

CHAPTER - IV

RESULTS AND DISCUSSION

Research yields important results when data analysis is conducted with precision. The gathered data has to be sorted and employed using suitable statistical techniques in tune with the framed objectives to reach a successful conclusion for the study. This chapter provides a comprehensive examination of the data amassed during the study.

The data obtained is presented in two different sections. Section A deals with the analysis of data related to VIII-grade students, while Section B addresses the data obtained for III-grade students.

Section A

4.1 Analysis of the Data obtained for VIII grade students.

A preliminary analysis was conducted for the pre-intervention and post-intervention scores obtained for achievement in mathematics and attitude towards learning mathematics of VIII grade students. The result of the analysis is elaborated in the subsequent sections.

Preliminary analysis of the data obtained for VIII grade students taught through conventional teaching methods.

The results of the achievement test and attitude test administered to VIII-grade students analyzed preliminarily and are discussed in the subsequent section.

4.1.1 Preliminary analysis of the scores of the Achievement test in Mathematics of the students taught through conventional teaching methods.

Table 4.1 presents the descriptive statistics of the pre-intervention and post-intervention results of achievement in Mathematics of the students taught through conventional teaching methods.

Table 4.1

Summary of the Descriptive Statistics of the Scores of Achievement Test on Mathematics of the Control Group (VIII grade)

Test	No. of students	Mean	Median	Mode	Kurtosis	Skewness	Standard Deviation
Pre-test	80	15.91	15.50	12.00	-0.167	0.049	4.44
Post-test	80	22.02	22.00	22.00	-0.677	0.012	4.75

The mean, median, and mode obtained for pre-intervention test scores are 15.91, 15.50, and 12.00 respectively. The standard deviation of the distribution is 4.44 and the skewness and kurtosis were found to be 0.049 and -0.167 respectively.

The statistical indices for the post-intervention test score for the achievement test in mathematics of the control group students were found to be 22.02 as the mean value, 22.00 as the median value, and 22.00 as the mode. The standard deviation is found to be 4.75. The skewness and kurtosis are found to be 0.012 and -0.677 respectively.

Discussion. The obtained values for the measures of central tendency, dispersion, and normality show that the data is not so scattered. The obtained data has the behavior of normality.

In Figures 4.1 and 4.2 the data distribution for the pre-intervention and post-intervention scores in mathematics achievement for the students taught through conventional teaching methods is illustrated graphically.

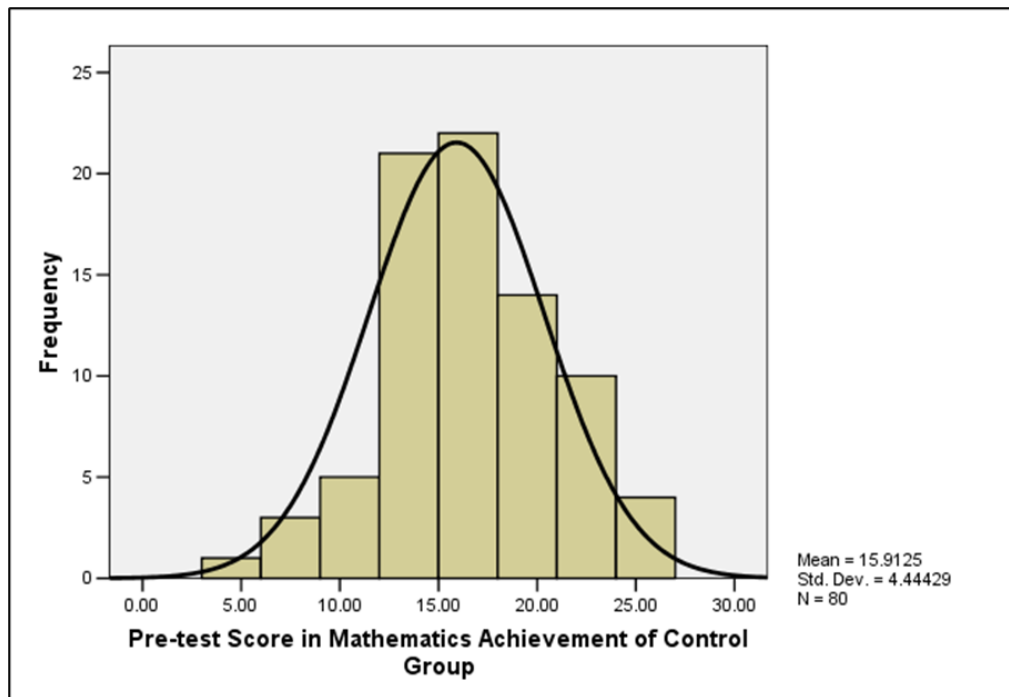


Figure 4.1. Graphical representation of pre-test scores obtained for the Achievement in mathematics of the control group

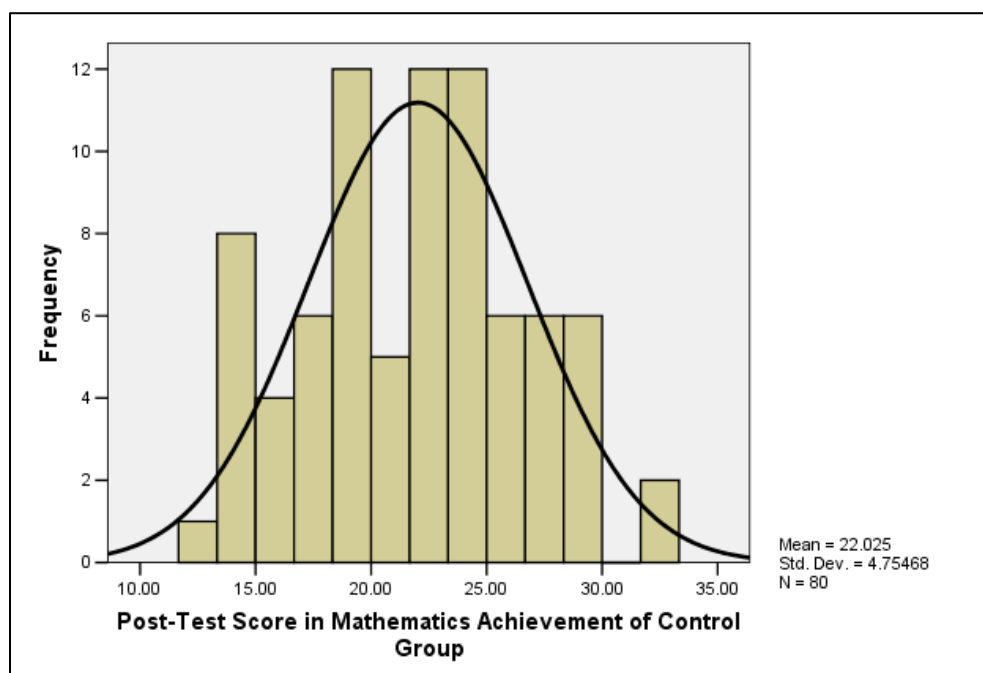


Figure 4.2. Graphical representation of post-test scores of Achievement in mathematics of the control group

4.1.2 Preliminary analysis of the scores of the Attitude Test on Mathematics of the students taught through conventional teaching methods.

The summary of the descriptive statistics scores of the Pre-intervention and Post-intervention test of attitudes towards learning Mathematics of the Control Group students is presented in Table 4.2

Table 4.2

Summary of the Descriptive Statistics of the Scores of Attitude towards Learning Mathematics of the Control Group (VIII grade)

Test	No. of students	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Pre-test	80	95.42	93.00	85.00	14.23	0.580	0.998
Post-test	80	97.78	97.50	93.00	12.36	0.396	0.608

The calculated mean, median, and mode obtained for Pre-intervention test scores of attitudes towards learning mathematics are 95.42, 93.00, and 85.00 respectively and the standard deviation was found to be 14.23 and the skewness and kurtosis values were 0.580 and 0.998 respectively, and for the Post-intervention scores of the students taught through conventional teaching methods, the calculated mean, median and mode were 97.78, 97.50, 93.00 respectively. The standard deviation was found to be 12.36 and the skewness and kurtosis values were 0.396 and 0.608 respectively.

Discussion.

The computed values for the measures of central tendency, dispersion, and normality indicate that the data exhibits minimal scatter and approaches a normal distribution.

The distribution of the scores can be graphically illustrated in Figure 4.3 and Figure 4.4.

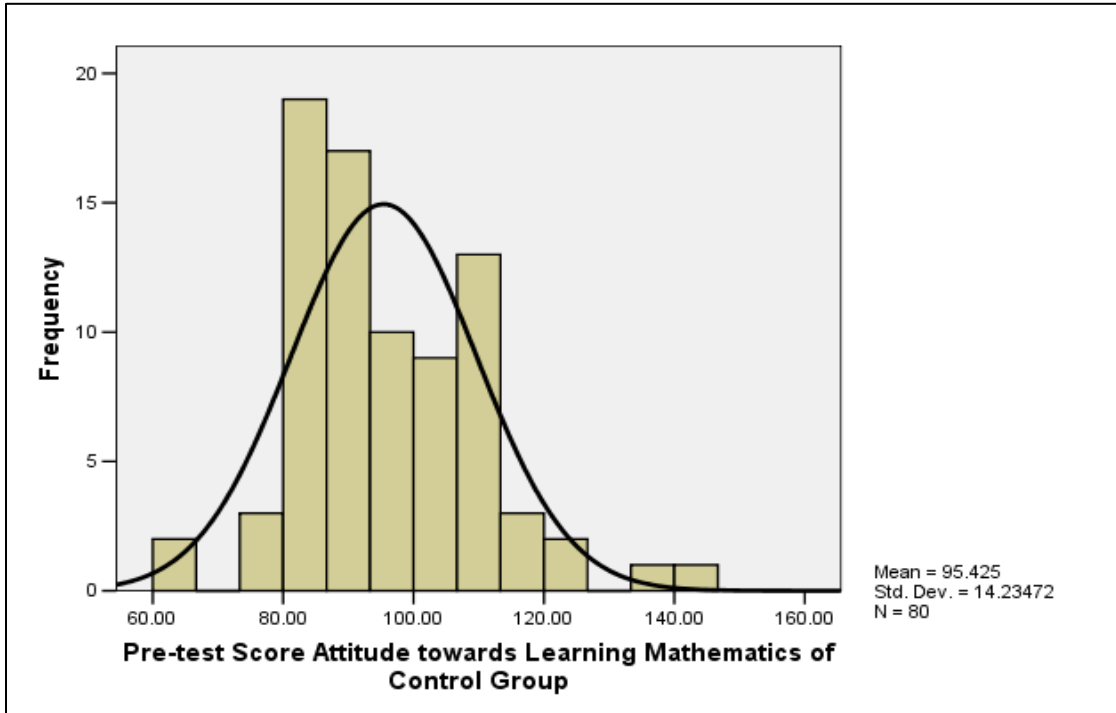


Figure 4.3. Histogram showing the pre-test scores of attitude of students towards learning mathematics of the control group

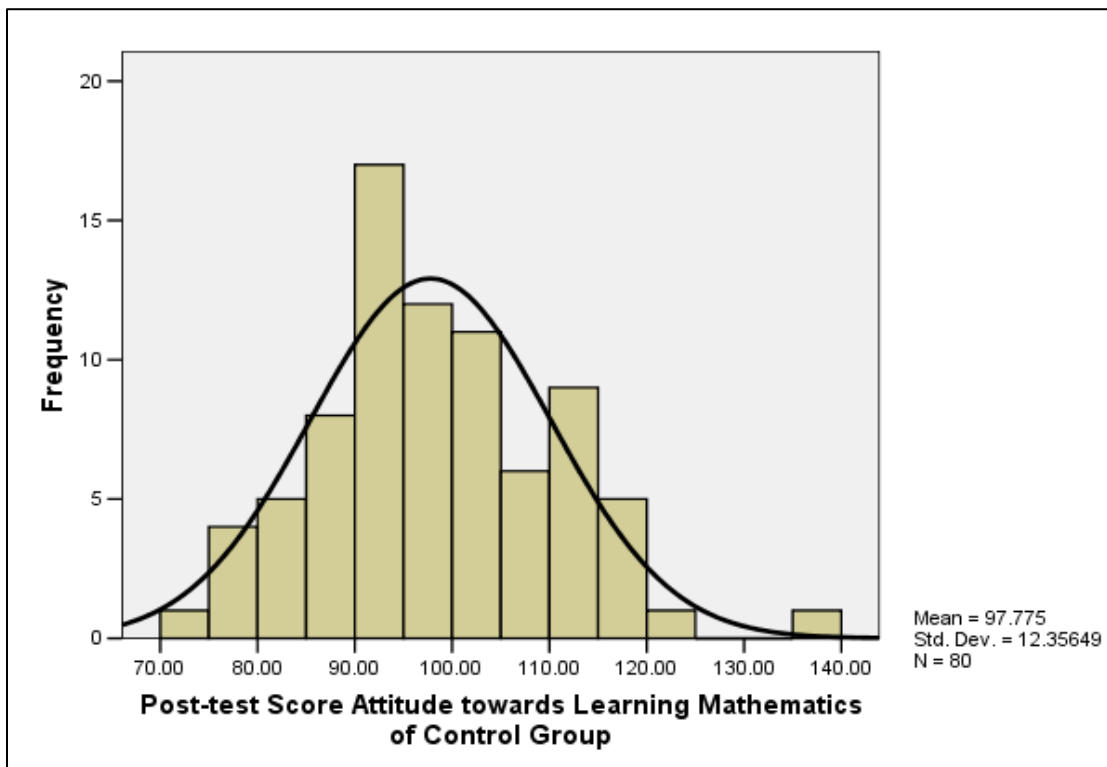


Figure 4.4. Graphical representation of post-test scores obtained as the attitude towards learning mathematics of the control group.

4.13 Preliminary analysis of the data of the experimental group students (VIII grade).

The initial assessment of data on pre-intervention and post-intervention scores of mathematics achievement and attitude towards the mathematics of students taught by Vedic mathematics-based instruction are discussed.

4.1.3a. Preliminary analysis of the Achievement test of the experimental group.

Table 4.3 displays the descriptive statistics for the pre-intervention and post-intervention scores of the achievement test for the students taught through Vedic mathematics.

Table 4.3

Summary of the Descriptive Statistics of Achievement in Mathematics of the Experimental Group (VIII grade)

Test	No. of students	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Pre-test	80	17.10	18.00	18.00	5.41	-0.360	-0.214
Post-test	80	22.04	23.00	25.00	5.96	-0.610	-0.275

The values of ‘mean, median, and mode’ of pre-intervention test scores were found as 17.10, 18.00, and 18.00 respectively with a standard deviation of 5.4. The values for skewness and kurtosis were -0.360 and -0.214 respectively. For post-intervention scores, the values were 22.04 for mean, 23.00 for median, and 25.00 for mode. The standard deviation was found to be 5.96 and skewness and kurtosis values were -0.610 and -0.275 respectively.

Discussion. The examination of the statistical metrics pertaining to the achievement of mathematics scores of the experimental group students for both the pre and post-intervention approaches normal distribution.

Figures 4.5 and 4.6 present the graphs, depicting the pre-intervention and post-intervention scores of mathematics achievement of the students taught through Vedic mathematics.

