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ANALYZING THE EFFECTIVENESS OF ACTIVITY BASED TEACHING LEARNING STRATEGIES IN RELATION TO ATTITUDE AND ACADEMIC ACHIEVEMENT INTEREST OF SOCIAL SCIENCE

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Abstract:
"Effectiveness of Activity Based Teaching Learning strategies" in Education has proved to be a successful teaching model in the field Science, and has recently found its way to Social Science. Therefore, in the present study an attempt has been made to find the effectiveness of this method among students of Social science. The primary data was collected through a structured questionnaire based on 5 point likert scale. The sample for the study comprised 40 students who were selected randomly from Secondary schools. The data was analyzed. It was found that majority of the students considered Activity Based Teaching Learning strategies as an effective method of teaching. It was also seen that both male and female students had similar views regarding the effectiveness of Activity Based Teaching Learning strategies. Lastly it was found that there was a significant relationship between the education level of students and statement that Activity Based Teaching Learning strategies is more engaging than traditional learning.

Keywords: Teaching, Attitude, Interest, Social Science etc.,

INTRODUCTION

Education is the main element in a society that can bring drastic changes in the norms and values of the members of a society. While explaining the term education we come across that there are two basic aspects of the educational process. These two aspects include teaching on one side and learning on the other. The two aspects of education cannot be separated from each other like two sides of coin. It means that learning is not possible without proper teaching similarly teaching without efficient learning is fruitless. Analyzing the traditional method of teaching one concludes that these methods are not based on modern psychology which stressed on the active involvement of the learners in teaching process.

Activity Based Teaching Learning strategies or ABTLS gives a range of pedagogical approaches to teaching. Its core premise involves the requirement that learning should be depending upon doing some hands-on experiments and activities. The idea of Activity Based Teaching Learning strategies is rooted in the common notion that children learn actively rather than passive recipients of information. They are active participants ("Activity Based Learning in India,"2011)

Activity Based Teaching Learning strategies method of teaching provides learner with hope in tackling the practical problems by using their own resources. It also plays a very useful tool in improving the existing conditions in our society. Activity based method of teaching helps a teacher to win the interest and attention of the pupils. It motivates the students to physical and mental activity. It saves time and makes learning effective and durable. Studies have shown that pupils retain the knowledge through activities; for a much longer time as compared to the subject-matter learnt in the absence of such activities. It helps the pupils to get first-hand experience by looking at concrete things, living specimens and actual demonstrations, handling the apparatus and performing the practical themselves.

By adopting Activity based method of teaching the following criteria are used to observe student improvement.

1. Increased understanding of the topic.
2. Improved interpersonal skills.
3. Willingness to participate in group activities.
4. Ability to relate the topic to real life examples.

Day by day activity-based method of teaching is gaining its momentum due to its divergent utility in secondary schools.

STATEMENT OF THE PROBLEM

"Effectiveness of Activity Based Teaching Learning Strategies in Relation to Interest and Academic Achievement of Social Science among IX Standard Students"

OBJECTIVES OF THE STUDY:

1.To study the attitude towards Social science among IX standard students.
2.To study the interest in learning Social science among IX standard students.
3.To study the achievement in Social science among IX standard students.
4.To prepare Activity Based Teaching Learning Strategies modules in social science to enhance attitude towards Social science, interest in learning Social science and achievement in Social science among IX standard students.
5.To study the effectiveness of Activity Based Teaching Learning Strategies modules as instructional strategies in Social science on attitude towards Social science, interest in learning Social science and achievement in social science among IX standard students.

Hypotheses of the Study

In pursuance of the objectives of the study, the following hypotheses are set up.

1.There is no significant difference between pretest and posttest scores of attitude towards Social science of high school students in control group.
2.There is no significant difference between pretest and posttest scores of attitude towards Social science of IX standard students in experimental group.
3.There is no significant difference between pretest and posttest scores of interest in learning Social science of IX standard students in control group.
4.There is no significant difference between pretest and posttest scores of interest in learning Social science of IX standard students in experimental group.
5.There is no significant difference between pretest and posttest scores of achievement in Social science of IX standard students in control group.

