

Chapter 5

Chapter-V

DATA ANALYSIS

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CHAPTER-V

DATA ANALYSIS

5.1 Introduction

One of the major objectives of the present study is to study the effectiveness of developed instructional strategy in order to enhance creative and critical thinking skills of the selected sample group of primary school teachers.

In order to achieve this objective an intervention programme was developed by the investigator and carried out for the period of twelve weeks on a single group using pre test post test design. One of the criteria for judging the effectiveness of the developed intervention strategy was gauged by the difference of mean scores obtained before and after the intervention by the sample group of teachers on the creative and critical thinking tool developed by the investigator. The data collected were qualitative and were analyzed using correlated t test. This chapter deals with detailed analyses of these data along with the inferences drawn with the respect to the stated objectives of the present study.

5.2 Creative and critical thinking measuring tool

In order to meet the stated objectives of the present study investigator had developed a tool that measures creative and critical thinking.

(Detail procedure for the tool development along with the scoring procedure is described in the chapter III, sec 3.3.1)

Developed tool contains various test items on three major sections which are:

- (1) Creative and Critical thinking awareness
- (2) Creative thinking and
- (3) Critical thinking

Response sheet of one of the sampled teacher on creative and critical thinking is enclosed on **Appendix IV** and reactions on reaction scale are enclosed on **Appendix-V**.

5.3 Comparison of means on pre test and post test on awareness of creative and critical thinking

In order to compare the performance of teachers on awareness of creative and critical thinking following null hypothesis was formulated.

H₀₁: Sampled teachers will have no significant difference in the means on awareness of creative and critical thinking on the pre test and post test. In order to test H₀₁, teachers scores on pre test and post test is presented in table 5.3.1

Table 5.3.1

Scores of teachers on pre test and post test on awareness of creative and critical thinking

Sr. No.	Pre test scores	Post test Scores
1	6	9
2	8	12
3	5	14
4	10	13
5	8	11
6	13	15
7	9	11

8	11	14
9	10	13
10	12	16
11	13	15
12	8	11
13	7	12
14	9	12
15	9	11
16	8	11
17	8	12
18	7	13
19	11	15
20	7	12
21	9	11
22	8	11
23	11	15
24	7	10
25	13	15

The mean, S.D., mean difference and correlation of score of teachers on pre test and post test is calculated. The calculated data is summarized in the table 5.3.2

Table 5.3.2

Mean, S.D., mean difference and correlation of scores of teachers on pre test and post test

	Number of teachers	Mean	S.D.	Difference	Correlation
Pre test	25	9.08	2.17	3.48	0.72
Post test	25	12.56	1.83		

From table 5.3.2, it can be seen that the mean achievement score of the teachers on pre test is 9.08 and that of post test is 12.56. Thus, there is a difference of 3.48 which is in favor of post test. Whether this observed difference is significant or otherwise, the investigator used correlated t test.

Summary of t test is presented in table 5.3.3

Table 5.3.3

Summary of t value of means of teachers on pre test and post test

	Mean	Difference	t-Value	Significant at
Pre-test	9.08	3.48	11.06	at .01 Level
Post Test	12.56			

Table 5.3.3 revealed that observed value of t equals to 11.06 which is greater than table value of t at 0.05 and 0.01 levels for 48 degrees of freedom. So observed value of t is greater at both the levels. Therefore, the null hypothesis H_{01} is rejected. So it can be concluded that the performance of teachers on post test is greater.

5.4 Comparison of means on selected dimensions of creative thinking

5.4.1 Comparison of means on pre test and post test on fluency

In order to compare the performance of teachers on fluency dimension of creative thinking following null hypothesis was formulated.

Ho2: There will be no significant difference in the mean fluency scores of the sampled teachers on the pre test and post test. In order to test Ho2, data on pre test and post test is presented in table 5.4.1.1

Table 5.4.1.1

Scores of teachers on pre test and post test on fluency dimension of creative thinking

Sr. No.	Pre test Score	Post test Score
1	39	76
2	47	89
3	30	64
4	44	76
5	37	74
6	45	76
7	39	79
8	38	67
9	31	65
10	33	66
11	52	91
12	38	76
13	39	76
14	35	73
15	38	77
16	27	75
17	40	76