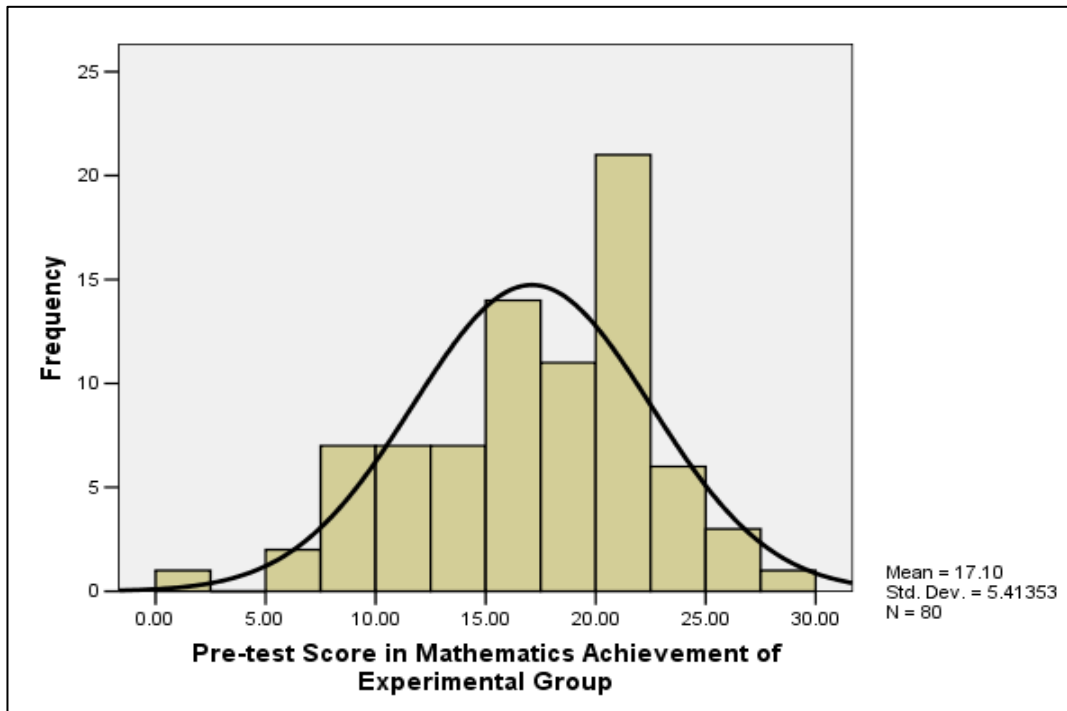


Figure 4.5. Graphical depiction of pre-test scores of Achievement in mathematics of the experimental group

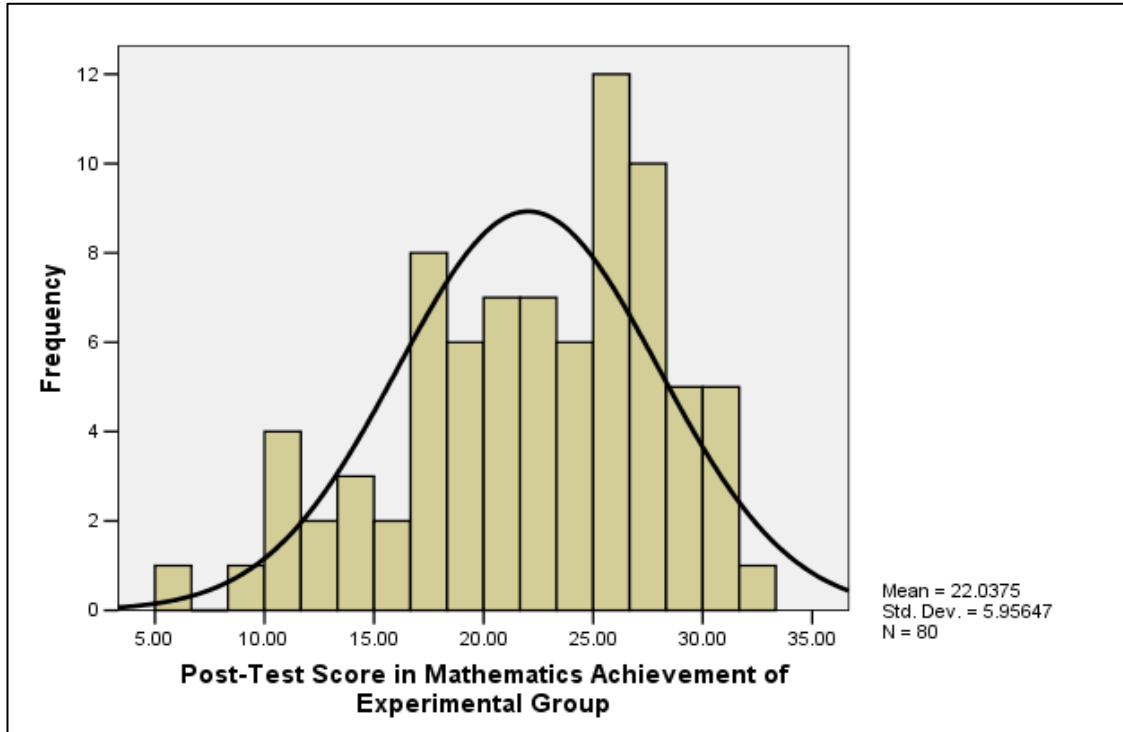


Figure 4.6. Graphical representation of post-test scores of Achievement in mathematics of the experimental group

4.1.3 b Preliminary analysis of Attitude towards Mathematics of the students taught through Vedic mathematics.

In Table 4.4, findings from descriptive statistics analysis of pre-intervention and post-intervention scores of attitude towards learning Mathematics of the students taught through Vedic mathematics are summarised.

Table 4.4

Summary of the Descriptive Statistics of the Scores of Attitude towards Learning Mathematics of the Experimental Group (VIII grade)

Test	No. of students	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Pre-test	80	95.02	94.50	92.00	15.38	0.339	-0.012
Post-test	80	99.65	100.00	100.00	13.09	-0.031	-0.118

Table 4.4, indicates that the mean, median, and mode obtained for pre-intervention test scores reflecting attitude toward mathematics are 95.02, 94.50, and 92.00 respectively. Additionally, the standard deviation is 15.38 and the skewness and kurtosis values are 0.339 and -0.012 respectively. The post-intervention scores exhibited a mean of 99.56, a median of 100, and a mode of 100. The standard deviation was calculated to be 13.09 with skewness and kurtosis values recorded at -0.031 and -0.118 respectively.

Discussion. The values of the statistical indices denote that the data is not much scattered, and almost tends to be normal.

The distribution of the scores can be graphically shown in Figure 4.7 and Figure 4.8.

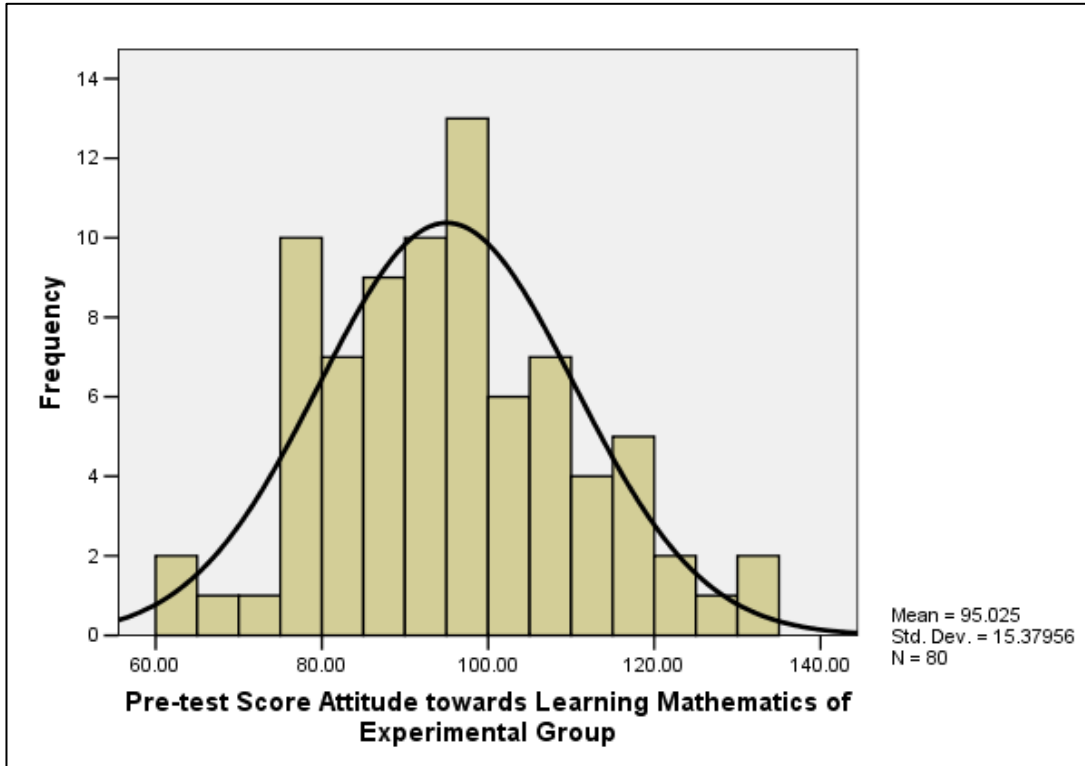


Figure 4.7. Graphical representation of pre-test scores of attitude towards learning mathematics of the experimental group

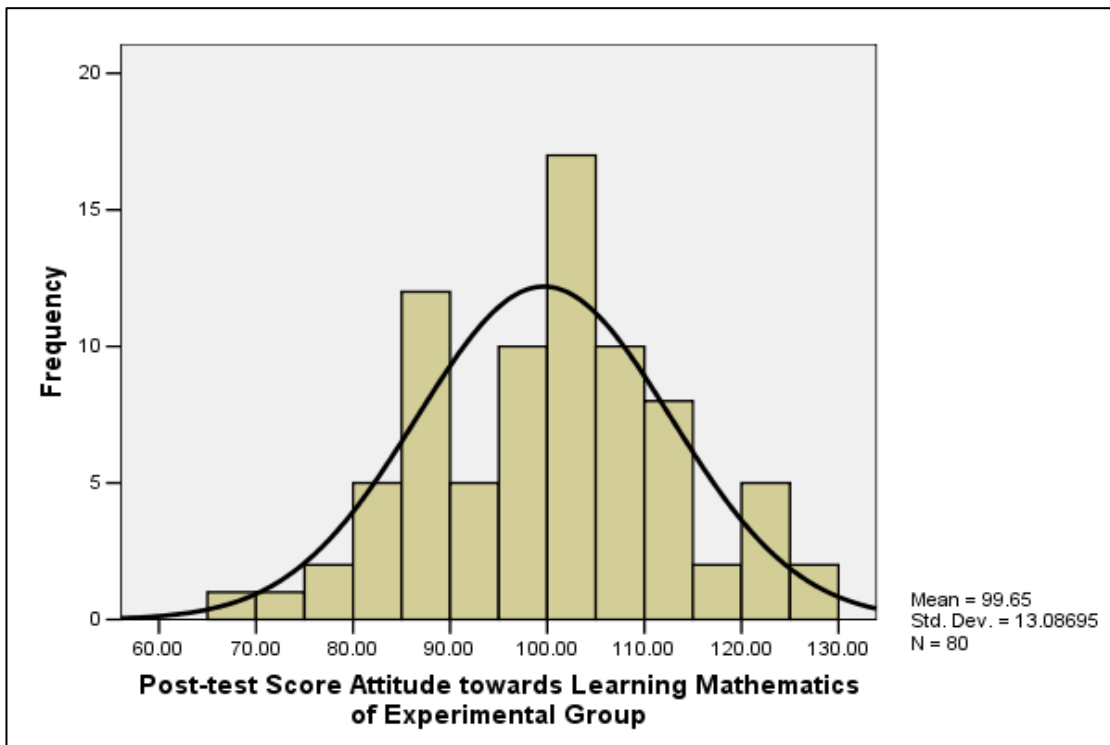


Figure 4.8. Graphical representation of post-test scores of attitude towards learning mathematics of the experimental group.

4.2 Correlation Analysis

Correlation analysis was conducted employing Pearson's method, and the findings are discussed.

4.2.1 Correlation between the pre-intervention test scores obtained for achievement in mathematics and attitude towards mathematics of VIII graders.

The investigator aimed to determine the correlation between the pre-intervention scores of academic achievement and attitude toward mathematics among VIII-grade students. The findings are encapsulated in Table 4.5(a).

Table 4.5(a)

Correlation between Achievement in Mathematics and Attitude towards Learning Mathematics of VIII grade Students. (pre-test scores of experimental and control group)

Variables	No of students	Mean	<i>r</i> (Correlation Coefficient)	<i>p</i> (probability)
Achievement in Mathematics	160	16.51		
Attitude towards Learning Mathematics	160	95.23	-.125	.117

From Table 4.5(a) the result indicates that the coefficient of correlation obtained is -0.125, ($p = 0.117$). The significant value is less than .05, which means that the correlation is not significant.

Discussion. The obtained r value -.125 suggests a mild negative relationship between achievement in mathematics and the learner's attitude towards mathematics. Furthermore, the significance level suggests that this correlation does not reach statistical significance at a .05 level.

The results demonstrate that the null hypothesis stated "There is no significant correlation between the pre-intervention test scores obtained for achievement in

mathematics and attitude towards learning mathematics of VIII grade students” is accepted.

4.2.2 Correlation between the post-intervention scores of mathematics achievement and attitude towards mathematics of VIII graders.

The investigator aimed to determine the correlation between the post-intervention scores of two chosen variables, academic achievement and attitude toward mathematics, among VIII grade students. The findings are summarised in Table 4.5(b).

Table 4.5(b)

Correlation between Achievement in Mathematics and Attitude towards Learning Mathematics of VIII grade Students. (post-test scores of experimental and control group)

Variables	No of students	Mean	<i>r</i> (Correlation Coefficient)	<i>p</i> (probability)
Achievement in Mathematics	160	22.03		
Attitude towards Learning Mathematics	160	98.715	.069	.388

As illustrated in Table 4.5(b) the result indicates that the coefficient of correlation obtained is .069, ($p = 0.388$). Since the significance value is less than .05, this indicates that the correlation lacks statistical significance.

Discussion. The obtained *r* value .069 explains that there is no substantial correlation between the post-intervention scores in achievement in mathematics and attitude towards learning mathematics of VIII grade students.

The results demonstrate that the null hypothesis stated “There is no significant relation exists between the post-intervention test scores in achievement in mathematics and attitude towards learning mathematics of VIII grade students” is accepted.

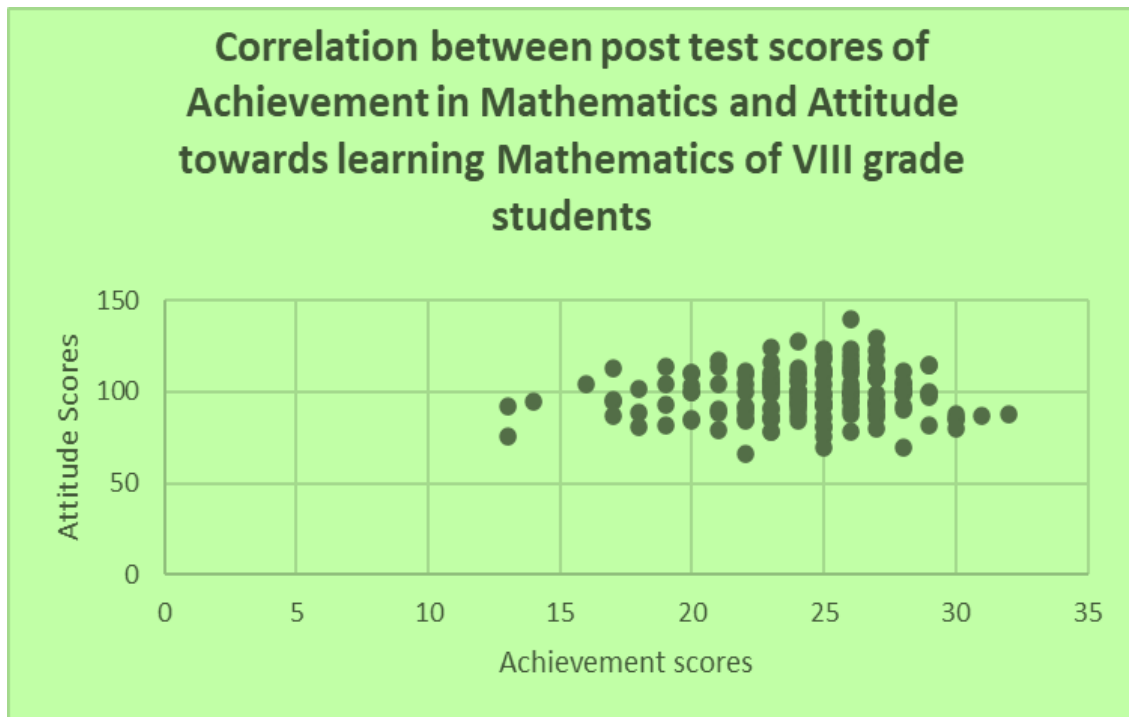


Figure 4.9. Correlation between post-test scores of achievement in mathematics and attitude towards learning mathematics of VIII grade students.

4.3 Inferential Analysis

The significance of inferential analysis is that it helps the investigator to make inferences about the larger population derived from the representative sample. It helps in delving deep into testing the hypotheses. In this investigation, the significance of differences in pre-intervention and post-intervention scores of the variables are studied.

4.3.1 The Significance of the differences in the mean pre-intervention scores of achievement and attitude towards learning mathematics between the students taught through the conventional teaching method and through the Vedic method

The investigator conducted an independent sample *t*-test to evaluate any differences in the mean pre-intervention scores related to achievement and attitude between the students taught through conventional teaching methods and Vedic mathematics. The findings are detailed below.

Table 4.6

Significance of Difference in the Mean Pre-test Scores of Achievement and Attitude towards Learning Mathematics of Control and Experimental Group

Variable	Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Achievement	Control	80	15.91	4.44	-1.516	0.131
	Experimental	80	17.10	5.41		
Attitude	Control	80	95.43	14.23	0.171	0.865
	Experimental	80	95.03	15.38		

Note: *n*= no. of students, *M*=Mean, *SD* = Standard Deviation, *t*= *t* value, *p* = probability

The mean pre-intervention achievement score for the control group is 15.91 with a standard deviation of 4.44. In contrast, the students taught through Vedic mathematics show a mean achievement score of 17.10 with a standard deviation of 5.41. The *t*-value is -1.516 which is less than 1.96 at the .05 level. There is no notable difference in the mean pre-intervention test scores of mathematics achievement between the students instructed through conventional methods and the Vedic mathematics-based approach.

From Table 4.6, the students instructed through traditional methods have a mean pre-intervention test score for the attitude test is 95.43 with a standard deviation 14.23 and students taught through a Vedic mathematics-based approach have a mean attitude score of 95.02 with a standard deviation of 15.38. The *t*-value, .171 is less than 1.96 at the .05 level. This analysis reveals that there is no substantial variation in the average pre-intervention test scores related to students' attitude towards mathematics between those instructed through traditional methods and the Vedic mathematics-based approach.

