

CHAPTER-IV

ANALYSIS AND STATEMENTS OF RESULTS

4.1 Introduction: -

This chapter deals with the analysis of the data. The analysis of the data was undertaken to draw logical inferences concerning the acceptance of hypothesis. Data was collected with a view to study the influence of learner-learner interaction strategy in comparison to traditional method of teaching. The whole sample was divided into groups and subgroups in order to determine the effect of learner-learner interaction strategy on experimental and control groups and on boys and girls.

This was essential to compare the effect of learner-learner interaction learning strategy with that of the traditional method of teaching being currently used in the schools. In analyzing the data exploratory methods were used to have a feel of the data. Inferential statistics was used to test the hypothesis stated in chapter one. The mean and standard deviation values were calculated; to describe the results of pretest scores and post test scores of both experimental & control group students. The t-test was used to test the hypothesis relating to experimental group and control group of boys and girls.

4.2 Data Analysis: -

4.2.1 before actually presenting the data analysis interpretation objective wise and hypothesis wise, the data analysis & interpretation for pretest is given below.

Table 4.2.1 (a)
Group Statistics

	Type of group	N	mean	Std.Deviation	Std.error of mean
Pretest mark	Experimental	31	19.32	5.72	1.03
	Control	31	19.06	5.00	0.90

Table 4.2.1(b)
Independent Samples Test
t-test for Equality of means

	t-Test for equality of means			
	t	df	sig. (2-tailed)	Std.Error of difference
Pre test marks Equal Variance Assumed	0.189	60	0.851	1.36
Equal variance Not assumed	0.189	58.935	0.581	1.36

4.2.1.1 Analysis: -

After calculating the pretest marks of both group i.e. experimental & control group. We found that the mean of experimental & control group was 19.32 & 19.06, S.D was 5.72 & 5.00 & standard error of mean was 1.03 & 0.90 respectively. The t-value when equal variances assumed was 0.189 & t-value when equal variance not assumed was 0.189. The calculated value was found to be 0.189 at df 60 & 58.935, but table value of df 60 was 2.66 at 0.01 level. This indicates that calculated value is more than the table value; therefore the difference is not significant at .01 level.

4.2.1.2 Interpretation: -

Due to not significant difference of mean, we can say that both groups are equal by means. The researcher was fortunate enough to get the equal group by chance as proved by the data presented in table 4.2.1(a) indicating, no need to transfer students from one group to another to make them equal.

4.2.2 Objective-1: -

To study the influence of learner-learner interaction on mathematics achievement as compared with traditional method of teaching.

Hypothesis-1: -

Learner - learner interaction strategy & traditional teaching method have same effect on mathematics achievement of class Vth students.

Table 4.2.2(a)
Group statistics

	Type of group	N	mean	Std.Deviation	Std.error mean
Post test mark	Experimental	31	44.35	12.36	2.22
	Control	31	32.29	9.63	1.73

Table 4.2.2(b)
Independent samples test

	t-test for Equality of means				
	t	df	sig. (2-tailed)	Std.Error of difference	
Post test marks	Equal Variance Assumed	4.288	60	0.000	2.88
	Equal variance Not assumed	4.288	56.613	0.000	2.88

4.2.2.1 Analysis: -

After calculating the post test marks of both groups i.e. experimental & control group. The mean was 44.35 & 32.29, standard deviation was 12.36 & 9.63 & standard error of mean was 2.22 & 1.73 respectively. The t-value, when equal variances assumed was 4.288 &, when equal variances not assumed was 4.288. The calculated value was found to be 4.288 at df 60, but table value at df 60 was 2.66 at 0.01 level. This indicates that calculated value is more than the table value; therefore the difference of means is highly significant at .01 levels.

4.2.2.2 Interpretation & conclusion: -

Due to the highly significant difference of mean, the hypothesis, "Learner-Learner interaction strategy and traditional teaching method have the same effect on the mathematics achievement of class Vth students." Is rejected. Thus we can say that the observed difference in the mathematics achievement of both the group is not by chance. The observed difference is due to the teaching approach, adopted i.e. learner-learner interaction, with experimental groups. Learner-learner interaction strategy is more effective than the traditional teaching method. In other words learner-learner interaction approach has positively affected the mathematics achievement of class V students. of D.M. School .

