CHAPTER – IV

ANALYSIS AND INTERPRETATION

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4.0.0 Introduction

This chapter deals with the presentation of data and their analysis to draw the results. It also deals with testing of hypotheseis. The objective-wise results also form the part of this chapter under different headings.

4.1.0 Effectiveness of CAM in Terms of Achievement in Science

The first objective of the study was to investigate the effectiveness of CAM in terms of achievement of students of class-VIII in Science. Criterion test, developed by the investigator, was administered to both the groups and scored properly. The data of the post test were analyzed by using percentile, mean and standard deviation.

Table 4.1 shows that 30 percent of students scored 64 percent marks, 50 percent students scored 66 percent marks, 70 Percent marks are scored by 60 percent students, 80 percent students scored 82 percent marks and 90 percent students scored 88 percent marks. The table 4.1, also, demonstrates that only 29 percent students scored below 64 percent marks.

Table - 4.1 : Percentile, Mean and SD for Achievement in Science

Percentile	Criterion Test
P90	88
P80	82
P70	76
P60	70
P50	66
P30	64
Mean	74.33
SD	5.30

This table also demonstrates that the mean score of achievement in science is 74.33. The SD is 5.30. The differential demonstrated by the percentage of the scores mean and SD, here, substantiates the facts that treatment given was effective in terms of achievement.

4.2.0 Comparison of Achievement

The second objective of the study was to compare the CAM with traditional method in terms of achievement in science. Criterian test, developed by the investigator, was administered to both the groups before and after the experiments. The data related to both the group were analyzed with the help of ANCOVA and the results and are presented in table 4.2 .

Table - 4.2 :Summary of Ancova for Achievement in Science by taking Pre-test scores of Achievement in Science as Covariate

Source of Variance	df	SS	MSS	F-Value
Among	1	5905.2	5905.2	625.55*
Within	57	537.82	9.44	
Total	58	6443.02		

* Significant at 0.01 level.

Table 4.2 shows that the F-value is significant at 0.01 level with df equal to 1/57. It indicates that mean scores of achievement in science of the group taught through the CAM, differ significantly from that of those taught through the TM. when their pre-test scores were taken as co-variate. Therefore, the Null hypothesis namely, "there will be no significant difference between the adjusted mean scores of achievement in science of students taught through the CAM and the students who taught through the TM, when their pre-test scores of achievement in science were taken as co-variate", is rejected.

4.3.0 Comparison of General Mental Ability

The third objective of the study was to compare the general mental ability of the students who taught through the CAM with that of those who taught through the TM. General mental ability test developed by J.C. Raven (Standard Progressive matrices) was administered to both the groups. The data related to both the group were analyzed with the help of ANOVA.

Table - 4.3 : Summary of ANOVA for General Mental Ability

Test	Source of Variance	df	SS	MSS	F-value
Mental	Among	1	100.86	100.86	3.85
Ability	Within	58	1521.14	26.23	
Test	**Total**	**59**	**1622.00**		

Table 4.3 shows that the F-value is not significant. It indicates that mean scores of GMA of the group taught through the CAM, did not differ significantly from that of those taught through the TM. Therefore, the Null hypothesis namely, "there will be no significant difference between the mean scores of GMA of students taught through the CAM and the students who taught through the TM", is not rejected. It can be concluded that there is no difference in the general mental ability of both the groups.

4.4.0 Effect and Interaction of Treatment and Sex on Achievement

The fourth objective of the study was to Study the effect of interaction of treatment and sex on the achievement of the students in science. Achievement in science was dependent variable and was measured by the Criterion test, developed by the investigator. It was administered to both the groups before and after the experiments. Post scores of both the groups were taken for the purpose of analysis. Treatment and sex were two independent variables and each had two levels. Treatment had teo levels such as CAM and TM and sex had two levels such as boys and girls.The data related to both the group were

analyzed with the help of 2X2 Factorial Design ANOVA of equal cell size..The results and are presented in table 4.4.

Table-4.4 :Summary of 2X2 Factorial Design ANOVA of Equal Cell Size for Achievement

Source of Variance	Sum of Squares	df	Mean Square	F-value
Treatments	6720.41	1	6720..41	275.43*
Sex	1.35	1	1.35	0.06
TreatXSex	18.15	1	18.15	0.74
Error	1366.93	56	24.40	
Total	8106.84	59		

significant at 0.01 level

Table 4.4 demonstrates that the F-value for the treatment is significant at 0.01 level with df equal to 1/59. It indicates that the mean scores of achievement of students in science of those who taught through the CAM differ significantly from that of those who taught through the TM. Therefore, the null hypothesis, namely, "there will be no significant effect of treatment on the achievement of students in science", is rejected. It indicates that the treatment has significant effect on the achievement of students in science.

4.4.1 Effect of Sex on Achievement

The F-value for the sex (0.06) is not significant Therefore, the null hypothesis, namely, "there will be no significant effect of sex on achievement of students in science", is not rejected. It indicates that there is no significant effect of sex on the achievement of students in science.

4.4.2 Effect and Interaction of treatment and Sex on Achievement

Table 4.4 also demonstrates that the F-value for the treatment and sex is not significant. Therefore the null hypothesis, namely, "there will be no significant effect of interaction between treatment and sex on achievement", is not rejected. It indicates that there is no significant effect and interaction of treatment and sex on the achievement of students in science.

4.5.0 Effect and Interaction of Treatment and Sex on General Mental Ability(GMA)

The fifth objective of the study was to Study the effect of interaction of treatment and sex on the GMA of the students. GMA was dependent variable and was measured by the Criterion test, developed by the investigator. It was administered to both the groups before and after the experiments. Post scores of both the groups were taken for the purpose of analysis. Treatment and sex were two independent variables and each had two levels. Treatment had teo levels such as CAM and TM and sex had two levels such as boys and girls.The data related to both

the group were analyzed with the help of 2X2 Factorial Design ANOVA of equal cell size..The results and are presented in table 4.4.

Table-4.5 :Summary of 2X2 Factorial Design ANOVA of Equal Cell Size for General Mental Ability(GMA)

Source of Variance	Sum of Squares	df	Mean Square	F-value
Treatments	183.74	1	183.74	1.75
Sex	1.34	1	1.34	0.01
TreatXSex	0.02	1	0.02	
Error	5853.22	56	104.52	
Total	6038.32	59		

Table 4.5 demonstrates that the F-value for the treatment is not significant at 0.01 level with df equal to 1/59. It indicates that the mean scores of achievement of students in science of those who taught through the CAM did not differ significantly from that of those who taught through the TM. Therefore, the null hypothesis, namely, "there will be no significant effect of treatment on general mental ability of the students", is not rejected. It indicates that the treatment has no significant effect on the general mental ability of students in science.

4.5.1 Effect of Sex on General Mental Ability(GMA)

Table 4.5 shows that the F-value for the sex (0.01) is not significant Therefore, the null hypothesis, namely, "there will be no significant effect of sex on the general mental ability of students", is not rejected. It indicates that there is no significant effect of sex on the general mental ability of students..

4.5.2 Effect and Interaction of treatment and Sex on General Mental Ability(GMA)

Table 4.5 also demonstrates that the F-value for the treatment and sex is not significant. Therefore the null hypothesis, namely, "there will be no significant effect of interaction between treatment and sex on achievement", is not rejected. It indicates that there is no significant effect and interaction of treatment and sex on the general mental ability of students.