Discussion. The obtained *t*-value, for pre-intervention test scores for both achievement and attitude, is less than the table value (1.96) indicating that the selected two groups are almost equal in achievement and attitude towards learning mathematics.

The results demonstrate that the null hypothesis stated "There is no significant difference exists between the mean pre-intervention scores of achievement and attitude towards learning mathematics between the students taught through the conventional teaching method and through the Vedic method" is accepted.

4.3.2 Significance of difference in the mean pre-intervention scores and mean post-intervention scores of students instructed through conventional methods

The significance of the difference in the mean pre-intervention scores and mean post-intervention scores of mathematics achievement and attitude towards learning mathematics of the control group was statistically analyzed by employing the paired sample *t*-test and the findings are presented below.

Table 4.7

Data and Results of Test of Significance of Difference in Mean Pre-Test and Post-Test Scores of Achievement Test and Attitude Test of Control Group

Variables	Control Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>t</i>	<i>p</i>
Achievement in Mathematics	Pre-test	80	15.91	4.44	0.741*	16.437*	<i>p</i> <0.0001
	Post-test	80	22.03	4.75			
Attitude towards Learning Mathematics	Pre-test	80	95.42	14.23	0.698*	2.005*	<i>p</i> <0.048
	Post-test	80	97.78	12.36			

Note. * denotes the value is significant at 0.05 level.

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *r*- correlation coefficient, *t*= *t* value, *p* = probability

Table 4.7 shows the average test scores in achievement before and after intervention for students instructed through conventional methods, which are 15.91(*SD*=4.44) and 22.03 (*SD*=4.75) respectively. The obtained value of the correlation coefficient 0.741, is significant at a .05 confidence level indicating a significant correlation between the before and after intervention test scores of students instructed through conventional methods.

The coefficient of correlation, *r*, is 0.698, which is significant at a .05 level of confidence, and additionally, the ‘*t* value’2.005 is greater than 1.96 indicating a significant difference in the attitude scores before and after the intervention.

Discussion. The calculated t-values (16.437 for the achievement test and 2.005 for the attitude test) exceed the critical value of 1.96. This suggests that the pre-intervention and post-intervention scores for both achievement and attitude of students instructed through conventional methods are statistically significant. As the mean post-intervention score is greater than the pre-intervention test, the conventional method of teaching mathematics has a positive effect on achievement in mathematics as well as attitude towards learning mathematics.

The results disclose that the null hypothesis stated “There is no significant difference exists between the mean pre-intervention test scores and mean post-intervention test scores of achievement in mathematics and attitude towards learning mathematics of students instructed through conventional teaching methods” is rejected.

The difference in the mean pre-test score and post-test score of achievement and attitude test is illustrated in Figure 4.10.

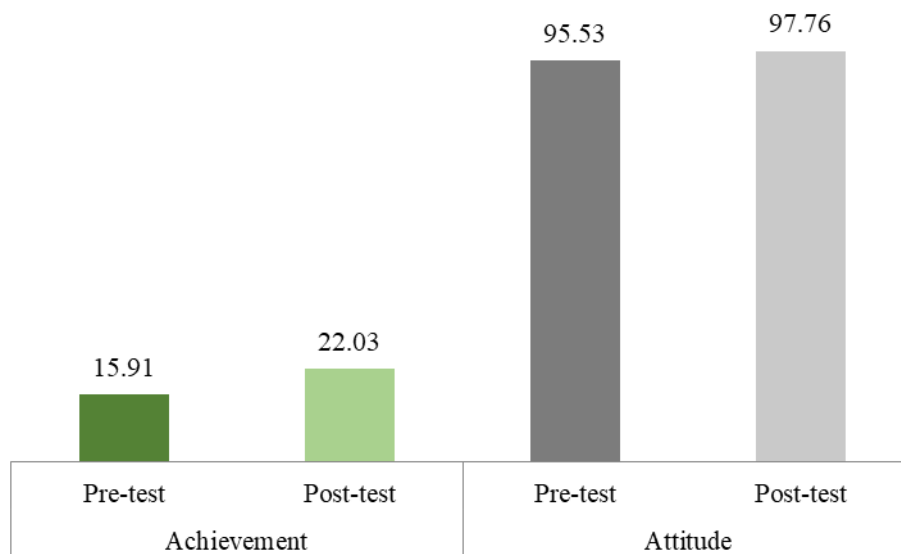


Figure 4.10. Difference in the mean pre-test and the post-test score of achievement and attitude of the control group.

4.4 Significance of difference in the mean post-intervention scores and delayed post-intervention scores of students taught through the conventional method.

The significance of the difference in the mean post-intervention and mean delayed post-intervention scores of mathematics achievement and attitude towards the mathematics of the control group was statistically analyzed by employing the paired sample *t*-test. The findings of the *t*-test are presented below.

Table 4.8

Data and Results of Test of Significance of Difference in Mean Post-Test and Delayed Post-Test Scores of Achievement Test and Attitude Test of Control Group

Variables	Control Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>t</i>	<i>p</i>
Achievement	Post-test	80	22.03	4.75	0.478*	6.503*	<i>p</i> <0.0001
	Delayed Post-test	80	25.06	2.37			
Attitude	Post-test	80	97.78	12.36	0.920*	1.361	0.177
	Delayed Post-test	80	98.51	11.58			

Note. * denotes the value is significant at 0.05 level.

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *r*- correlation coefficient, *t*= t value, *p* = probability

Table 4.8 shows the mean post-intervention and delayed post-intervention achievement scores of students taught through the conventional method as 22.03(*SD*=4.75) and 22.03 (*SD*=2.37) respectively. The obtained value of the coefficient of correlation, *r*, is 0.478, significant at a .05 level. Hence, the post-intervention and delayed post-intervention scores of the students taught through the conventional method have a significant correlation. The *t*-value 6.503, is greater than 1.96. Hence, the difference is significant at the .05 level.

The coefficient of correlation, *r*, is 0.920, significant at a .05 level. Hence, the post-intervention and delayed post-intervention scores of the students taught through the conventional method have a significant correlation. The *t*-value obtained is 1.361 which is less than the table value 1.96. That means, the mean score of post-intervention and delayed post-intervention scores does not differ significantly at a .05 level of confidence.

Discussion. The *t*-value obtained 6.503 for the achievement test is more than 1.96. Therefore, the difference in mean post-intervention and delayed post-intervention scores of achievement tests of the students taught through the conventional method is significant

at a .05 level of confidence. The result shows that the mean delayed post-intervention value is greater than the post-intervention, which means the conventional method of teaching mathematics applied in the control group has a positive effect on mathematics achievement. On the contrary, the t value for the post-intervention and the delayed post-intervention score of the attitude towards learning mathematics of the students taught through the conventional method, 1.361 shows that the difference is not significant at the .05 level.

The results reveal that the null hypothesis stated “There is no significant difference exists between the mean post-intervention scores and delayed post-intervention scores of students taught through the conventional method for achievement test” is rejected and for "attitude towards mathematics" the hypothesis is accepted.

The difference in the mean post-intervention score and the delayed post-intervention score of the achievement test is illustrated in Figure 4.11.

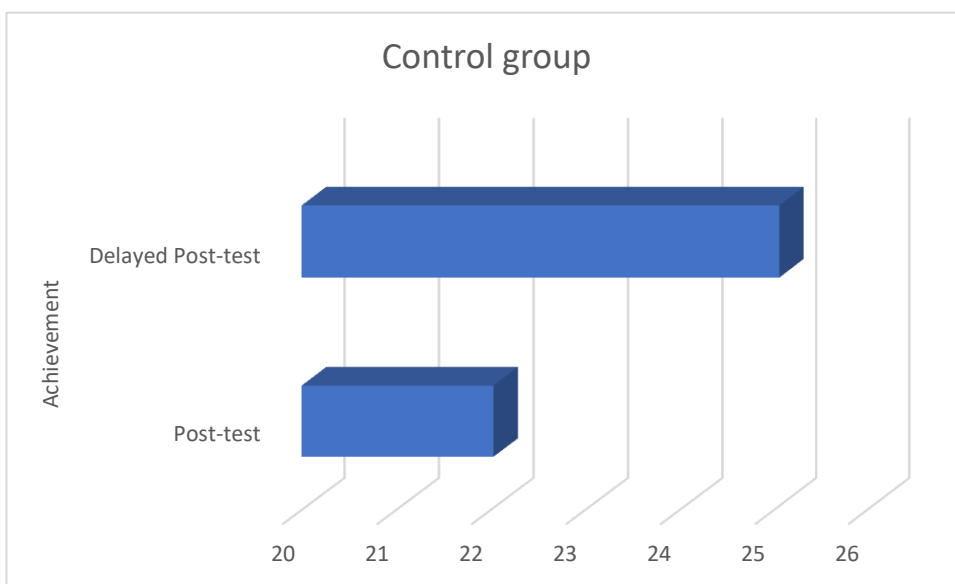


Figure 4.11. Difference in the mean post-test and the delayed post-test score of achievement of the control group.

4.5 Significance of difference in the mean pre-intervention and mean post-intervention scores of students taught through Vedic mathematics.

The significance of the difference in the mean pre-intervention and mean post-intervention scores of mathematics achievement and attitude towards learning

mathematics of the experimental group was statistically analyzed by employing the paired sample *t*-test. The findings of the *t*-test are presented below.

Table 4.9

Data and Results of Test of Significance of Difference in Mean Pre-Test and Post-Test Scores of Achievement Test and Attitude Test of Experimental Group

Variables	Experiment al Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>t</i>	<i>p</i>
Achievement	Pre-test	80	17.10	5.41	0.858*	14.365*	<i>p</i> <0.0001
	Post-test	80	22.03	5.96			
Attitude	Pre-test	80	95.02	15.38	0.844*	5.022*	<i>p</i> <0.0001
	Post-test	80	99.65	13.09			

Note. * denotes the value is significant at 0.05 level.

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *r*- correlation coefficient, *t*= *t* value, *p* = probability

The paired sample *t*-test conducted between the mean pre-intervention and post-achievement score of students taught through Vedic mathematics, the obtained value of the coefficient of correlation, *r*; is 0.858, significant at .05 level. Hence, the pre-intervention and post-intervention scores of the students taught through Vedic mathematics have a significant correlation. The *t*-value obtained is 14.365 which is more than 1.96 at the .05 level. Hence, it can be said that the difference in the mean value is significant.

The coefficient of correlation, *r*; is 0.844, significant at a .05 level. Hence, the pre-intervention and post-intervention scores of the experimental group have a significant correlation. The *t*-value, 5.022 is more than the table value of 1.96. Hence, the difference is significant at the .05 level.

Discussion. The *t*-value (14.365 for the achievement test and 5.022 for the attitude test) is more than 1.96. Therefore, the difference in mean pre-test and post-test scores of the achievement test as well as attitude test of the experimental group is significant. The result shows that the mean post-intervention value is more than the pre-intervention, that means the Vedic mathematics method applied to the students taught through Vedic mathematics has a considerable effect on the achievement in mathematics, as well as attitude towards mathematics of the students, taught through Vedic mathematics.

The results demonstrate that the null hypothesis stated “There is no significant difference exists between the mean pre-intervention scores and post-intervention scores of achievement test in mathematics and attitude towards learning mathematics of students taught through the Vedic mathematics” is rejected

The difference in the mean pre-intervention score and post-intervention score of achievement and attitude test is illustrated in Figure 4.12.

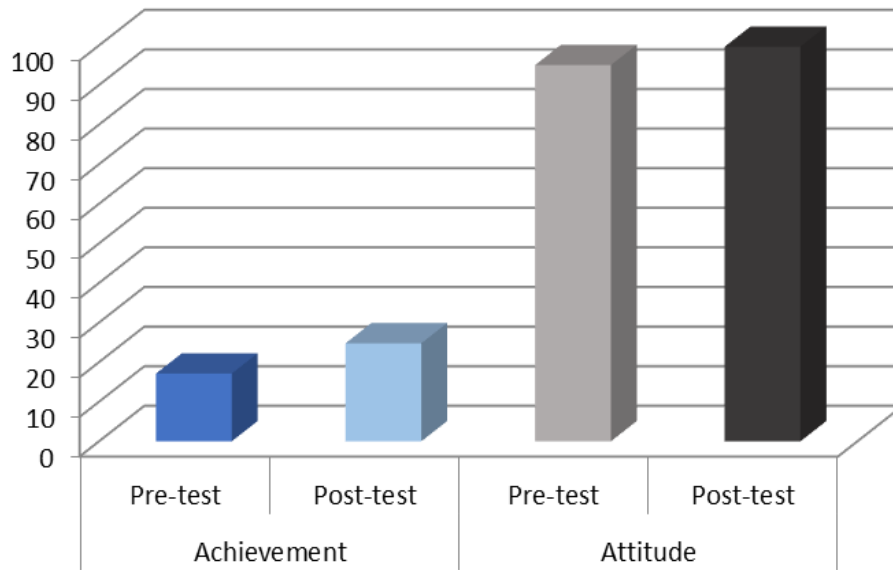


Figure 4.12. Difference in the mean pre-test and the post-test score of achievement and attitude of the experimental group.

4.6 Significance of difference in the mean post-intervention and delayed post-intervention scores of students taught through Vedic mathematics.

The significance of the difference in the mean post-intervention and mean delayed post-intervention scores of achievement in mathematics and attitude towards learning mathematics of the experimental group was statistically analyzed by employing the paired sample t-test. The findings of the t-test are presented below.

Table 4.10

Data and Results of Test of Significance of Difference in Mean Post-Test and Delayed Post-Test Scores of Achievement Test and Attitude Test of Experimental Group

Variables	Experiment	<i>n</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>t</i>	<i>p</i>
	al Group						
Achievement	Post-test	80	22.03	5.96	0.231*	0.278	0.781
	Delayed Post-test	80	22.23	3.03			
Attitude	Post-test	80	99.65	13.09	0.797*	2.518*	0.014
	Delayed Post-test	80	96.70	17.33			

Note. * denotes the value is significant at 0.05 level.

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *r*- correlation coefficient, *t*= *t* value, *p* = probability

Table 4.10 shows the mean post-intervention and delayed post-intervention achievement scores of students taught through Vedic mathematics as 22.03 (*SD*=5.96) and 22.23 (*SD*=3.03) respectively. The obtained value of the coefficient of correlation, *r*, is 0.231, significant at .05. Hence, the post-intervention and delayed post-intervention scores of the students taught through Vedic mathematics have a significant correlation. The *t*-value 0.278 is less than 1.96. Hence, the difference is not significant at the .05 level.

The coefficient of correlation, *r*, 0.797 is significant at .05 level. Hence, the post-intervention and delayed post-intervention scores of the experimental group has a significant correlation. The *t*-value 2.518 is more than 1.96. That means, the mean score of post-intervention and delayed post-intervention scores differ significantly at .05 level of confidence.

Discussion. The findings of the paired sample t-test applied between post-intervention and delayed post intervention of students taught through Vedic mathematics revealed that the mean score of achievement has not changed significantly between post-test and delayed post-test. The retention of the method can be seen here. At the same time there is slight decrease in the mean delayed post-intervention attitude score of the students taught

through Vedic mathematics. It shows that the discontinuation of the Vedic method makes a decline in the attitude of students towards mathematics.

The results demonstrate that the null hypothesis stated as “There is no significant difference exists between the mean post-intervention scores and delayed post-intervention scores of achievement test in mathematics of students taught through the Vedic mathematics” is accepted and for “attitude towards learning mathematics” is rejected

The difference in the mean pre-test score and post-test score of attitude test is illustrated in Figure 4.13.

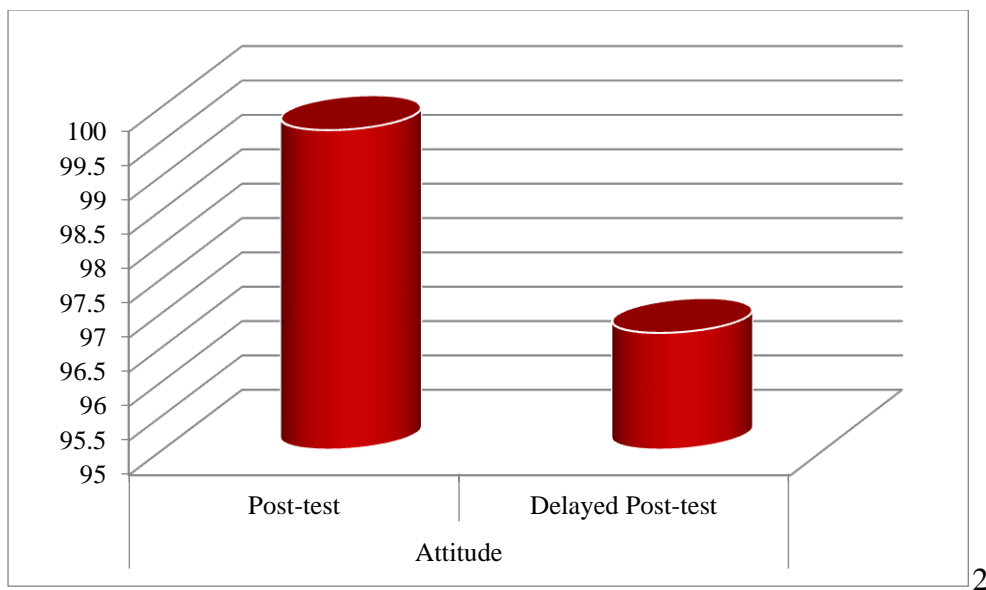


Figure 4.13. Difference in the mean post-test and the delayed post-test score of attitude towards learning mathematics of the experimental group.