18	39	80
19	40	88
20	39	85
21	38	79
22	31	71
23	41	81
24	32	71
25	62	89

The mean, S.D. and mean difference of score of teachers on pre test and post test is calculated. The calculated data is summarized in the table 5.4.1.2

Table 5.4.1.2

Mean, S.D. and mean difference of scores of teachers on pre test and post test

	Number of teachers	Mean	S.D.	Difference	Correlation
Pre test	25	38.96	7.19	37.84	0.75
Post test	25	76.8	7.33		

From table 5.4.1.2, it can be seen that the mean achievement score of the teachers on pre test is 38.96 and that of post test is 76.8. Thus, there is a difference of 37.84 which is in favor of post test. Whether this observed difference is significant or otherwise, the investigator used correlated t test.

Summary of t test is presented in table 5.4.1.3

Table 5.4.1.3

Summary of t value of means of teachers on pre test and post test

	Mean	Difference	t-Value	Significant at
Pre-test	38.96	37.84	36.75	at .01 Level
Post Test	76.80			

Table 5.4.1.3 reveals that observed value of t is 36.75 which is greater than table value of t at 0.05 and 0.01 levels. So observed value of t is greater at both the levels. Therefore, the null hypothesis Ho2 is rejected. So it can be concluded that the performance of sampled teachers on fluency dimension of creative thinking tool on post test is greater.

5.4.2 Comparison of means on pre test and post test on flexibility

In order to compare the performance of teachers on flexibility dimension of creative thinking following null hypothesis was formulated.

Ho3: There will be no significant difference in the mean flexibility scores of the sampled teachers on the pre test and post test. In order to test Ho3, data on pre test and post test is presented in table 5.4.2.1.

Table 5.4.2.1

Scores of teachers on pre test and post test on flexibility dimension of creative thinking

Sr. No.	Pre test score	Post test score
1	20	38
2	24	45
3	16	32
4	21	39
5	18	36
6	22	37
7	22	38
8	19	34
9	18	34
10	17	32
11	25	45
12	18	37
13	20	38
14	17	30
15	19	32
16	14	33
17	21	36
18	18	41
19	22	41
20	19	43
21	18	40

22	14	31
23	17	32
24	14	35
25	32	46

The mean, S.D. and mean difference of score of teachers on pre test and post test is calculated. The calculated data is summarized in the table 5.4.2.2

Table 5.4.2.2

Mean, S.D. and mean difference of scores of teachers on pre test and post test

	Number of teachers	Mean	S.D.	Difference	Correlation
Pre test	25	19.40	3.82	17.6	0.76
Post test	25	37.00	4.55		

From table 5.4.2.2, it can be seen that the mean achievement score of the teachers on pre test is 19.40 and that of post test is 37.00. Thus, there is a difference of 17.6 which is in favor of post test. Whether this observed difference is significant or otherwise, the investigator used correlated t test.

Summary of t test is presented in table 5.4.2.3

Table 5.4.2.3

Summary of t value of means of teachers on pre test and post test

	Mean	Difference	t-Value	Significant at
Pre-test	19.40	17.60	29.33	at .01 Level
Post Test	37.00			

Table 5.4.2.3 reveals that observed value of t is 29.33 which is greater than table value of t at 0.05 and 0.01 levels. So observed value of t is greater at both the levels. Therefore, the null hypothesis Ho3 is rejected. So it can be concluded that the performance of sampled teachers on post test is greater.

5.4.3 Comparison of means of pre test and post test on originality

In order to compare the performance of teachers on flexibility dimension of creative thinking following null hypothesis was formulated.

Ho4: There will be no significant difference in the mean originality scores of the sampled teachers on the pre test and post test. In order to test Ho4, data on pre test and post test is presented in table 5.4.3.1.

Table 5.4.3.1

Scores of teachers on pre test and post test on originality dimension of creative thinking

Sr. No.	Pre test score	Post test score
1	6	23
2	9	27
3	5	19
4	9	20
5	6	19
6	15	24
7	7	23
8	9	18
9	8	20
10	7	18
11	16	30
12	6	24
13	7	23
14	6	19
15	7	23
16	4	20
17	6	23
18	6	20
19	10	27
20	6	26

21	6	30
22	5	22
23	5	16
24	8	21
25	13	30

The mean, S.D. and mean difference of score of teachers on pre test and post test is calculated. The calculated data is summarized in the table 5.4.3.2

Table 5.4.3.2

Mean, S.D. and mean difference of scores of teachers on pre test and post test

	Number of teachers	Mean	S.D.	Difference	Correlation
Pre test	25	7.68	2.98	14.92	0.53
Post test	25	22.60	3.87		

From table 5.4.3.2, it can be seen that the mean achievement score of the teachers on pre test is 7.68 and that of post test is 22.60. Thus, there is a difference of 14.92 which is in favor of post test. Whether this observed difference is significant or otherwise, the investigator used correlated t test.