4.2.3 Objectives-2: -

To compare the influence of learner-learner interaction on mathematics achievement boys and girls of class V .

Hypothesis – 2: -

Learner-learner interaction strategy, has same effect on boys and girls of class Vth .

Table 4.2.3 (a)
Group statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
Post Test Marks	Girls	8	42.25	6.04	2.14
	Boys	23	45.09	13.94	2.91

Table 4.2.3(b)
Independent Samples test

	t-test for Equality of means			
	t	df	sig. (2-tailed)	Std.Error of difference
Post test marks Equal Variance Assumed	-0.553	29	0.585	5.13
Equal variance Not assumed	-0.786	27.229	0.438	3.60

4.2.3.1 Analysis –

The posttest marks of both sex i.e. girls & boys. The mean was 42.25 & 45.09, S.D was 6.04 & 13.94, & standard error of mean was 2.14 & 2.91 respectively. Then t-value, when equal variances assumed was 5.53 & when equal variance not assumed was 7.86. The table value was found to be 2.76 & 2.77 at df 29 & 27.229 at .01 level respectively. This indicates that calculated value is more than the table value; therefore the difference of means is highly significant at .01 levels.

4.2.3.2 Interpretation & Conclusion –

Due to the highly significant Difference of mean, the hypothesis, “The learner-learner interaction strategy has same effect on boys and girls.” is rejected. Thus we can say that the learner-learner interaction strategy doesn't have the same effect on boys & girls. Learner-learner interaction strategy affects boys and girls differently. The effect is found to be positive in both the gender a bit more in favor of boys than in girls, as indicated by the means of boys 45.09, & means of girls 42.25 of posttest.

4.2.4 Objective: 3: -

To study the influence of learner-learner interaction on mathematics achievement on boys of class Vth.

Hypothesis – 3: -

Learner –learner interaction strategy and traditional teaching methods have same effect on the mathematics achievement of class Vth boys.

Table 4.2.4(a)
Group statistics

Type of group	N	Mean	Std. Deviation	Std. Error of Mean
Post Test Marks Experimental	23	45.09	13.94	2.91
Control	23	29.65	9.81	2.04

Table 4.2 .4 (b)
Independent samples test

	t-test for Equality of means			
	t	df	sig. (2-tailed)	Std.Error of difference
Post test marks Equal Variance Assumed	4.342	44	0.000	3.55
Equal variance Not assumed	4.342	39.482	0.000	3.55

4.2.4.1 Analysis-The calculated mean of posttest marks of boys of both the, control and experimental group was found to be 45.09 & 29.65, S.D was 13.94 & 9.81, standard error of mean was 2.91 & 2.04, respectively. The t-value, when equal variances assumed were 4.342 & when equal variances not assumed was 4.342. The table value was found to be 2.69 at df 44 & 2.71 at d.f. 39.482 at 0.01 levels. This indicates that calculated value is more than the table value; therefore the difference of means is highly significant at 0.01 levels.

4.2.4.1 Interpretation & Conclusion Due to the highly significant difference of mean, the hypothesis, "Learner-learner interaction strategy and

traditional teaching method have the same effect on the mathematics achievement of class Vth boys”, is rejected. Thus we can say that the observed difference in the mathematics achievement of boys of both the groups not by chance, rather due to the teaching approach adopted, i.e. learner-learner interaction, with experimental group. Learner- learner interaction strategy is much more effective than the traditional teaching methods on boys.

4.2.5 Objective – 4: -

To study the influence of learner-learner interaction on mathematics achievements on girls of class Vth.

Hypothesis –4

Learner-learner interaction strategy and traditional teaching methods have same effect on the mathematics achievement of class Vth girls.