4.7 Significance of difference in the mean post-intervention scores of mathematics achievement and attitude towards mathematics of students taught through conventional teaching method and Vedic mathematics.

The study intended to find the effectuality of Vedic mathematics on the achievement and attitude of students, the investigator tested whether the difference in the mean post-intervention score of the students taught through conventional Vedic mathematics is significant or not. For this, the investigator applied an independent sample *t*-test. The findings of the statistical analysis are presented below.

Table 4.11

Test of Significance of Difference in the Mean Post-test Scores of Achievement Test and Attitude Test of Control and Experimental Group

Variable	Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Achievement	Control	80	22.03	4.75	0.015	0.988
	Experimental	80	22.04	5.96		
Attitude	Control	80	97.78	12.36	0.932	0.353
	Experimental	80	99.65	13.09		

n= no. of students, M=Mean, SD = Standard Deviation, t= t value, p = probability

Table 4.11 shows that the students taught through the conventional teaching method have a mean post-intervention achievement score of 22.03 with a standard deviation of 4.75. And students of students taught through Vedic mathematics have a mean post-intervention score of 22.04 with a standard deviation of 5.96. The *t*-value for the test of significance of the difference in the mean post-test scores of achievement of students taught through conventional teaching method and Vedic mathematics is found to be 0.015 which is much less than 1.96 at a .05 level of confidence. The *t*-value shows that the difference in the mean post-intervention scores of achievement test of students taught through conventional teaching methods and Vedic mathematics is not significant at a .05 level.

Table 4.11 also denotes that the *t* value (0.932) obtained for the test between the post-intervention score of attitude towards mathematics of students taught through conventional teaching method and Vedic mathematics is less than 1.96 at a .05 level and hence not significant.

Discussion. The *t* value of both the achievement test and attitude test reveals that the difference in the post-intervention score is not significant at a .05 level. Hence, the Vedic mathematics applied for the students taught through Vedic mathematics slightly has an effect on the achievement as well as attitude towards mathematics of the VIII grade students.

The results demonstrate that the null hypothesis stated as “There is no significant difference exists between the mean post-intervention scores of mathematics achievement and attitude towards the mathematics of students taught through conventional teaching method and Vedic mathematics” is accepted.

4.8 Significance of difference in the mean post-intervention scores of achievement in mathematics and attitude towards learning mathematics of students taught through conventional teaching method and Vedic mathematics for sample classified based on their gender.

The investigator has extended the analysis to know whether the method was effective for female or male students separately and so an independent sample t-test was conducted. The findings of the statistical analysis are displayed below.

Table 4.12

Test of Significance of Difference in the Mean Post-test Scores of Achievement Test and Attitude Test of Control and Experimental Group for the subsample Gender

Sub Sample	Variable	Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Girls	Achievement	Control	49	23.08	4.13	4.723*	<i>p</i> < 0.0001
		Experimental	25	17.60	5.73		
	Attitude	Control	49	100.04	13.21	0.813	0.419
		Experimental	25	102.64	12.62		
Boys	Achievement	Control	31	20.35	5.25	3.275*	0.002
		Experimental	55	24.05	4.90		
	Attitude	Control	31	94.19	10.06	1.500	0.137
		Experimental	55	98.29	13.18		

Note. ** denotes the value is significant at .01 level

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *t*= t value, *p* = probability

As per Table 4.12 the *t* value obtained for the post-intervention score of achievement in mathematics of students taught through conventional teaching method (*M*=23.08; *SD* =4.13) and students taught through Vedic mathematics (*M*=17.60, *SD* = 5.63) for the subsample ‘girls’ is 4.723. The *t* value is higher than 1.96 and hence the difference is significant.

The t value obtained for the post-intervention score of attitude towards learning mathematics of students taught through conventional teaching method ($M=100.04$; $SD =13.21$) and students taught through Vedic mathematics ($M=102.64$, $SD = 12.62$) is 0.813 which is less than the table value, and hence the difference is not significant at 5 percent level of confidence.

The t value for the post-intervention achievement score of students taught through conventional teaching method ($M=20.05$; $SD =5.25$) and students taught through Vedic mathematics ($M=24.05$, $SD = 4.90$) for boys is 3.275 which is significant at 5 percent level of confidence.

Also, the t -value of the post-test score attitude of students taught through conventional teaching method and Vedic mathematics group for boys gives a t value of 1.500 which is less than 1.96, hence the difference is not significant at .05 level.

Discussion. The t value of both the achievement test for girls and boys sample is significant at .05 level of significance. The mean score of girls of students taught through conventional teaching method is higher than the students taught through Vedic mathematics, which means, the conventional method of teaching mathematics is effective for girls. On the contrary, the achievement score of boys students taught through Vedic mathematics is higher than the students taught through the conventional teaching method which denotes that the Vedic method has influence on the achievement in mathematics of boys.

The t value obtained for the mean post-intervention score of attitude towards learning mathematics of both girls and boys shows no significant difference. Hence it can be concluded that the applied Vedic method did not enhance the attitude of VIII-grade students towards mathematics.

The results reveal that the null hypothesis stated as “There is no significant difference exists between the mean post-intervention scores of achievement in mathematics of students taught through conventional teaching method and Vedic mathematics for sample classified based on their gender.” is rejected and “attitude towards learning mathematics” is accepted

The difference in the mean post-intervention score of achievement in mathematics is illustrated in Figure 4.14.

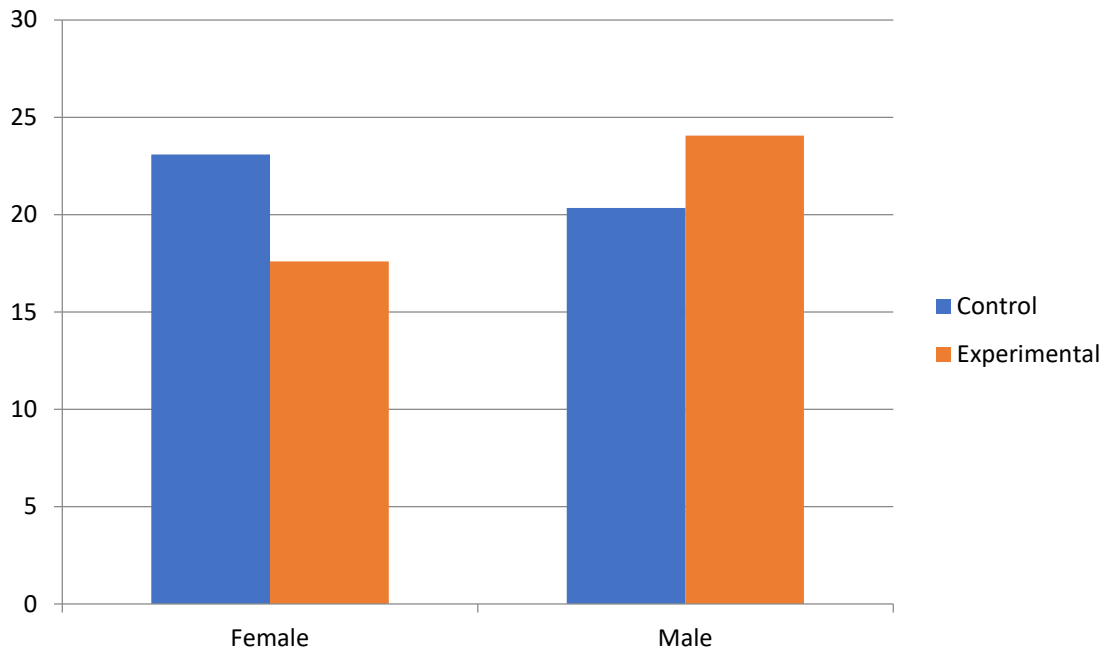


Figure 4.14. Graphical representation of difference in the mean score of achievement in mathematics of control and experimental group for the sub sample classified based on gender.

4.9 Significance of difference in the mean post-intervention scores of achievement in mathematics and attitude towards mathematics of students taught through conventional teaching method and Vedic mathematics for sample classified based on their type of school.

The sample was taken from government–aided schools and Private schools. The analysis was done separately for both types of schools to analyze the effect of the Vedic method. The findings are given below.

Table 4.13

Test of Significance of Difference in the Mean Post-test Scores of Achievement Test and Attitude Test of Control and Experimental Group for the Subsample Type of School

Sub Sample	Variable	Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Govt-Aided	Achievement	Control	40	21.30	5.51	0.225	0.441
		Experimental	40	21.00	6.38		
	Attitude	Control	40	95.38	13.59	2.782*	0.007
		Experimental	40	103.60	12.82		
Private	Achievement	Control	40	22.75	3.79	0.312	0.756
		Experimental	40	23.07	5.38		
	Attitude	Control	40	100.17	10.60	1.746	0.085
		Experimental	40	95.70	12.26		

Note. ** denotes the value is significant at .01 level

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *t*= t value, *p* = probability

As per Table 4.13, the *t* value obtained for the post-intervention score of achievement in mathematics of students taught through conventional teaching methods and Vedic mathematics for government-aided schools is 0.441. The obtained *t*-value is lower than 1.96, and hence, the difference is not significant.

The *t* value obtained for the post-intervention score of attitude towards mathematics of students taught through conventional teaching methods is 2.782 which is more than the 1.96, and hence the difference is significant at .05 level.

The *t* value for the post-intervention achievement of students taught through conventional teaching method and Vedic mathematics for private school students is 0.312 which is not significant at .05 level.

The *t* value for the post-intervention score of the attitude of students taught through conventional teaching methods and Vedic mathematics for the private school students is 1.746 which is less than 1.96, hence not significant at 0.05 level of significance.

Discussion. t-test was employed to test the effectiveness of the Vedic method on the achievement and attitude towards the mathematics of Government-aided school and Private school students separately. The result shows that the Vedic method has a positive effect on the attitude of Government-aided students. At the same time the achievement in mathematics of both Government-aided and private school students, additionally the attitude of private school students is not changed by applying the Vedic method.

The results reveal that the null hypothesis stated as “There is no significant difference exists between the mean post-intervention scores of achievement in mathematics of students taught through conventional teaching method and Vedic mathematics for sample classified based on their type of school.” is accepted and for “attitude towards learning mathematics” for government aided school is rejected and for private school, is accepted.

The difference in the mean post-intervention score of attitude toward mathematics of Government-aided schools is illustrated in Figure 4.15.

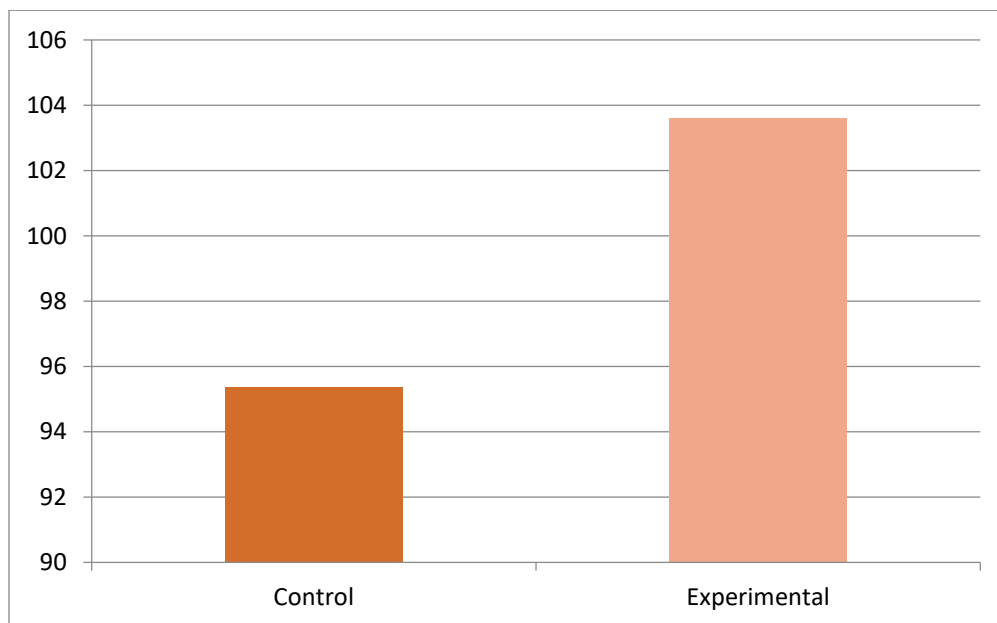


Figure 4.15. Graphical representation of difference in the mean score of attitude towards learning mathematics of control and experimental group for the sub sample –Govt.-Aided school.

4.10 Significance of difference in the mean score of Achievement based on the learning style of the students.

The investigator classified the learners as per their learning style into three groups – Visual, Auditory, and kinesthetic. The investigator tried to find out students with which learning style benefitted more through Vedic mathematics.

One-way ANOVA was employed for this purpose. The result of the ANOVA is discussed further.

The Levene Statistic was obtained as 1.291 at a significance on .281 which means the data satisfies the rule homogeneity of variance. The descriptive statistics of the test is given in Table 4.14.

Table 4.14 Descriptive Statistics of the Post-test Score of Achievement in Mathematics for learning style

Learning Style	<i>n</i>	<i>M</i>	<i>SD</i>
Visual	38	21.00	6.53
Auditory	26	23.03	5.08
Kinesthetic	16	22.88	5.79

Note: n= no. of students, M=Mean, SD = Standard Deviation

As per Table 4.14, 38 students fall into the visual group, 26 to auditory and 16 to kinesthetic. The mean is obtained as 21.00, 23.03, and 22.88 for the visual, auditory, and kinesthetic groups respectively. The ANOVA was conducted and the result is presented in Table 4.15.

Table 4.15

Significance of Difference in the Mean Achievement Score of Different Learning Style Groups

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between Groups	78.176	2	39.088		
Within Groups	2724.712	77	35.386	1.105	.337
Total	2802.888	79			

Note: SS = Sum of Squares, df = degrees of freedom, MS = Mean Square, F = F ratio, p = probability

The F value obtained for the ANOVA conducted is 1.105 ($df = 77/2$) is less than the table value (Table R). The value of significance 0.337 clearly shows that the difference is not significant at the .05 level.

Discussion. The F value is not significant at a .05 level of significance. Hence, the Vedic mathematics method applied has no separate effect on the students according to their learning style.

The findings of the statistical analysis applied for the VIII-grade students show that the post-intervention and delayed post-intervention scores are significantly more than the pre-intervention scores for both students taught through conventional teaching methods and Vedic mathematics. At the same time, there is no significant difference in the pre-intervention as well as the post-intervention score of the students taught through conventional teaching methods and Vedic mathematics.

The results disclose that the null hypothesis stated as “There is no significant difference exists between the mean achievement score of the different learning styles of the students.” is accepted.

Hence it can be said that the Vedic Method strategy is not effective in the higher classes. To ascertain this, samples from lower classes were also taken (III grade for this study), the result of the statistical analysis is discussed hereafter.

SECTION B

4.11 Preliminary analysis of the scores of the Achievement Test on Mathematics for III grade students taught through conventional teaching methods.

Table 4.16 shows the descriptive statistics of the Pre-intervention and post-intervention achievement test scores on Mathematics of III-grade students of control group.

Table 4.16

Summary of the Descriptive Statistics of the Scores of Achievement Test on Mathematics of the Control Group (III grade)

Test	No. of students	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Pre-test	80	9.25	9.00	9.00	2.51	0.077	-0.556
Post-test	80	11.66	12.00	12.00	2.52	0.524	0.048

From Table 4.16 it is evident that the mean, median, and mode obtained for the pre-test scores of the students taught through the conventional method on achievement in mathematics are 9.25, 9.00, and 9.00 respectively. The standard deviation is found to be 2.51. The skewness value is 0.077 and the kurtosis is obtained as -0.556.

The statistical indices for the post-intervention for achievement in mathematics of the control group students are 11.66 as the mean value, 12.00 as the median value, and 12.00 as the mode. The standard deviation is found to be 2.52. The skewness and kurtosis are found to be 0.524 and 0.048 respectively.

Discussion. The value of the statistical indices obtained for both the pre-intervention and post-intervention scores of the achievement in mathematics of third-graders shows that the data almost attains normality. Hence can be subjected to inferential statistics to get a more reliable output.

Figure 4.15 and Figure 4.16 shows the graphical depiction of the pre-intervention and post-intervention scores in mathematics achievement of the students taught through conventional teaching method.