Summary of t test is presented in table 5.4.3.3

Table 5.4.3.3

Summary of t value of means of teachers on pre test and post test

	Mean	Difference	t-Value	Significant at
Pre-test	7.68	14.92	22.00	at .01 Level
Post Test	22.60			

Table 5.4.3.3 reveals that observed value of t is 22.00 which is greater than table value of t at 0.05 and 0.01 levels. So observed value of t is greater at both the levels. Therefore, the null hypothesis Ho4 is rejected. So it can be concluded that the performance of teachers on post test is greater.

5.5 Comparison of means of pre test and post test on dimensions of critical thinking

In order to compare the performance of teachers on critical thinking following null hypothesis was formulated.

Ho5: Sampled teachers will have no significant difference in the means of critical thinking scores on the pre test and post test. In order to test Ho5, data on pre test and post test is presented in table 5.5.1

Table 5.5.1

Scores of teachers on pre test and post test on critical thinking

Sr. No	Pre test Score	Post test Score
1	2	4
2	3	5
3	2	5
4	2	5
5	1	3
6	3	7
7	2	6
8	3	5
9	2	5
10	3	6
11	3	6
12	2	4
13	1	3
14	2	5
15	2	3
16	2	4
17	2	5
18	2	4
19	3	5
20	2	5
21	3	6

22	1	2
23	1	5
24	2	4
25	4	8

The mean, S.D. and mean difference of score of teachers on pre test and post test is calculated. The calculated data is summarized in the table 5.5.2

Table 5.5.2

Mean, S.D. and mean difference of scores of teachers on pre test and post test

	Number of teachers	Mean	S.D.	Difference	Correlation
Pre test	25	2.20	0.75	2.60	0.78
Post test	25	4.80	1.30		

From table 5.5.2, it can be seen that the mean achievement score of the teachers on pre test is 2.20 and that of post test is 4.80. Thus, there is a difference of 2.60 which is in favor of post test. Whether this observed difference is significant or otherwise, the investigator used correlated t test.

Summary of t test is presented in table 5.5.3

Table 5.5.3

Summary of t value of means of teachers on pre test and post test

	Mean	Difference	t-Value	Significant at
Pre-test	2.20	2.60	15.01	at .01 Level
Post Test	4.80			

Table 5.5.3 reveals that observed value of t is 15.01 which is greater than table value of t at 0.05 and 0.01 levels. So observed value of t is greater at both the levels. Therefore, the null hypothesis H_0 is rejected. So it can be concluded that the performance of teachers on post test is greater.

5.6 Reaction of the sampled teachers towards the implemented instructional strategy

It is obligatory to find out the responses of the sample teachers reactions towards the training. The investigator prepared the reaction scale for observing their reactions. There are twelve statements included in the scale. The respondent had to select any of the five points with which they believe without any prejudice and bias. Thus the data received from the scale have been analyzed with the help of percentage. The data presented herewith table 5.6

Sr. No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
		%	%	%	%	%
1	We come to know about different tools and strategies for developing creative and thinking abilities adequately.	75	20	5		
2	The meanings of creative and critical thinking abilities become clearer.	80	20			
3	We came to understand the need of creative and critical thinking	40	30	25	5	
4	More clarity about essential environment for developing thinking ability	35	45	15	5	

5	We have acquired understanding of the characteristics of creative students.	70	25	5		
6	We have acquired understanding of the characteristics of critical personality.	60	30	5	5	
7	We come to know the different activities for developing thinking ability.	35	60	5		
8	The essential activities for discussion are found satisfactory.	25	65	10		
9	The queries of the programme were responded satisfactorily.	45	55			
10	We are able to develop the skill of using thinking tools and strategies effectively during classroom interaction.	30	65	5		
11	The time for training was convenient.	65	30	5		