Table 4.2.5 (a)
Group statistics

Type of group	N	Mean	Std. Deviation	Std. Error of Mean
Post Test Marks Experimental	8	42.25	6.04	2.12
Control	8	39.88	2.53	0.90

Table 4.2.5 (b)
Independent samples test

	t-test for Equality of means			
	t	df	sig. (2-tailed)	Std.Error of difference
Post test marks Equal Variance Assumed	1.025	14	0.323	2.32
Equal variance Not assumed	1.025	9.385	0.331	2.32

4.2.5.1 Analysis: -

The mean was 42.25 & 39.88, S.D. was 6.04 & 2.53, & standard error of mean was 2.14 & .90, respectively. The t-value when variances assumed equal & unequal was 1.025 at d.f. 14 & 9.385. The table value was found to be 2.98 & 3.25 at .01 level & 2.14 & 2.26 at 0.05 level on d.f 14 & 9.305 respectively. This indicates that calculated value is less than the table value, therefore the difference of means is not significant at both level.

4.2.5.2 Interpretation & Conclusion: -

Due to the not significant difference of mean, the hypothesis, "Learner-learner interaction strategy and traditional teaching method have same effect on the mathematics achievement of class V girls. "is accepted based on due the above we can say that the learner learner interaction strategy and traditional method have equal effect or no effect at all on the mathematics achievement of girls of standard V. The possible reason could be low motivation of experimental group girls to study mathematics. Moreover, the mean of pretest marks of control group girls is found to 23.25. Where as the pretest mean of experimental group girls was 17.75.

4.2.6 Objective – 5: -

To compare the influence of traditional teaching method on mathematics achievement on boys and girls of class V.

Hypothesis – 5: -

Traditional method of teaching has same effect on boys & girls of class V.

Table 4.2.6 (a)
Group statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
Post Test Marks	Girls	8	39.88	2.53	0.90
	Boys	23	29.65	9.81	2.04

Table 4.2.6 (a)
Independent samples test

	t-test for Equality of means			
	t	df	sig. (2-tailed)	Std. Error of difference
Post test marks Equal Variance Assumed	2.886	29	0.007	3.54
	4.580	28.008	0.000	2.23
Equal variance Not assumed				

4.2.6.1 **Analysis:** -

The posttest mean of control group boys & girls was found to be 39.88 & 29.65 and S.D. was 2.53 & 9.81, Std. Error of mean 0.90 & 2.04 respectively. The t-value, when variances assumed equal & unequal & was 2.886&4.580 at 29 & 28.008 respectively. The table value of t was found to be 2.04 & 2.76 on df 29 & 2.05 & 2.76 on df. 28 at 0.05 level &.01 level. This indicates that calculated value is more than the table values, therefore the difference of means is significant at both level.

4.2.6.2 **Interpretation and Conclusion:** -

Due to highly significant difference of mean, the hypothesis, "Traditional Method of Teaching has same effect on boys & girls of class V." is rejected. This implies that traditional method of teaching does not have same effect on boys & girls.

Thus traditional method of teaching leaves different effect of boys & girls, a bit more in favor of girls, the possible reason could be, by nature the girls are more quite and in a society liberal, they're taught to fit into the stereotypical role of a girl child. She is expected to behave in cool & submissive manner right from the start, as a result they have we slightly better listening skills than boys.

4.2.7 Objective-6: -

To analyze the levels of improvement among class Vth students in achievement after using learner learner interaction strategy.

Hypothesis – 6: -

There is no improvement in achievement of students after teaching trough learner interaction strategy.

Table 4.2.7(a)
Paired samples statistics

		Mean	N	Std. Deviation	Std. Error of Mean
Pair 1	Pre test marks	19.87	23	6.33	1.32
	Post test marks	45.09	23	13.94	2.91

Table 4.2.7(b)
Paired Samples Test

	t	df	Sig.(2-tailed)
Pair 1 Pre test marks Post test marks	10.516	22	0.000

4.2.7.1 Analysis: -

The mean of pre test & posttest was 19.32 & 44.35, S.D was 5.72 & 12.36, and Standard error of mean was 1.03 & 2.22 respectively. The t-value, at df. 30 was 13.389. The calculated value was found to be 13.389, at 30 df ,but table value at df 30 was 2.75. This indicates that calculated value is more than the table value; therefore the difference of means is highly significant at .01 level.