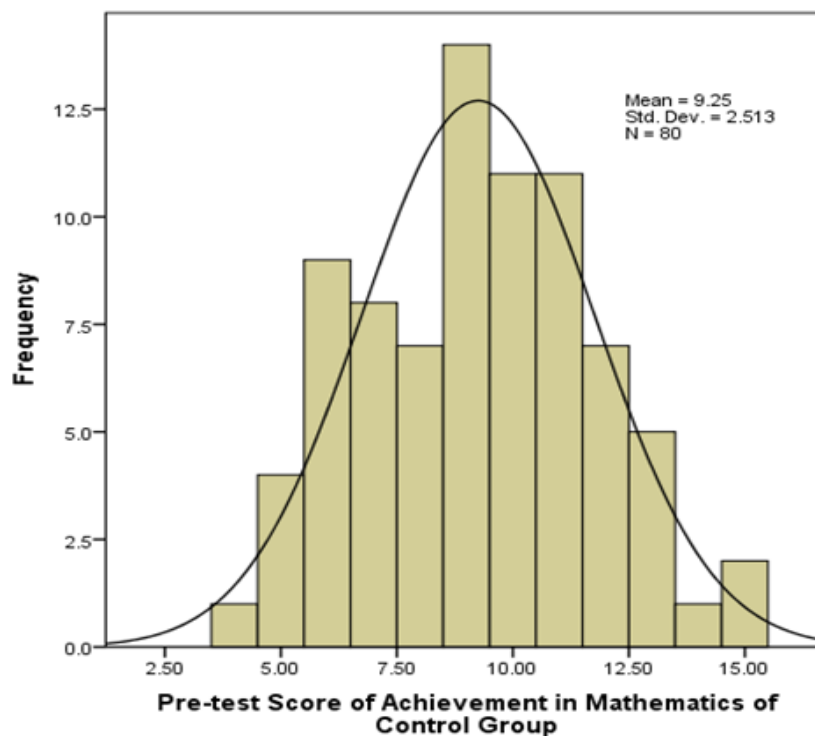


Figure 4.16 Graphical representation of pre-test scores of Achievement in mathematics of the control group

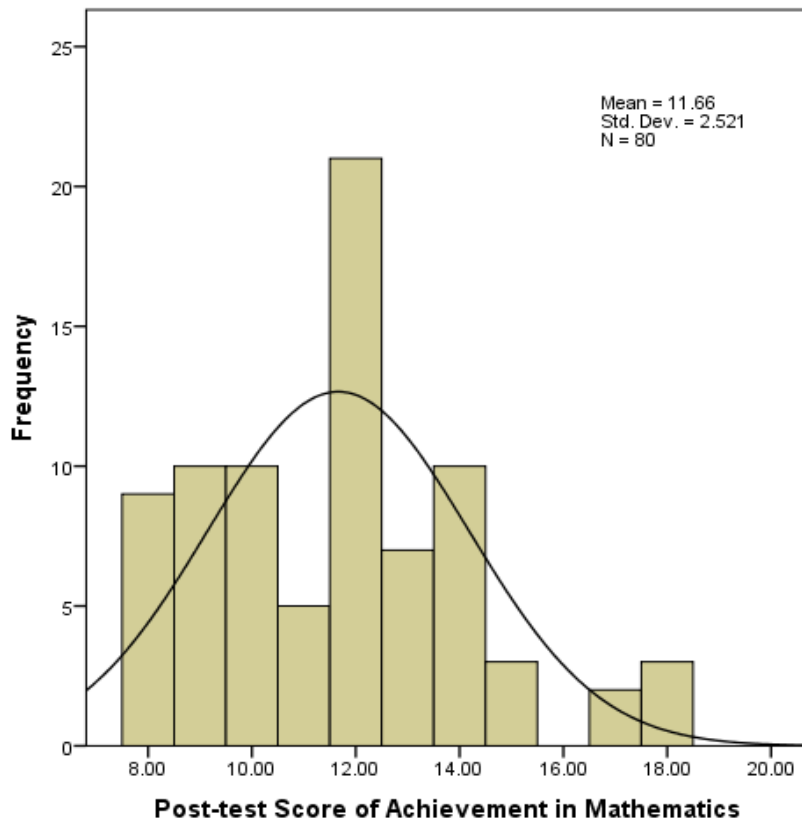


Figure 4.17. Graphical representation of post-test scores of Achievement in mathematics of the control group

4.11.1 Preliminary analysis of the scores of the Attitude Test on Mathematics of the students taught through conventional teaching methods.

The descriptive statistics of the Pre-intervention and Post-intervention scores of attitude towards Mathematics of the Control Group are presented below.

Table 4.17

Summary of the Descriptive Statistics of the Scores of Attitude towards Learning Mathematics of the Control Group (III grade)

Test	No. of students	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Pre-test	80	33.80	33.00	26.00	6.81	0.512	-0.770
Post-test	80	38.76	37.00	32.00	7.22	0.769	0.145

The mean, median, and mode obtained for pre-test scores of attitude towards learning mathematics for the students taught through conventional teaching methods are 33.80, 33.00, and 26.00 respectively. The standard deviation is found to be 6.81 and the skewness and kurtosis value is 0.512 and -0.770 respectively.

The statistical indices for the post-intervention of the attitude towards learning mathematics of the students taught through conventional teaching methods is 38.76 as the mean value, 37.00 as the median value, and 32.00 as the mode. The standard deviation is found to be 7.22. The skewness and kurtosis are found to be 0.796 and 0.145 respectively.

Discussion. The obtained values for the statistical indicators of central tendency, measures of dispersion, and statistical indicators of normality for the scores of attitude towards learning mathematics show that the data is not so scattered. The skewness value indicates that the distribution exhibits a slight positive skew. Hence it can be assumed that the data distribution is normal.

The distribution of the scores can be graphically illustrated in Figures 4.18 and 4.19.

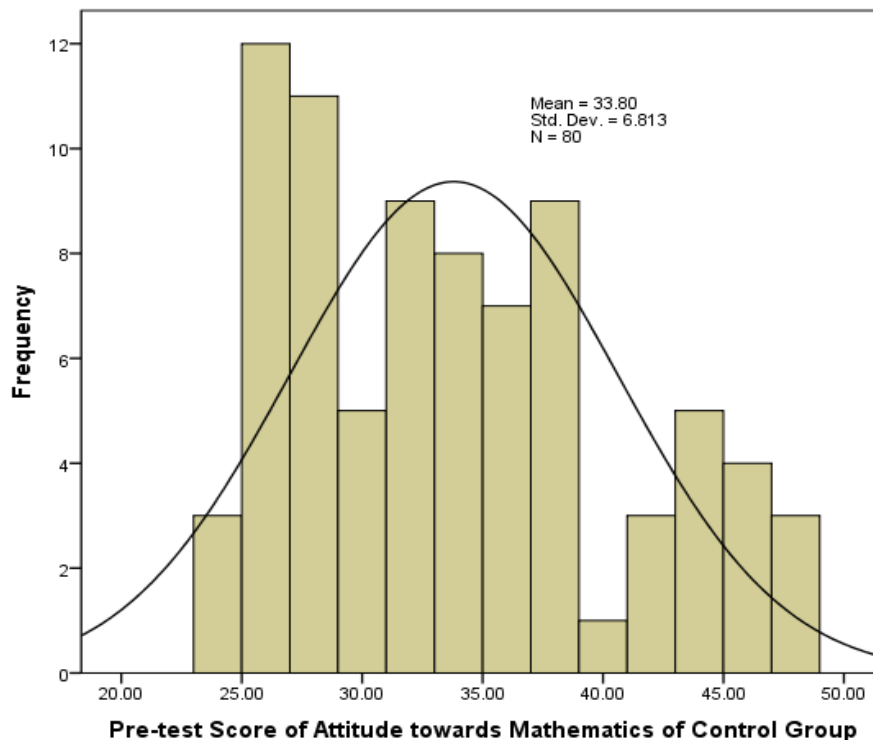


Figure 4.18. Graphical representation of pre-test scores of attitude towards learning mathematics of the control group

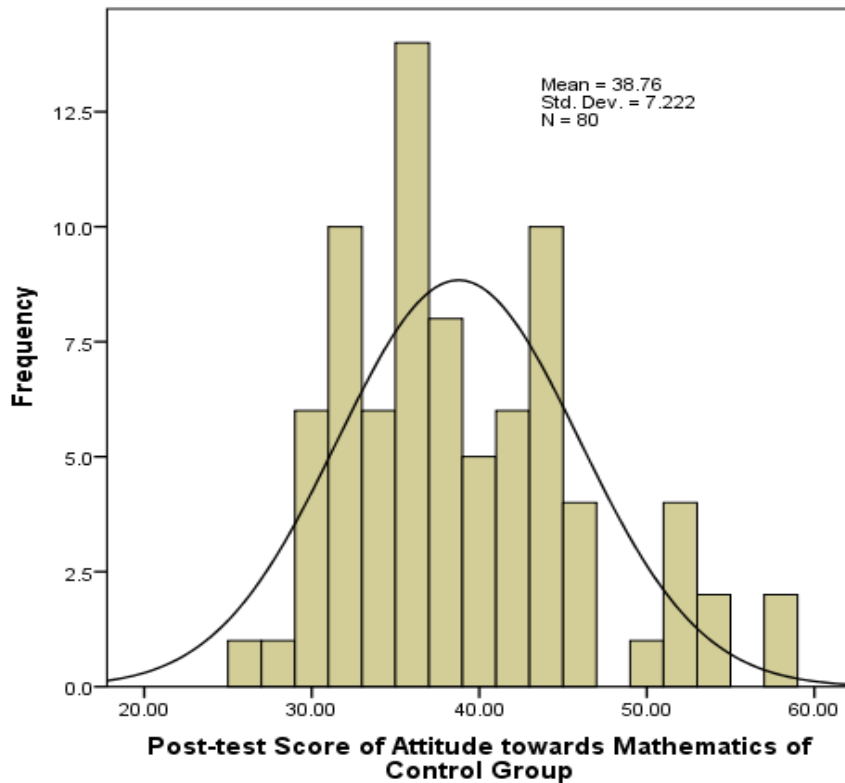


Figure 4.19. Graphical representation of post-test scores of attitude towards learning mathematics of the control group.

4.12 Preliminary analysis of the data of the students taught through Vedic mathematics-based instruction (III grade).

The results of the preliminary analysis of pre-intervention and post-intervention tests of both achievement and attitude tests are discussed below.

4.12.1 Preliminary analysis of the scores of the Mathematics Achievement Test of the experimental group.

Table 4.18 shows the summary of the descriptive statistics of the pre-intervention and post-intervention achievement tests on Mathematics scores obtained by the students taught through Vedic mathematics-based instruction.

Table 4.18

Summary of the Descriptive Statistics of the Scores of Achievement Test on Mathematics of the Experimental Group (III grade)

Test	No. of students	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Pre-test	80	9.31	9.00	9.00	2.46	-0.313	0.097
Post-test	80	15.29	15.00	14.00	2.29	0.268	-0.545

The value of the mean, median, and mode of the pre-test is found as 9.31, 9.00, and 9.00 respectively. The standard deviation is calculated as 2.46. The value for skewness and kurtosis is obtained as -0.313 and -0.097 respectively.

The statistical indices for the post-intervention of the achievement in mathematics of the students taught through Vedic mathematics-based instruction are 15.29 (mean) 15.00 (median) and 14.00 (mode). The standard deviation is found to be 2.29. The skewness and kurtosis are found to be 0.268 and -0.545 respectively.

Discussion. The analysis of the statistical indices of the pre-intervention and post-intervention of the achievement in mathematics scores of the experimental group shows that the distribution of data is almost normal and can be subjected to major statistical analysis for a reliable output.

Figure 4.20 and Figure 4.21 give the graphical representation of the pre-intervention and post-intervention scores in mathematics achievement of the students taught through Vedic mathematics-based instruction for the III grade respectively.

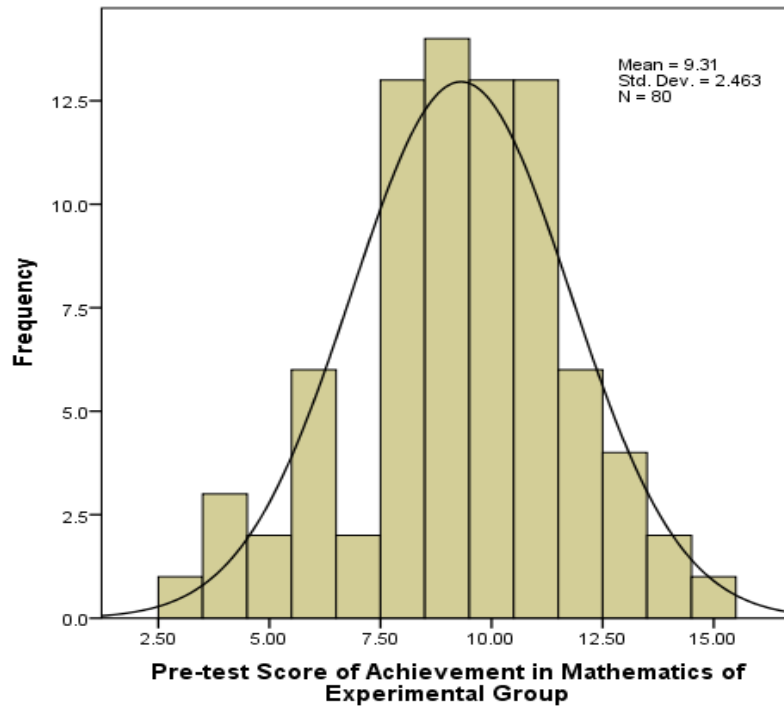


Figure 4.20. Graphical representation of pre-test scores of Achievement in mathematics of the experimental group

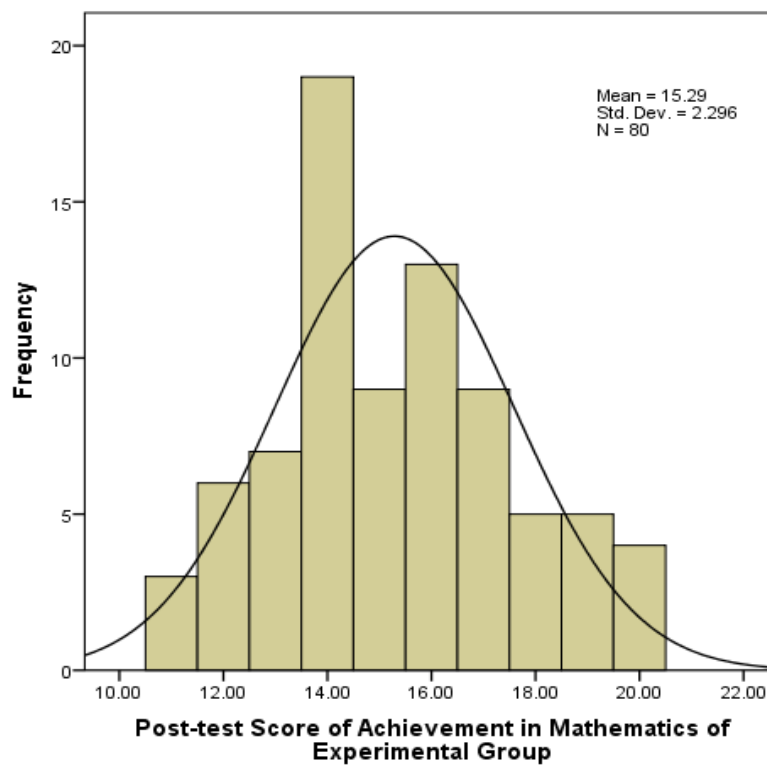


Figure 4.21. Graphical representation of post-test scores of Achievement in mathematics of the experimental group

4.12.2 Preliminary analysis of Attitude Test on Mathematics scores of the students taught through Vedic mathematics-based instruction.

The summary of the descriptive statistics of the pre-intervention and post-intervention scores of attitude towards mathematics of the students taught through Vedic mathematics-based instruction is depicted below.

Table 4.19

Summary of the Descriptive Statistics of the Scores of Attitude towards Learning Mathematics of the Experimental Group (III grade)

Test	No. of students	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Pre-test	80	34.46	34.00	32.00	6.60	0.413	-0.843
Post-test	80	47.36	48.00	44.00	6.58	-0.061	-0.913

From above Table 4.19, it can be observed that the value of mean, median, and mode obtained for pre-intervention scores of attitude towards learning mathematics is 34.48, 34.00, and 34.00 respectively. The standard deviation is 6.60 and the skewness and kurtosis value are 0.413 and -0.843 respectively.

As per Table 4.19, the statistical indices obtained for the post-intervention of the attitude towards learning mathematics of the students taught through Vedic mathematics-based instruction are 47.36 as the mean value, 48.00 as the median value, and 44.00 as the mode. The standard deviation is found to be 6.58. The skewness and kurtosis are found to be -0.061 and -0.913 respectively.

Discussion. The values of the statistical indices denote that the data is not much scattered, and almost tends to be normal.

The distribution of the scores can be visually presented in Figures 4.22 and 4.23.

