed by the researcher. The test was designed in alignment with the topics covered during the intervention**.** The interpretation of the data was done using descriptive statistics, which includes Mean, Standard Deviation, and graphical representation which has been presented in the form of table and graph.

4.3.1 Analysis and Interpretation of Objective using Descriptive Statistics

The descriptive statistics used for analysis and interpretation of objective three includes mean, standard deviation and graphical representation, which has been presented in the form of table and figure

Table 4.5: Mean of Pre-test and Post-test scores on the Achievement in Mathematics of the students

Test	N	MM	Mean	S.D.
Pre-test	40	30	17.35	2.9
Post-test	40	30	22.28	3.0

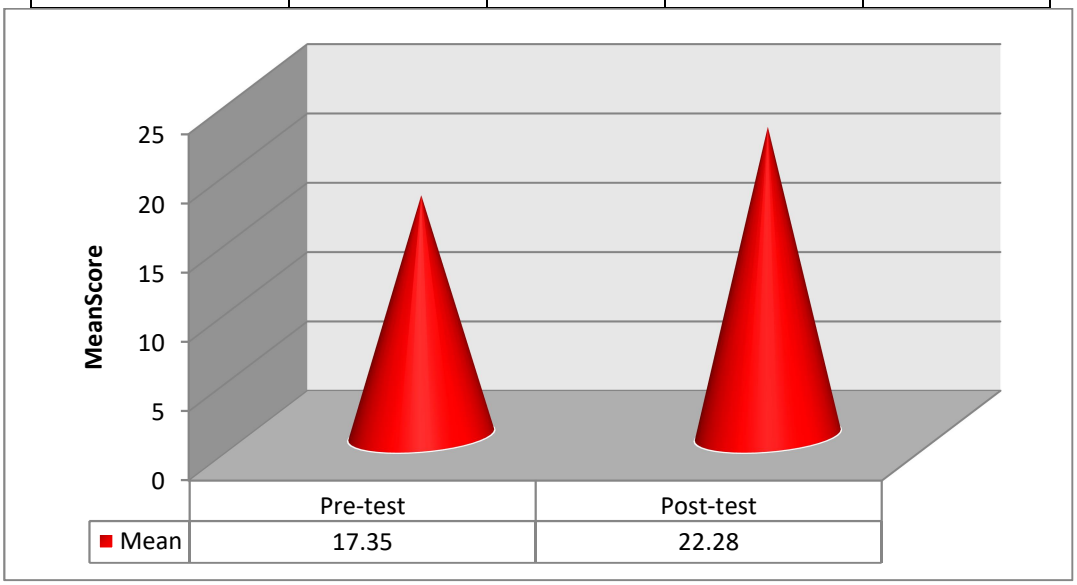

Figure 4.3: Graph Representing Mean of Pre-test and Post-test score on the Achievement in Mathematics of the students

From the Table 4.5 and Figure 4.3 it is observed that the mean scores on Achievement in Mathematics are higher in Post-test than Pre-test scores of the students.

This shows that students has performed better in Post-test than Pre-test. The height difference between two bars shows the difference between the mean scores of the two tests. The significance of the difference was tested using the inferential statistics.

4.3.2 Analysis and Interpretation of Objective using Inferential Statistics

A null hypothesis was formulated in relation to objective. Inferential statistics was used to analyze and interpret the null hypothesis. The‘t’ value was calculated to find out the significant difference in the effect of Mathematics kit on Achievement in Mathematics among the students of class 8^{th}. In order to test the null hypothesis H_0, a hypothesis was formulated as given below.

H_0: There is no significant difference in the Achievement in Mathematics of class 8^{th} before and after being taught through Mathematics kit.

The‘t’ test was used to test the null hypothesis and the results are given in Table 4.6

Table 4.6:‘t’ test of the Pre-test and Post-test scores of the students on Achievement in Mathematics

Test	Mean	S.D.	df	t	Result
Pre-test	17.35	2.9	39	7.47	Significant at 0.05 level
Post-test	22.28	3			

From the Table 4.6 it is observed that the obtained‘t’ value 7.47 is greater than the theoretical value 2.02. Hence the null hypothesis was rejected. i.e. There is no significant difference in the Achievement in Mathematics of class 8^{th} before and after being taught through Mathematics kit. Further as the mean of the pre-test score is 17.35 and the mean of the post-test score is 22.28, the difference is in favour of post-test score of the students. Hence it can be concluded that the Achievement in Mathematics of students is higher in Post-test score than Pre-test Scores.

4.3.3 Conclusion

The present study shows that students have significantly improved their Achievement in Mathematics after the intervention. Therefore, from the above result it can be concluded that, Mathematics kit is effective on Achievement in Mathematics among the Students of class 8^{th}.