4.2.7.2 Interpretation & Conclusion: -

Due to highly significant difference of mean the hypothesis "There is no improvement in achievement of students after teaching through learner interaction strategy." is rejected. Thus we can say that the observed difference in mathematics achievement of student is not by chance, rather it is the effect of learner learener interaction strategy. This indicates that learner learner strategy is helpful in raising the mathematics achievement level of students of V.

4.2.8 Objective – 7: -

To analyze the levels of improvement among class Vth boys in achievement after using learner learner interaction strategy.

Hypotheses – 7: -

There is no improvement in achievement of boys after teaching though learner-learner interaction strategy.

Table 4.2.8(a)

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Pre Test Marks	19.87	23	6.33	1.32
Post Test marks	45.09	23	13.94	2.91

Table 4.2.8(b)
Paired Samples Test

	t	df	Sig.(2-tailed)
Pair 1 Pre test marks Post test marks	10.516	22	0.000

4.2.8.1 Analysis: -

We saw that the mean of pretest and posttest marks was 19.87 & 45.09, S.D. Was 6.33 & 13.94, Standard error of mean was 1.32 & 2.41 respectively the t-value, was 10.516 at 22 df. The calculated value was found to be 10.516 at 22df, but table value at df 22 was 2.82 at .01 level. This indicates that calculated value is more than the table value; therefore the difference of means is highly significant at .01 level.

4.2.8.2 Interpretation: -

Due to highly significant difference of mean, the hypothesis "There is no improvement in achievement of boys after teaching through learner-learner interaction strategy." is rejected. Thus we can say that the observed difference in the mathematics achievement of boys is due to learner-learner interaction strategy. Hence, we can conclude that learner learner interaction strategy is much better than the traditional method of teaching as far as mathematics achievement is concerned. The observed high improvement in mathematics achievement of boys after teaching through learner-learner interaction strategy, could be due to learning by doing in accordance with the principle of joyful learning.

4.2.9 Objective – 8: -

To analyze the levels of improvement among class Vth girls in achievement after using learner-learner interaction strategy.

Hypothesis-8: -

There is no improvement in achievement of girls after teaching through learner-learner interaction strategy.

Table 4.2.9 (a)
Paired samples statistics

		Mean	N	Std. Deviation	Std. Error of Mean
Pair 1	Pre test marks	17.75	8	3.24	1.15
	Post test marks	42.25	8	6.04	2.14

Table 4.2.9 (b)
Paired Samples Test

	t	df	Sig.(2-tailed)
Pair 1 Pre test marks Posttest marks	9.972	7	0.000

4.2.9.1 Analysis: -

We saw that the mean of experimental & control group was 17.75 & 42.25, S.D. was 3.24 & 6.04 and standard error of mean 1.15 & 2.14. The t-value was 9.972 at df 7. The calculated value was found to be 9.972 at df 7, but

table value at df 7 was 3.50 at .01 level. This indicates that calculated value is more than the table value; therefore the difference of means is highly significant at .01 level.

4.2.9.2 Interpretation & Conclusion: -

Due to highly significant difference of means the hypothesis "There is no improvement in achievement of girls after teaching through learner-learner interaction strategy. " is rejected. Thus we can say the observed difference in the mathematics achievement of girls is due to learner- learner interaction strategy. There is high improvement in achievement of girls after teaching through learner-learner interaction strategy.

4.2.10 Objective: -

To analyze the levels of improvement among class Vth students in achievement after using traditional method.

Hypothesis 9: -

There is no improvement in achievement of students after teaching through traditional method of teaching.

Table 4.2.10(a)
Paired samples statistics

		Mean	N	Std. Deviation	Std. Error of Mean
Pair 1	Pre test marks	19.06	31	5.00	0.90
	Post test marks	32.29	31	9.63	1.73

Table 4.2.10 (b)
Paired Samples Test

	t	df	Sig.(2-tailed)
Pair 1 Pre test marks Posttest marks	9.206	30	0.000

4.2.10.1 Analysis: -

After calculating the pretest posttest marks of students of control group. We saw that the mean of pretest & posttest was 19.06 & 32.29, S.D. was 5 & 9.63; Standard error of mean was 0.90 & 1.73. The t-value was 9.260 at df 30. The calculated value was found to be 9.206 at df 30, but table value at df 30 was 2.76 at .01 level. This indicates that calculated value is more than the table value; therefore the difference of means is highly significant at .01 levels.