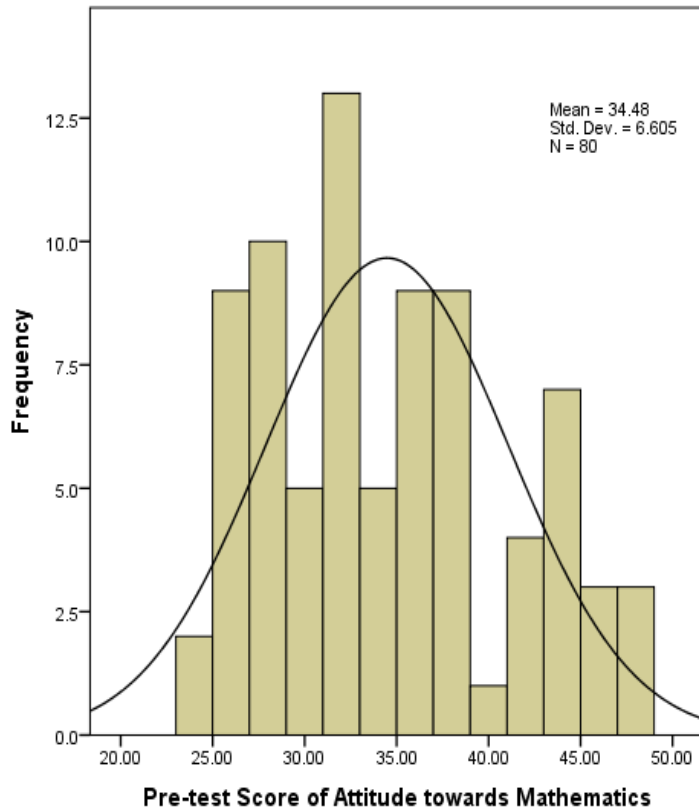


Figure 4.22. Graphical representation of pre-test scores of attitude towards learning mathematics of the experimental group

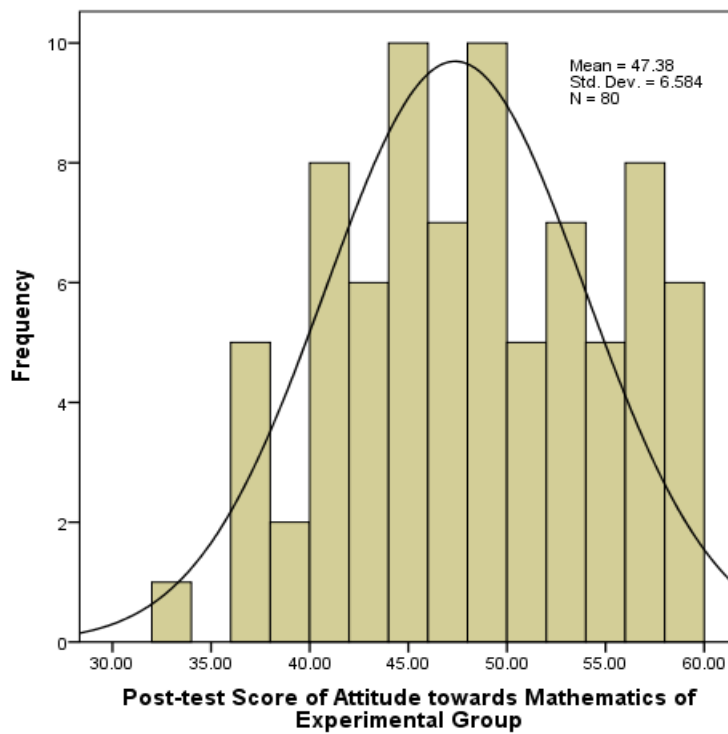


Figure 4.23. Graphical representation of post-test scores of attitude towards learning mathematics of the experimental group.

Statistical Analysis of III grade

4.13 Correlation between achievement in mathematics and attitude towards learning Mathematics

4.13.1 Correlation between pretest scores of achievement in mathematics and attitude towards learning mathematics of III graders.

The investigator tried to find out whether the selected two variables academic achievement and attitude of the III grade student are correlated to each other. The findings of which is encapsulated in Table 4.20(a).

Table 4.20(a)

Correlation between pre test scores Achievement in mathematics and Attitude towards Learning Mathematics of III grade Students.

Variables	No of students	Mean	Standard Deviation	<i>r</i> (Correlation)	<i>p</i> (probability)
Achievement in Mathematics	160	9.28	2.48		
Attitude towards Learning Mathematics	160	34.13	6.69	.344*	$p < 0.0001$

Note. * denotes the value is significant at 0.05 level.

Table 4.20(a) shows that the coefficient of correlation obtained for the test of correlation employed between achievement in mathematics and attitude towards learning mathematics is 0.344 ($p < 0.0001$). The *p-value* obtained shows that the correlation is significant.

Discussion. The examination of the relationship between achievement and attitude among third-grade students indicates a notable moderate correlation between achievement and their attitude towards learning mathematics.

The results demonstrate that the null hypothesis stated as “There is no significant relation exists between the pretest scores of achievement in mathematics and attitude towards learning mathematics of III grade students” is rejected.

The graphical representation of the correlation of the variable is shown in Figure 4.24.

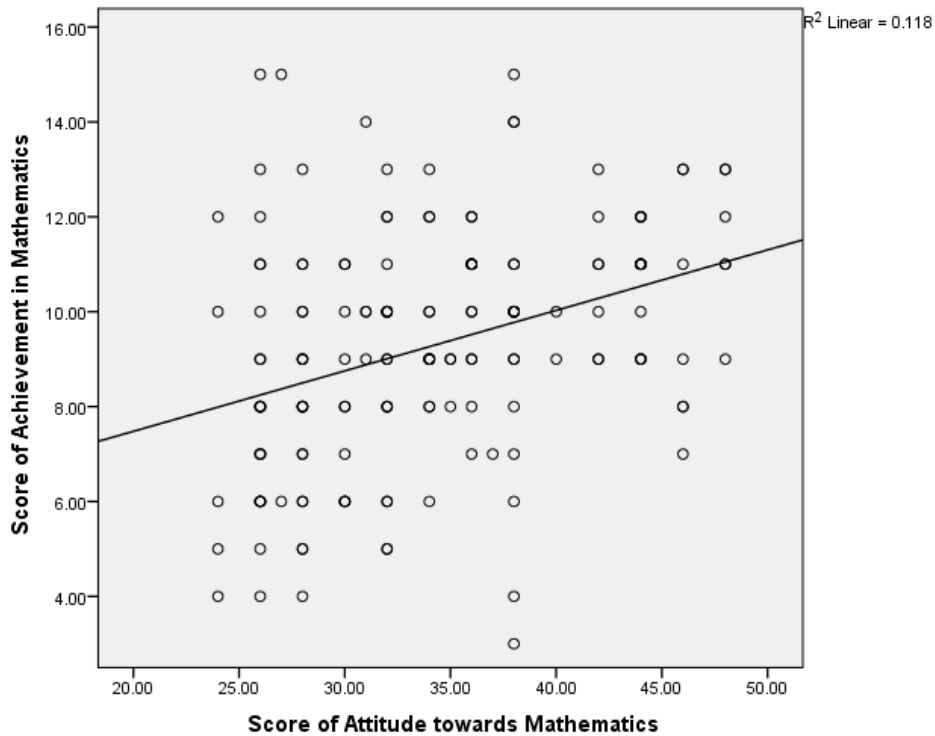


Figure 4.24. Graphical representation of the correlation between attitude towards learning mathematics and achievement in mathematics of III grade students.

4.13.2 Correlation between the post-intervention scores of achievement in mathematics and attitude towards learning mathematics of III grade students.

The investigator sought to examine whether there is a relationship between the post-intervention scores of two variables, achievement, and attitude towards learning mathematics among eighth-graders. The findings of this investigation are summarized as follows.

Table 4.20 (b)

Correlation between the post test scores of Achievement in Mathematics and Attitude towards Learning Mathematics of III grade Students. (post-test scores of experimental and control group)

Variables	No of students	Mean	<i>r</i> (Correlation Coefficient)	<i>P</i> (probability)
Achievement in Mathematics	160	13.475		
Attitude towards Learning Mathematics	160	43.06	.469**	P < 0.0001

Note. * *denotes the value is significant at 0.05 level.

Table 4.20 (b) shows that the coefficient of correlation obtained for the test of correlation employed between achievement in mathematics and attitude towards learning mathematics is .469 ($p < 0.0001$). The p -value obtained shows that the correlation is significant.

Discussion: The examination of the relation between achievement and attitude among third-grade students reveals a strong and significant correlation between their achievement in mathematics and attitude toward learning mathematics.

The results demonstrate that the null hypothesis stated as “There is no significant relation exists between the post-test scores of achievement in mathematics and attitude towards learning mathematics of III grade students” is rejected.

The graphical representation of the correlation of the variable is shown in Figure 4.25

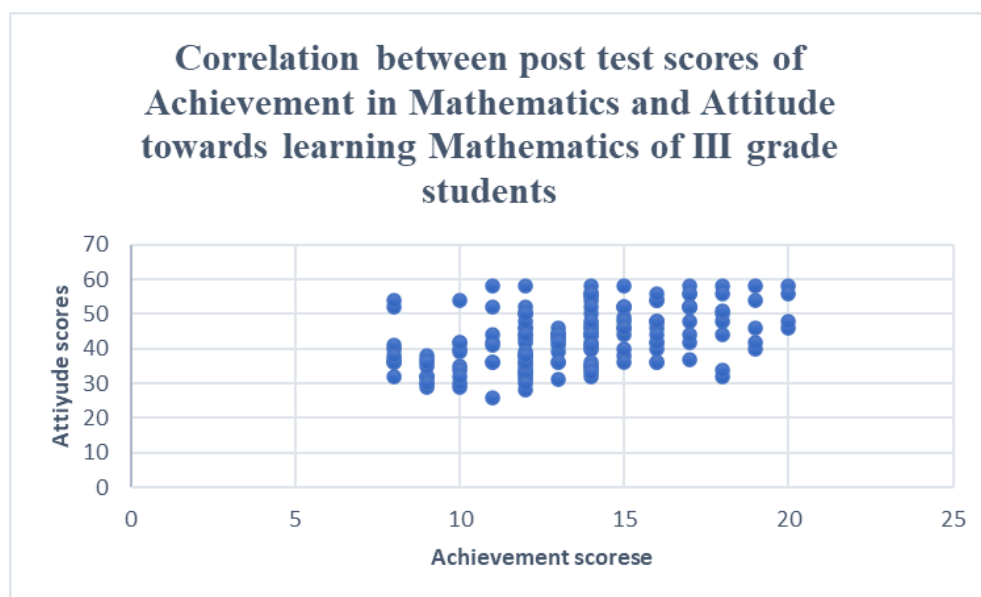


Figure 4.25. Correlation between post test scores of achievement in mathematics and attitude towards learning mathematics of III grade students

4.14 Significant difference in the mean pre-intervention scores of achievement and attitude towards learning mathematics of students taught through conventional teaching method and Vedic mathematics method for III grade.

To find if any significant difference in the mean pre-intervention scores of achievement and attitude of the control group and experimental group, The findings of the statistical analysis are presented below.

Table 4.21

Test of Significance of Difference in the Mean Pre-test Scores of Achievement and Attitude towards Learning Mathematics of Control and Experimental Group

Variable	Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Achievement	Control	80	9.25	2.51	0.159	0.874
	Experimental	80	9.31	2.46		
Attitude	Control	80	33.80	6.81	0.636	0.526
	Experimental	80	34.48	6.60		

Note: n= no. of students, M=Mean, SD = Standard Deviation, t= t value, p = probability

Table 4.21 shows that the students taught through the conventional teaching method have a mean pre-intervention achievement score of 9.25 and a standard deviation of 2.51. The students taught through Vedic mathematics have a mean achievement score of 9.31 with standard deviation of 2.46. The t -value for the mean pre-intervention scores of achievement of the students taught through the conventional teaching method and Vedic methods is 0.159 which is less than the table value 1.96 at .05 level of confidence. This reveals that there exists no significant difference in the mean pre-intervention scores of mathematics achievement of students taught through the conventional teaching method and Vedic methods

Table 4.21 makes clear that the students taught through the conventional teaching method have a mean pre-intervention score of attitude as 33.80 and the standard deviation was 6.81. Students taught through Vedic mathematics have a mean score attitude of 34.48 with standard deviation of 6.60. The t -value for the mean pre-intervention scores of attitude of students taught through the conventional teaching method and Vedic methods are found to be .636, which is below the table value of 1.96 at a .05 level of confidence. This reveals that there exists no significant difference in the mean pre-intervention scores of attitude toward learning mathematics of students taught through the conventional teaching method and Vedic methods.

Discussion. The obtained t -value, for both pre-intervention achievement and attitude is less than the table value (1.96), i.e., there exists no significant difference in the mean pre-intervention scores of mathematics achievement as well as attitude towards learning mathematics of students taught through the conventional teaching method and Vedic methods at .05 level of significance. The result shows that the selected two groups are almost equal in achievement and attitude towards learning mathematics.

The results reveals that the null hypothesis stated as “There is no significant difference exists between the mean pre-test scores of achievement in mathematics and attitude towards learning mathematics of students taught through conventional teaching method and Vedic mathematics method for III grade students” is accepted.

4.15 Significant difference in the scores of mean pre-intervention and post-intervention of the control group of III grade.

The significance of the difference in the mean pre-intervention scores and mean post-intervention scores of mathematics achievement and attitude towards learning mathematics of control group was statistically analyzed by employing the paired sample *t*-test. The findings are given in Table 4.22.

Table 4.22

Data and Results of Test of Significance of Difference in Mean Pre-Test and Post-Test Scores of Achievement Test and Attitude Test of Control Group

Variables	Control Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>t</i>	<i>p</i>
Achievement	Pre-test	80	9.34	2.55	0.725*	11.055*	<i>p</i> <0.0001
	Post-test	80	11.66	2.52			
Attitude	Pre-test	80	33.80	6.81	0.555*	6.698*	<i>p</i> <0.0001
	Post-test	80	38.76	7.22			

Note. * denotes the value is significant at 0.05 level.

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *r* = coefficient of correlation, *t*= *t* value, *p* = probability

Table 4.22 shows the mean pre-intervention and post-intervention achievement scores of the control group as 9.34(*SD*=2.55) and 11.66 (*SD*=2.52) respectively. The obtained value of the coefficient of correlation, *r*, is 0.725 and is significant at the .05 level. Hence, the scores of pre-intervention and post-intervention of the students taught through the conventional teaching method had a significant correlation. The obtained *t*-value 11.055 is greater than 1.96. Hence, the difference is said to be significant at 5 percent level of confidence.

It is evident that the obtained value of the coefficient of correlation, *r*, 0.55 is significant at a .05 level of significance. Hence, the pre-intervention and post-intervention attitude scores of the students taught through the conventional teaching method had a significant correlation. The *t*-value obtained is 6.698 is greater than 1.96 at a .05 level of significance.

Discussion. The *t*-value (11.055 for the achievement test and 6.698 for the attitude test) is greater than 1.96. Therefore, it is interpreted that the difference in mean pre-

intervention and post-intervention scores of achievement test and attitude test of the students taught through the conventional teaching method is significant. The result displays that the mean post-intervention value is greater than the pre-intervention, which means the conventional method of teaching mathematics applied to students has enhanced the mathematics achievement as well as attitude towards the mathematics of the students taught through the conventional teaching method.

The results reveal that the null hypothesis stated as “There is no significant difference exists between the mean pre-intervention test and post-intervention test of the control group of III grade” is rejected.

The difference in the mean pre-intervention score and post-intervention score of achievement and attitude test is illustrated in Figure 4.26.

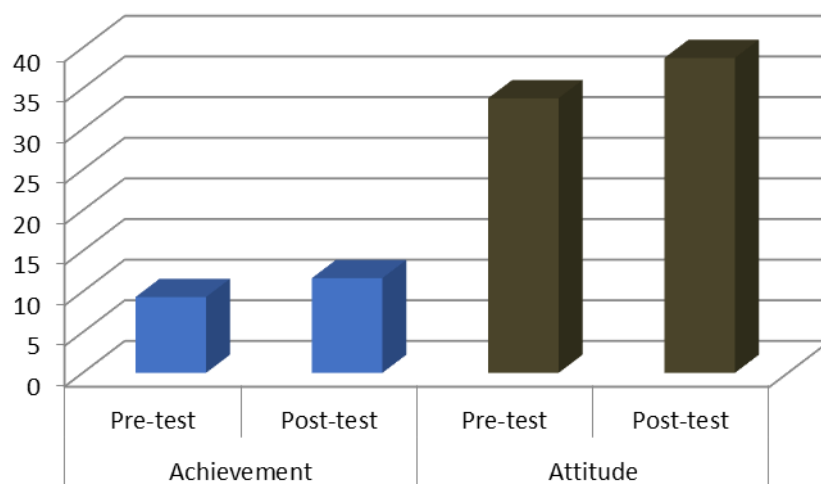


Figure 4.26. Difference in the mean pre-test and the post-test score of achievement in mathematics and attitude towards learning mathematics of the control group.

4.16 Significance of difference in the mean post-intervention and mean delayed post-intervention scores of students taught through the conventional teaching method.

The significance of the difference in the mean post-intervention scores and mean delayed post-intervention scores of achievement in mathematics and attitude towards learning mathematics of the control group was statistically analysed by employing the paired sample *t*-test. The result is presented in Table 4.23.

Table 4.23

Data and Results of Test of Significance of Difference in Mean Post-Test and Delayed Post-Test Scores of Achievement and Attitude of Control Group

Variables	Control Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>t</i>	<i>p</i>
Achievement	Post-test	80	11.66	2.52	0.693*	0.638	0.52
	Delayed Post-test	80	11.80	2.39			
Attitude	Post-test	80	38.76	7.22	0.963*	0.342	0.7
	Delayed Post-test	80	38.84	6.81			

Note. * denotes the value is significant at 0.05 level.

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *r* = coefficient of correlation, *t*= *t* value, *p* = probability

Table 4.23 shows the result of the paired sample *t-test* applied for the post-intervention and delayed post-intervention achievement of students taught through the conventional teaching method for III grade. The value of the coefficient of correlation, *r*, obtained is 0.638, significant at a .05 level of significance. Hence, the post-intervention and delayed post-intervention scores of the students taught through the conventional teaching method have a significant correlation. The *t*-value obtained 0.638 is less than 1.96 and so the difference is not significant at the .05 level.