METHOD OF THE STUDY

The data had been collected on pretest and posttest academic performance or achievement, interest in social science and attitude towards activity based teaching learning strategies from IX standard students of high schools in control group and experiment group and it was processed using Microsoft Excel - 2010. Then, the data were analyzed with reference to the objectives and hypotheses by applied different kinds of statistical tools in analyzing and establishing the related variables using independent t test for comparison of control group and experiment group, dependent t test was applied to compare the pretest and posttest scores and analysis of covariance by considering

between pretest scores are as a covariate (ANCOVA) was performed to assess the differences between control group and experiment group. The two way ANOVA with interaction design was applied to see the significance of interactions on gain in academic performance or achievement, interest in social science and attitude towards activity based teaching learning strategies of IX standard students of high schools. Lastly, the Karl Pearson's correlation coefficient method was performed for relationships. The statistical software was used is SPSS 20.0 version. The statistical significance was set at 5% level of significance ($p<0.05$) and the results obtained thereby have been interpreted.

The principle of the expediency, the special sections of chapter IV of the study has been structured under the following section:

Section I: Analysis of covariance (ANCOVA) between the two groups by pretest scores of as a covariate on posttest test scores of academic performance or achievement, interest in social science and attitude towards activity based teaching learning strategies of IX standard students of high schools

In this section, the mean score of pretest and posttest as well as adjusted mean of posttest of academic performance or achievement, interest in social science and attitude towards activity based teaching learning strategies of IX standard students of high schools. Further, the two groups (control and experiment) were compared with respect to pretest scores by one way ANOVA and posttest scores were compared (pretest scores as covariate) by using Analysis of Covariance (ANCOVA) and the results are presented in the following table.

Null Hypothesis: No significant difference between control group and experiment group with respect to posttest scores of academic performance or achievement in social science by pretest as a covariate of IX standard students of high schools.

Alternative Hypothesis: A significant difference between control group and experiment group with respect to posttest scores of academic performance or achievement in social science by pretest as a covariate of IX standard students of high schools.

To accomplish or achieve above hypothesis, the Analysis of covariance (ANCOVA) (pretest scores as covariate) technique has been applied and the results are highlighted in the table given below.

Table: Summery of posttest scores of academic performance or achievement in social science by pretest as a covariate of IX standard students of high schools

Groups	Posttest			Adjusted Posttest	
	Mean	SD	SE	Mean	SE
Control group	23.98	5.11	0.81	23.86	0.71
Experiment group	54.73	4.78	0.76	54.84	0.71

We clearly observed from the above table is,

- The mean of posttest scores of academic performance or achievement in social science in control group is 23.98±5.11 (SE=0.81) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of academic performance or achievement in social science in control group is 23.86 (SE=0.71) in control group.
- The mean of posttest scores of academic performance or achievement in social science in control group is 54.73±4.78 (SE=0.76) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of academic performance or achievement in social science in control group is 23.86 (SE=0.71) in experiment group. It clearly showed that, the both with and without adjusted mean scores are higher in experiment group as compared to control group

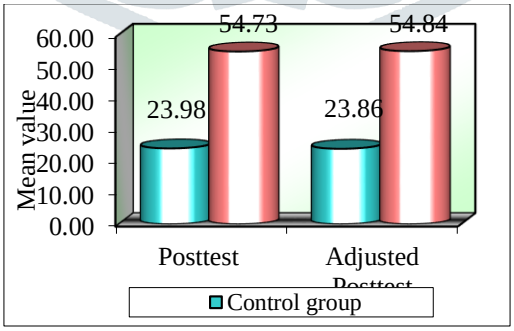
Table: Comparison of between control groupand experiment group with respect to posttest scores of academic performance or achievement in social science of IX standard students of high schools by Analysis of covariance (ANCOVA)

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	19268.414	2	9634.21	478.6690	0.0001*
Intercept	4014.19	1	4014.19	199.4420	0.0001*
Pretest	357.16	1	357.16	17.7450	0.0001*
Groups	19143.67	1	19143.67	951.1390	0.0001*
Error	1549.79	77	20.13		
Total	144692.00	80			

*p<0.05

The results of the above table clearly shows that, the control and experiment groups differs significantly with respect to posttest scores of academic performance or achievement in social science of IX standard students of high schools after pretest scores as a covariate (F=951.1390, p=0.0001) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is not rejected. It means that, the posttest scores of academic performance or achievement in social science of IX standard students of high schools are different in control and experiment groups. In another words, the posttest scores of academic performance or achievement in social science of IX standard students of high schools are significantly higher in experiment group as compared to control group. Also the model is found to be statistically significant with F=478.6690 and p=0.0001. It means that, the pretest scores are definitely influencing on posttest scores of academic performance or achievement in social science of IX standard students of high schools. The details are also presented in the above table. The mean posttest and adjusted posttest scores of academic performance or achievement in social science of IX standard students of high schools in control group and experiment group in the following figure

Figure: Comparison between control and experiment groups with respect to mean posttest and adjusted posttest scores of academic performance or achievement in social science of IX standard students of high schools



Null Hypothesis: No significant difference between control group and experiment group with respect to posttest scores of interest in social science by pretest as a covariate of IX standard students of high schools.