4.2.10.2 Interpretation & Conclusion: -

Due to the highly significant difference of mean, the hypothesis "There is no improvement in achievement of students after teaching through traditional method of teaching." is rejected. Thus we can say that the observed difference in the mathematics achievement of students is due to traditional method of teaching. There is high improvement in achievement of students after teaching through traditional method of teaching.

4.2.11 Objective-10: -

To analyze the levels of improvement among class V, boys in achievement after using traditional method.

Hypothesis 10: -

Ho-There is no improvement in achievement of boys after teaching through traditional method of teaching.

Table 4.2.11(a)
Paired samples statistics

		Mean	N	Std. Deviation	Std. Error of Mean
Pair 1	Pre test marks	17.61	23	4.62	0.96
	Post test marks	29.65	23	9.81	2.04

Table 4.2.11 (b)
Paired Samples Test

	t	df	Sig.(2-tailed)
Pair 1 Pre test marks Posttest marks	6.684	22	0.000

4.2.11.1 Analysis: -

After calculating the pretest, posttest marks of boys of control group. We saw that the mean of pretest and posttest was 17.61 & 29.65, S.D. was 4.62 & 9.81, and standard error of mean was 0.96 & 2.04 respectively. The t-value at df 22 was 6.684. The calculated value was found to be 6.684 at df 22, but table value at df 22 was 2.02 at .01 levels. This indicates that calculated value is more than the table value therefore the difference of means is highly significant at .01 levels.

4.2.11.2 Interpretation & Conclusion: -

Due to highly, significant difference of mean, the hypothesis, "There is no improvement in achievement of boys after teaching through traditional method of teaching." is rejected. Thus we can say that the observed difference in the mathematics achievement of boys is due to traditional method of teaching. There is high. Improvement in achievement of boys after teaching though traditional method of teaching.

4.2.12 Objective-11: -

To analyze the levels of improvement among class Vth girls in achievement after using traditional method.

Hypothesis-11: -

Ho-There is no improvement in achievement of girls after teaching through traditional method of teaching.

Table 4.2.12(a)
Paired samples statistics

		Mean	N	Std. Deviation	Std. Error of Mean
Pair 1	Pre test marks	23.25	8	3.62	1.28
	Post test marks	39.88	8	2.53	0.90

Table 4.2.12 (b)
Paired Samples Test

	t	df	Sig.(2-tailed)
Pair 1 Pre test marks Posttest marks	10.095	7	0.000

4.2.12.1 Analysis: -

After calculating the pretest- posttest marks of girls of control group. We saw that the mean of pre & posttest was 23.25 & 39.88 and S.D. was 3.62 & 2.53, standard error of mean was 1.28 & 0.90. The t-value was 10.095 at df 7. The calculated value of t-was found to be 10.095 at df 7. But the table value at df 7 was 3.50 at .01 level. This indicates that the calculated value is more than the table value; therefore the difference of means is highly significant at .01 level.

4.2.12.2 Interpretation & Conclusion: -

Due to highly significant difference of means, the hypothesis, "There is no improvement in achievement of girls after using traditional method of teaching." is rejected. Thus we can say that the observed difference in the mathematics achievement of boys is due to traditional method of teaching. There high improvement in achievement of girls after teaching through traditional method of teaching.

4.3 Discussion: -

The above analysis and interpretation of the pretest and post-test marks of the control group and experimental group indicates in general, a significant improvement in the mathematics achievement of the students both the groups i.e. control & experimental. This shows that both the strategies traditional as well as experimental have positive effect on the mathematics achievement of class V students when viewed in past however the holistic picture i.e. comparative data analysis implies that the learner learner interaction strategy is much more effective than the traditional method. (Hypothesis 1, 2, 3, 4)