Since the value of the coefficient of correlation, *r*, obtained is 0.963, significant at a .05 level, the post-intervention and delayed post-intervention attitude scores of the students taught through the conventional teaching method have a significant correlation. The *t*-value obtained (0.342) is less than 1.96, therefore the difference is not significant at the .05 level.

Discussion. The obtained *t* value for the mean post-intervention and delayed post-intervention score of achievement and attitude of III-grade students taught through the conventional teaching method is not significant at a .05 level of confidence. That means the retention effect of the conventional teaching method is constant in third-grade students. The results reveal that the null hypothesis stated as “There is no significant difference exists between the mean post-intervention scores and mean delayed post-intervention scores of achievement in mathematics and attitude towards learning mathematics of the control group” is accepted.

4.17 Significance of difference in the mean pre-intervention and mean post-intervention scores of the students taught through Vedic mathematics.

The significance of the difference in the mean pre-intervention scores and mean post-intervention scores of mathematics achievement and attitude towards learning mathematics of experimental group was statistically analyzed by employing the paired sample *t*-test. The finding is presented below.

Table 4.24

Data and Results of Test of Significance of Difference in Mean Pre-Test and Post-Test Scores of Achievement Test and Attitude Test of Experimental Group

Variables	Experiment al Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>t</i>	<i>p</i>
Achievement	Pre-test	80	9.36	2.42	0.750*	31.646*	<i>p</i> <0.0001
	Post-test	80	15.29	2.29			
Attitude	Pre-test	80	34.48	6.60	0.714*	23.145*	<i>p</i> <0.0001
	Post-test	80	47.38	6.58			

Note. * denotes the value is significant at 0.05 level.

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *r* = coefficient of correlation, *t*= *t* value, *p* = probability

Table 4.24 shows that for the paired sample *t*-test conducted between the mean pre-intervention and post-intervention achievement score of the experimental group, the obtained value of the coefficient of correlation, *r*, 0.750 is significant at the .05 level. Hence, the pre-intervention and post-intervention scores of the students taught through Vedic mathematics have a significant correlation. The *t*-value, 31.646 is greater than 1.96 at the .05 level, therefore the difference in the mean value is significant.

The obtained value of the coefficient of correlation, *r*, 0.714 is significant at .05 level. Hence, the pre-intervention and post-intervention attitude scores of the students taught through Vedic mathematics have a significant correlation. The *t*-value, 23.145 is greater 1.96. Hence, the difference is significant at the .05 level.

Discussion. The *t*-value (31.646 for the achievement test and 23.145 for the attitude test) is higher than 1.96. Therefore, the difference in mean pre-intervention and post-intervention scores of the achievement test as well as attitude test of the experimental group is significant. The result reveals that the mean post-intervention value is higher than

the pre-intervention, which means the Vedic mathematics method applied to the students taught through Vedic mathematics has a positive effect on the achievement in mathematics as well as attitude towards learning mathematics of the experimental group.

The results reveal that the null hypothesis stated as “There is no significant difference exists between the mean pre-intervention scores and mean post-intervention scores of achievement in mathematics and attitude towards learning mathematics of experimental group” is rejected.

The difference in the mean pre-intervention score and post-intervention score of achievement and attitude test is illustrated in Figure 4.27.

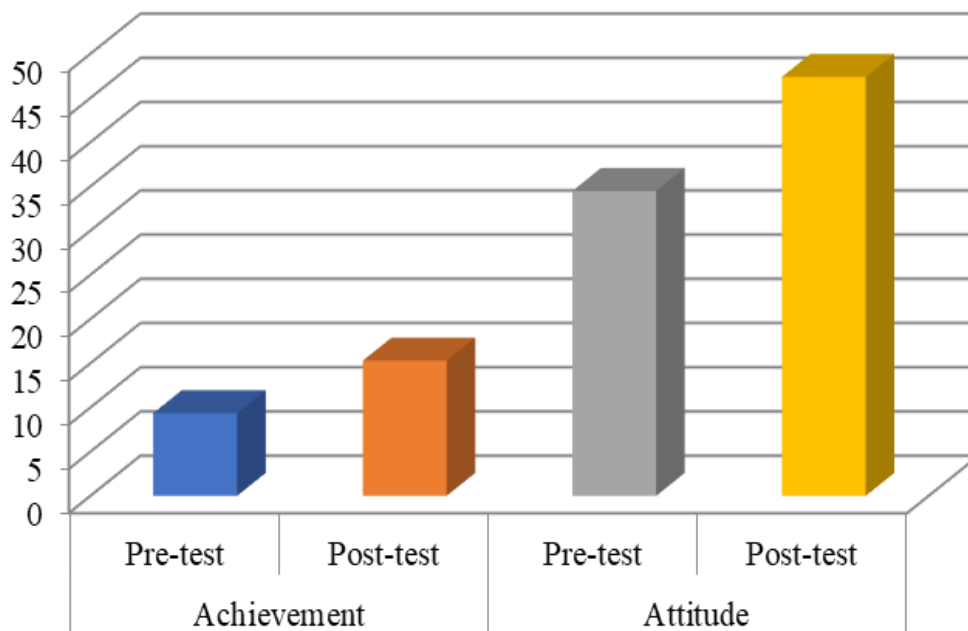


Figure 4.27. Difference in the mean pre-test and the post-test score of achievement in mathematics and attitude towards learning mathematics of the experimental group.

4.18 Significance of difference in the mean post-intervention and mean delayed post-intervention of the students taught through Vedic mathematics.

The significance of the difference in the mean post-intervention scores and mean delayed post-intervention scores of achievement in mathematics and attitude towards learning mathematics of experimental group was statistically analyzed by employing the paired sample *t*-test. The result is presented in Table 4.25.

Table 4.25

Data and Results of Test of Significance of Difference in Mean Post-Test and Delayed Post-Test Scores of Achievement and Attitude of Experimental Group

Variables	Experimental Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>t</i>	<i>p</i>
Achievement	Post-test	80	15.29	2.29	0.784*	0.835	0.40
	Delayed Post-test	80	15.15	2.18			
Attitude	Post-test	80	47.38	6.58	0.946*	0.262	0.79
	Delayed Post-test	80	47.44	6.23			

Note. * denotes the value is significant at 0.05 level.

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *r* = coefficient of correlation, *t*= *t* value, *p* = probability

Table 4.25 shows the result of the paired sample *t*-test applied for the post-intervention and delayed post-intervention of students taught through Vedic mathematics from III grade. The value of the coefficient of correlation, *r*; 0.784, is significant at .05 level. Hence, the post-intervention and delayed post-intervention scores of the students taught through Vedic mathematics have a significant correlation. The *t*-value obtained is 0.835 which is less than 1.96. Hence, the difference is not significant at a .05 level of significance.

From Table 4.25, the result obtained for the paired sample *t*-test applied for the post-intervention and delayed post-intervention score of attitude of students taught through Vedic mathematics of III grade is also clear. The value of the coefficient of correlation, *r*; 0.946, is significant at a .05 level. Hence, the post-intervention and delayed post-intervention scores of attitude towards learning mathematics of the students taught through Vedic mathematics have a significant correlation. The *t*-value, 0.262 is less than 1.96. Hence, the difference is not significant at the .05 level.

Discussion. The obtained *t* value for the test of significance of the difference in the mean post-intervention and delayed post-intervention score of achievement and attitude of the III-grade students taught through Vedic mathematics is not significant at .05 level, which means, the retention effect of the Vedic method is constant in the III grade students.

The results reveal that the null hypothesis stated “There is no significant difference exists between the mean post-intervention scores and mean delayed post-intervention

scores of achievement in mathematics and attitude towards learning mathematics of experimental group” is accepted.

4.19 Significance of difference in the mean post-intervention scores of achievement in mathematics and attitude towards learning mathematics of students taught through conventional teaching method and Vedic mathematics.

The investigator examined if the difference in the mean post-intervention score of students taught through conventional teaching method and Vedic mathematics is significant or not. The result of independent sample *t*-test is presented below.

Table 4.26

Test of Significance of Difference in the Mean Post-test Scores of Achievement Test and Attitude Test of Control and Experimental Group

Variable	Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Achievement	Control	80	11.66	2.52	9.510*	<i>p</i> <0.0001
	Experimental	80	15.29	2.29		
Attitude	Control	80	38.76	7.22	8.562*	<i>p</i> <0.0001
	Experimental	80	47.38	6.58		

Note. * denotes the value is significant at .05 level

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *t*= *t* value, *p* = probability

Table 4.26 shows that the students taught through the conventional teaching method have a mean post-intervention achievement score of 11.66 with a standard deviation of 2.52. The students taught through Vedic mathematics have a mean post-intervention score of 15.29 with a standard deviation of 2.29. The *t*-value for the mean post-intervention scores of achievement of students taught through conventional teaching methods and Vedic mathematics is found to be 9.510 which is greater than 1.96 at a .05 level of confidence. The obtained *t*-value of the mean post-intervention scores of achievement test of students taught through conventional teaching methods and Vedic mathematics is significant at the .05 level.

Table 4.26 also denotes that the *t* value obtained for the test between the post-intervention score of attitude towards learning mathematics of students taught through conventional teaching method and Vedic mathematics (8.562) is greater than the table value 1.96 at .05 level and the difference in the mean score is significant.

Discussion. The t value, for the post-intervention scores of both the achievement test and attitude test shows a significant difference at the .05 level. The mean value of students taught through Vedic mathematics is higher than the students taught through conventional teaching methods. Hence, the Vedic mathematics applied for the students taught through Vedic mathematics is effective in enhancing the achievement as well as attitude towards learning mathematics of the III graders.

The results demonstrate that the null hypothesis stated “There is no significant difference exists between the mean post-intervention scores of achievement in mathematics and attitude towards learning mathematics of students taught through conventional teaching method and Vedic mathematics” is rejected.

The difference in the post-intervention score of the students taught through conventional teaching methods and Vedic mathematics is given in Figure 4.28.

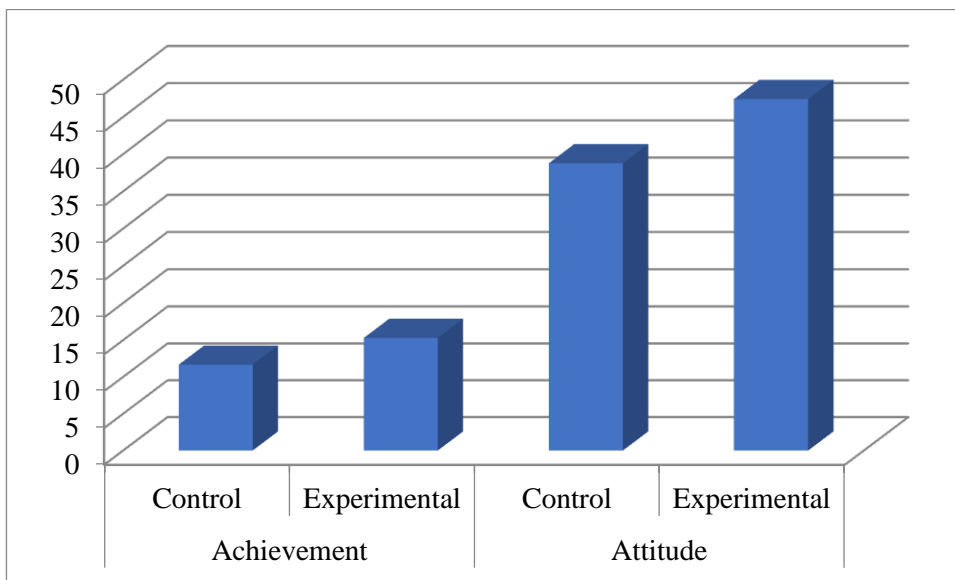


Figure 4.28. Graphical representation of the difference in the mean post-test scores of achievement in mathematics and attitude towards mathematics learning of control group and experimental group.

4.20 Significance of difference in the mean post-intervention scores of achievement in mathematics and attitude towards learning mathematics of students taught through conventional teaching method and Vedic mathematics based on gender

The efficacy of Vedic mathematics on the achievement in mathematics and attitude towards mathematics of school students based on gender was compared using a t-test. The findings are given below.

Table 4.27

Test of Significance of Difference in the Mean Post-test Scores of Achievement Test and Attitude Test of Control and Experimental Group students based on gender

Variable	Group	Sub sample	<i>n</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Achievement	Control	Girls	55	11.89	2.63	1.292
		Boys	25	11.16	2.21	
Attitude		Girls	55	40.15	6.66	2.51* $p < 0.0001$
		Boys	25	35.72	7.6	
Achievement	Experimental	Girls	41	16.16	2.25	.498
		Boys	39	14.89	2.22	
Attitude		Girls	41	50.36	6.32	1.44
		Boys	39	46.02	6.29	

Table 4.27 displays that there is no significant difference in the achievement in mathematics of male and female students taught by conventional teaching methods and Vedic mathematics. It is seen that the attitude of girls taught by the conventional method is better than that of boys, but there is no difference in the attitude of male and female students taught by Vedic mathematics-based instruction.

The results disclose that the null hypothesis stated “There is no significant difference exists between the mean post-intervention scores of achievement in mathematics of students taught through conventional teaching method and Vedic mathematics based on gender” is accepted. and “attitude towards learning mathematics” of the control group is rejected and for the experimental group it is accepted.

4.21 Significance of difference in the mean post-intervention scores of mathematics achievement and attitude towards learning mathematics of girls taught through conventional teaching method and Vedic mathematics and boys of students taught through conventional teaching method and Vedic mathematics.

The investigator has extended the analysis to sample-wise. In order to know whether the method was effective for female or male students separately independent sample t-test was conducted. The result is given below.

Table 4.28

Test of Significance of Difference in the Mean Post-test Scores of Achievement Test and Attitude Test of Control and Experimental Group for the subsample Gender

Sub Sample	Variable	Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Girls	Achievement	Control	55	11.89	2.63	7.014*	<i>p</i> < 0.0001
		Experimental	41	16.16	2.25		
	Attitude	Control	55	40.15	6.66	6.456*	<i>p</i> < 0.0001
		Experimental	41	50.36	6.32		
Boys	Achievement	Control	25	11.16	2.21	6.965*	<i>p</i> < 0.0001
		Experimental	39	14.89	2.22		
	Attitude	Control	25	35.72	7.60	6.346*	<i>p</i> < 0.0001
		Experimental	39	46.02	6.29		

Note. ** denotes the value is significant at .01 level

n = no. of students, *M* = Mean, *SD* = Standard Deviation, *r* = coefficient of correlation, *t* = *t* value, *p* = probability

The *t* value obtained for the post-intervention score of achievement in mathematics of students taught through conventional teaching method and Vedic mathematics for the subsample 'girl is 7.014, which is greater than 1.96. Therefore, the difference is significant and the mean value of the students taught through Vedic mathematics is higher than the students taught through conventional teaching methods.

The *t* value obtained for the post-intervention score of attitude towards mathematics of students taught through conventional teaching method and Vedic mathematics is 6.456 which is higher than 1.96, and hence significant at .05 level. The mean value of students taught through Vedic mathematics is greater than the mean value of the students taught through conventional teaching methods.

From Table 4.28, the *t*-test for the post-intervention achievement score of students taught through conventional teaching method and Vedic mathematics for male students is 6.965 which is greater than 1.96 and hence significant.

From Table 4.28, the post-intervention attitude score of students taught through conventional teaching methods and Vedic mathematics for male students gives a *t* value of 6.346. The *t* value is greater than 1.96 and hence significant at the .05 level.

Discussion. The *t*-test for the mean post-intervention value of achievement and attitude between the students taught through conventional teaching methods and Vedic

mathematics employed for girls and boys separately shows that the experimental group has obtained significantly greater mean achievement as well as attitude scores. This denotes that the Vedic method applied in the III grade experiment group has a positive effect on the achievement in mathematics and attitude towards mathematics of lower graders.

The results disclose that the null hypothesis stated “There is no significant difference exists between the mean post-intervention test scores of achievement in mathematics and attitude towards learning mathematics of girls of control and experimental group and boys of control and experimental group” is rejected

The difference in the mean score can be graphically represented as given in Figure 4.29.

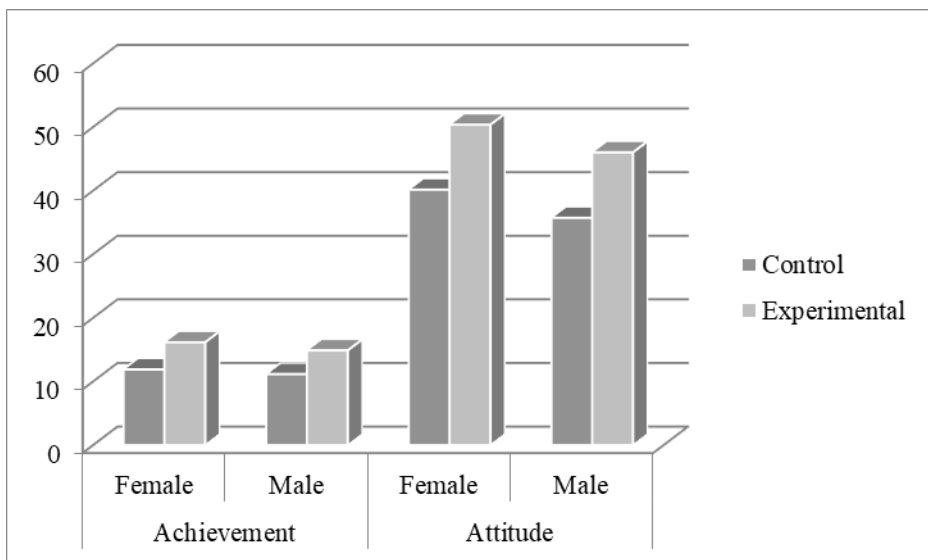


Figure 4.29. Graphical representation of difference in the mean score of achievement in mathematics of control and experimental group for the sub sample classified based on gender.

4.22 Significance of difference in the mean post-intervention scores of achievement in mathematics and attitude towards learning mathematics of students taught through conventional teaching method and Vedic mathematics for sample classified based on the type of school.

The sample was obtained from government-aided and private schools. The investigator conducted separate analyses for each school type to analyze the effect of the Vedic method.

Table 4.29

Test of Significance of Difference in the Mean Post-test Scores of Achievement Test and Attitude Test of Control and Experimental Group for the Subsample Type of School

Sub Sample	Variable	Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Govt-Aided	Achievement	Control	40	12.07	2.12	6.878*	<i>p</i> < 0.0001
		Experimental	40	5.50	2.33		
	Attitude	Control	40	36.60	6.11	8.031*	<i>p</i> < 0.0001
		Experimental	40	47.78	6.34		
Private	Achievement	Control	40	11.25	2.83	6.662*	<i>p</i> < 0.0001
		Experimental	40	15.08	2.27		
	Attitude	Control	40	40.93	7.67	3.715*	<i>p</i> < 0.0001
		Experimental	40	46.98	6.88		

Note. ** denotes the value is significant at .01 level

n= no. of students, *M*=Mean, *SD* = Standard Deviation, *r* = coefficient of correlation, *t*= *t* value, *p* = probability

The *t* value of the post-intervention score of achievement in mathematics of the students taught through conventional teaching methods and Vedic mathematics from government-aided schools is 6.878. The obtained *t*-value is higher than 1.96 and hence, significant at a .05 level.

The *t* value obtained between the post-intervention score of attitude towards learning mathematics of the students taught through conventional teaching method is 8.031 which is greater than 1.96, and hence, the difference is significant at .05 level.

The *t* value of the post-intervention achievement score of the students taught through conventional teaching methods and Vedic mathematics for private school students is 6.662, hence significant at a 5 percent level of confidence.

From Table 4.29, the *t* value of the post-intervention attitude score of the students taught through conventional teaching methods and Vedic mathematics for the private school students is 3.715 which is higher than 1.96, hence the difference is significant at a .05 level.

Discussion. *t* test was employed for testing the effect of Vedic method on the achievement and attitude towards mathematics of Govt-aided and Private school students

separately. The analysis shows it clearly that the mean score obtained by the students taught through Vedic mathematics is much higher than the control group. Hence, Vedic Mathematics applied to the III grade students taught through Vedic mathematics is effective in improving the achievement in mathematics as well the attitude towards learning mathematics of the III graders.

The results disclose that the null hypothesis stated as “There is no significant difference exists between the mean post-intervention scores of achievement in mathematics and attitude towards learning mathematics of students taught through conventional teaching method and Vedic mathematics for sample classified on the type of school” is rejected.

The difference in the mean post-intervention score of both groups based on the type of school is illustrated in Figure 4.30.

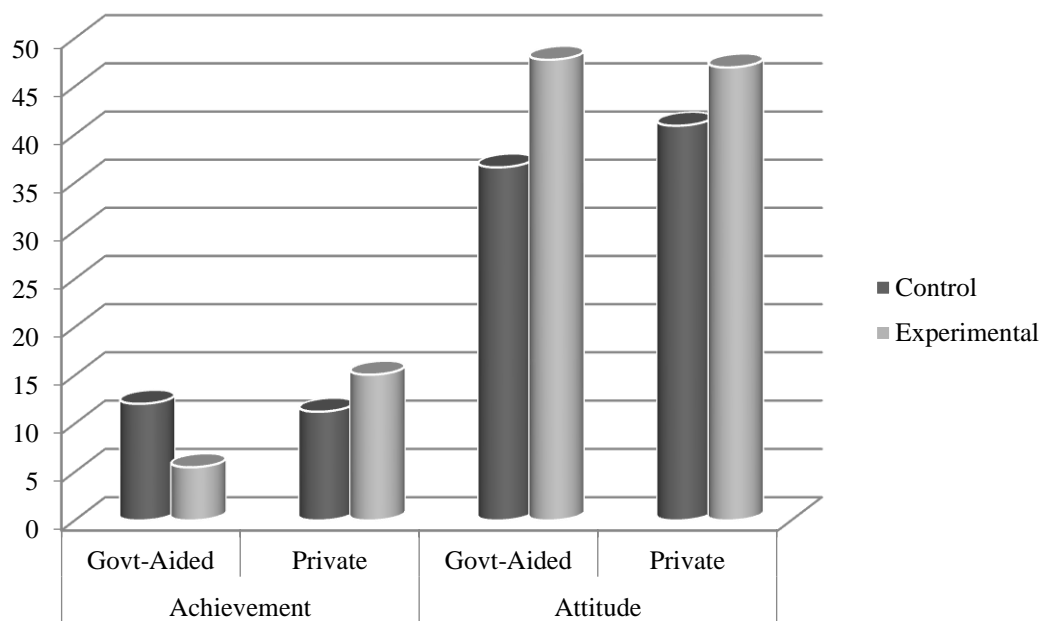


Figure 4.30. Graphical representation of difference in the mean post-test score of achievement in mathematics and attitude towards learning mathematics of control and experimental group for the sub sample –Govt.-Aided school.

4.23 The significance of the difference in the mean score of Achievement in Mathematics for the different learning style groups.

The investigator grouped the learners according to their learning style into three groups: Visual, Auditory, and Kinesthetic. The investigator aimed to discover which students with which learning style benefitted more from Vedic mathematics.

The investigator employed one-way ANOVA, the result of which is discussed below.

The Levene Statistic was obtained as 1.686 at a significance of .192 which means the data satisfies the rule of homogeneity of variance and can be employed for further analysis. The descriptive statistics of the test are given in Table 4.30.

Table 4.30

Descriptive Statistics of the Post-test Score of Achievement in Mathematics

Learning Style	<i>n</i>	<i>M</i>	<i>SD</i>
Visual	34	15.38	2.41
Auditory	26	15.04	1.99
Tactile	20	15.45	2.54

Note: n= no. of students, M=Mean, SD = Standard Deviation

As per Table 4.30, 34 students fall into the visual group, 26 into the auditory group, and 20 into the kinesthetic group. The mean is obtained as 15.38, 15.04, and 15.45 for the visual, auditory, and kinesthetic groups, respectively. The table displays that the mean is almost the same. However, further analysis was done. The result is presented in Table 4.31.

Table 4.31

Significance of Difference in the Mean Achievement Score of Different Learning Style Groups

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between Groups	2.447	2	1.223		
Within Groups	413.941	77	5.376	0.228	0.797
Total	416.388	79			

Note: SS = Sum of squares, df = degrees of freedom, MS = Mean Square, F = F ratio, p = probability

The *F* value obtained for the ANOVA conducted is 0.228 (*df* – 77/2) is less than the Table value (Table R). The value of significance 0.797 clearly shows that the difference is not significant at the .05 level.

Discussion. The F value is not significant at a .05 level. The result, reveals that Vedic mathematics is effective for all three learning groups in an equal manner. None of the group gains more than the other when Vedic mathematics is applied.

The results demonstrate that the null hypothesis stated as “There is no significant difference exists between the mean score of Achievement in Mathematics for the different learning style groups” is accepted

4.24 COMPUTATIONAL SPEED

Computational speed refers to a student's ability to solve mathematical problems efficiently and accurately within a short time. Improving computational speed enables students to tackle more complex problems with confidence and ease.

Out of curiosity, an effort was made to assess the computational speed of third-grade and eighth-grade students, the investigator conducted a post-achievement test. The students were informed in advance that their time of completion would be recorded. During the test, the time taken by each student was carefully noted as soon as they finished.

4.24.1 Significance of difference in the mean post scores of computation speed of the students taught through conventional teaching methods and Vedic mathematics for the VIII and III Graders.

The investigator classified the control and experiment group students of eighth and third grade based on their computational speed.

Table 4.32 Classification of the students based on the computational speed of the control and experimental group of eighth and third grade.

VIII GRADE			III GRADE		
Time Duration in minutes	Control group	Experimental Group	Time Duration in minutes	Control group	Experimental Group
	No of students	No of students		No of students	No of students
0-30	6	20	0-30	NIL	2
30-60	40	50	30-60	42	54
60-90	34	10	60-90	38	24
TOTAL	80	80	TOTAL	80	80

Out of the students, taught through the conventional teaching method of eighth grade, only 6 students were able to complete the achievement test within 30 minutes, 40 students were able to complete the test within one hour and 34 students took even more than one hour in the control group.

On comparing the students taught through Vedic mathematics, the majority of the students 70 in number were able to complete the test within one hour of which 20 were able to finish within 30 minutes. Only 10 students took more time greater than one hour.

In the control group of third-grade students, it was observed that none were able to complete the achievement test within 30 minutes. A total of 42 students managed to finish the test within one hour, while 38 students took more than one hour to complete it.

In contrast, the experimental group showed improved performance. A majority of 56 students completed the test within one hour, with 2 of them finishing in under 30 minutes. Only 24 students in the experimental group required more than one hour to complete the test.

This shows that the computational speed of the students taught through Vedic mathematics-based instruction was better.

Table 4.33 Comparison of Mean computation speed Scores of Control and Experimental Groups for the VIII and III Grade students

Variable	Group	VIII Grade					III Grade				
		N	M	SD	t	p	N	M	SD	t	p
Computational Speed	Control	80	55.31	21.08	4.423*	.000	80	58.25	19.84	5.680**	.000
	Experimental	80	41.95	16.89			80	42.82	14.01		

The t value of the computation speed time of the students taught through the conventional teaching method and Vedic mathematics for the VIII and III Grade is 5.680 and greater than 1.96, therefore there is a significant difference in the computing speed of

students taught by Vedic Mathematics and conventional methods of teaching rejecting the null hypothesis.

The mean values of VIII Grade are 55.31 and 41.95 for the students taught through the conventional teaching method and Vedic mathematics respectively. The mean time of the students taught through the conventional teaching method is higher than that of the students taught through Vedic mathematics. Similarly, the mean values of III Grade are 58.25 and 42.82 for the students taught through the conventional teaching method and Vedic mathematics respectively. The mean time of the students taught through the conventional teaching method is higher than the students taught through Vedic mathematics. The mean time of computation of the third and eighth-grade students taught through Vedic mathematics is less than the students taught through the conventional teaching method. which indicates that students taught through Vedic mathematics have an enhanced computational speed.

The results demonstrate that the null hypothesis stated as “There is no significant difference exists between the mean post scores of computation speed of the students taught through conventional teaching methods and Vedic mathematics for the VIII and III Grade students” is rejected.

4.25 QUALITATIVE ANALYSIS

4.25.1 Evaluating Teacher Perspectives on the Effectiveness of Vedic Mathematics: A Semi-Structured Interview Approach

A semi-structured interview was conducted with primary and upper-primary teachers to assess the effectiveness of Vedic mathematics-based instruction for students. The objective of the interview was to determine the opinion of teachers on Vedic mathematics-based instruction. Ten teachers were interviewed each interview lasted for 15 minutes, during which the teachers' responses were recorded for further analysis.

Table 4.34

Semi-structured interview on Evaluating Teacher Perspectives on the Effectiveness of Vedic Mathematics-Based Instruction.

S.No	QUESTIONS	NUMBER OF RESPONSE			PERCENTAGE		
		Yes	No	No comment	Yes	No	No comment
1	Is there a belief that Vedic mathematics enhances the calculation speed of students?	8	nil	2	80	0	20
2	Have you noticed a rise in students' engagement with mathematics following the implementation of instruction based on Vedic mathematics?	7	1	2	70	10	20
3	Do you consider that Vedic mathematics facilitates a better comprehension of intricate mathematical concepts for students?	9	nil	1	90	0	10
4	In your observation, has there been an enhancement in students' overall mathematical performance following the integration of Vedic mathematics techniques?	8	nil	2	80	0	20
5	Do you perceive students have a positive attitude towards learning	8	nil	2	80	0	20

S.No	QUESTIONS	NUMBER OF RESPONSE			PERCENTAGE		
		Yes	No	No comment	Yes	No	No comment
	mathematics after learning through Vedic mathematics-based instruction?						
6	Have you identified a notable improvement in students' problem-solving skills as a result of employing Vedic mathematics?	9	nil	1	90	0	10
7	Does instruction grounded in Vedic mathematics demonstrate greater efficacy compared to conventional teaching methods?	9	nil	1	90	0	10
8	Would you advocate for the incorporation of Vedic mathematics among other teachers in your school?	7	1	2	70	10	20

The survey results indicate strong support for the use of Vedic Mathematics among respondents. A majority (80%) believe that it improves students' calculation speed, and 70% have observed an increase in students' interest in mathematics following the introduction of Vedic Mathematics-based instruction. Additionally, 90% agree that Vedic Mathematics helps students better understand complex mathematical concepts and 80% report improvements in overall math performance. The data also shows that 80% feel students have developed a more positive attitude toward learning mathematics after being taught using Vedic Mathematics.

Furthermore, 90% of respondents noticed a significant enhancement in students' problem-solving abilities after implementing Vedic Mathematics techniques. A similar

percentage (90%) view Vedic Mathematics as more effective than traditional methods, and 70% would recommend its use to other teachers. Overall, the responses suggest that Vedic Mathematics is perceived as a beneficial instructional tool that can positively impact students' mathematical understanding and engagement.

4.25.2 Evaluating Student's Perspectives on the Effectiveness of Vedic Mathematics: A Semi-Structured Interview Approach

Table: 4.35 Semi-structured Interview on Evaluating Student Perspectives on the Effectiveness of Vedic Mathematics - instruction

S.No	QUESTIONS	NUMBER OF RESPONSE			PERCENTAGE		
		Yes	No	No comment	Yes	No	No comment
1	Do you find Vedic mathematics easy to comprehend?	155	2	3	96.8	1.25	1.875
2	Has your confidence in mathematics increased after solving problems through Vedic Mathematics methods?	145	5	10	90.625	3.125	6.25
3	Have you experienced an increase in your confidence regarding mathematics following your study of Vedic Mathematics techniques?	152	nil	8	95	0	5
4	In your opinion, do you find Vedic Mathematics to be more engaging than	149	7	4	93.125	4.375	2.5

	conventional mathematical approaches?						
5	Do you feel that Vedic mathematics has improved your overall math skills?	147	3	10	91.875	1.875	6.25
6	Do you find that your enjoyment of mathematics has increased since you were introduced to Vedic Mathematics?	146	6	8	91.25	3.75	5
7	Would you advocate for the study of Vedic Mathematics among fellow students?	153	5	2	95.625	3.125	1.25
8	In your opinion, could Vedic Mathematics enhance your performance in mathematics assessments?	130	1	29	81.25	0.625	18.125
9	Do you think Vedic mathematics should be part of the regular school curriculum?	150	2	8	93.75	1.25	5
10	Do you think Vedic mathematics has improved your overall math skills?	157	nil	3	98.125	0	1.875

The survey results reveal a strong positive response towards Vedic Mathematics among students. A vast majority (96.8%) found it easy to understand, indicating that the techniques are accessible. Additionally, 90.625% of students felt more confident in math after learning these methods, with 95% further confirming this boost in confidence. Vedic Mathematics appears to be more engaging than conventional methods, as 93.125% of students found it more interesting. A significant number of students (91.875%) also reported improvements in their overall math skills, while 91.25% expressed that they enjoyed learning math more after being introduced to these techniques. The enthusiasm for Vedic Mathematics is evident, with 95.625% of students willing to recommend it to others. Furthermore, 81.25% of respondents believed that it would help them perform better in math exams. Lastly, 93.75% thought that Vedic Mathematics should be part of the regular school curriculum, underscoring its perceived value in education. Overall, the students have a better opinion in learning Vedic mathematics.

Conclusion

This research was intended to find whether Vedic mathematics can have any effect on achievement in mathematics and attitude toward learning mathematics. The samples included third-grade and eighth-grade students.

From the analysis, the investigator found that Vedic mathematics is effective in improving the achievement in mathematics as well as the attitude towards learning mathematics of III graders. However, the application of the Vedic method in mathematics teaching was not found so effective in eighth grade as they are familiar with the conventional method of teaching mathematics and they may have found it difficult to unlearn that and learn the new method. On the contrary, third-grade students are in their initial stage of learning. And hence, it is easier for them to start with the new method. The new method may have been more interesting to them and thus application of Vedic mathematics in the classroom brought improvement in the achievement as well as the attitude towards the mathematics of the third graders.

Hence, it can be concluded that, if started from the lower classes, the Vedic mathematics strategy will be a good and better to teach mathematics. It will help to reduce the difficulty with mathematical calculations.