Alternative Hypothesis: A significant difference between control group and experiment group with respect to posttest scores of interest in social science by pretest as a covariate of IX standard students of high schools.

To accomplish or achieve above hypothesis, the Analysis of covariance (ANCOVA) (pretest scores as covariate) technique has been applied and the results are highlighted in the table given below.

Table: Summery of posttest scores of interest in social science by pretest as a covariate of IX standard students of high schools

Groups	Posttest			Adjusted Posttest	
	Mean	SD	SE	Mean	SE
Control group	101.40	7.00	1.11	101.31	1.39
Experiment group	191.88	10.44	1.65	191.96	1.39

We clearly observed from the above table is,

- The mean of posttest scores of interest in social science in control group is 101.40±7.00 (SE=1.11) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of interest in social science in control group is 101.31 (SE=1.65) in control group.
- The mean of posttest scores of interest in social science in control group is 191.88±10.44 (SE=0.76) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of interest in social science in control group is 23.86 (SE=1.39) in experiment group. It clearly showed that, the both with and without adjusted mean scores are higher in experiment group as compared to control group

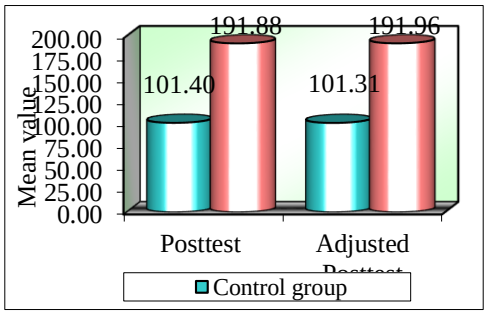
Table: Comparison of between control groupand experiment group with respect to posttest scores of interest in social science of IX standard students of high schools by Analysis of covariance (ANCOVA)

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	163912.74	2	81956.37	1058.8760	0.0001*
Intercept	5156.84	1	5156.84	66.6260	0.0001*
Pretest	198.22	1	198.22	2.5610	0.1140
Groups	163846.91	1	163846.91	2116.9020	0.0001*
Error	5959.75	77	77.40		
Total	1890077.00	80			

*p<0.05

The results of the above table clearly shows that, the control and experiment groups do not differs significantly with respect to posttest scores of interest in social science of IX standard students of high schools after pretest scores as a covariate (F=2116.9020, p=0.0001) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is not rejected. It means that, the posttest scores of interest in social science of IX standard students of high schools are different in control and experiment groups. In another words, the posttest scores of interest in social science of IX standard students of high schools are similar in experiment group as compared to control group. Also the model is found to be statistically significant with F=1058.8760 and p=0.0001. It means that, the pretest scores are definitely influencing on posttest scores of interest in social science of IX standard students of high schools. The details are also presented in the above table. The mean posttest and adjusted posttest component of interest in social science of IX standard students of high schools in control group and experiment group in the following figure.

Figure: Comparison between control and experiment groups with respect to mean posttest and adjusted posttest scores of interest in social science of IX standard students of high schools



Null Hypothesis: No significant difference between control group and experiment group with respect to posttest scores of attitude towards activity based teaching learning strategies in social science by pretest as a covariate of IX standard students of high schools.

Alternative Hypothesis: A significant difference between control group and experiment group with respect to posttest scores of attitude towards activity based teaching learning strategies in social science by pretest as a covariate of IX standard students of high schools.

To accomplish or achieve above hypothesis, the Analysis of covariance (ANCOVA) (pretest scores as covariate) technique has been applied and the results are highlighted in the table given below.

Table: Summery of posttest scores of attitude towards activity based teaching learning strategies in social science by pretest as a covariate of IX standard students of high schools

Groups	Posttest			Adjusted Posttest	
	Mean	SD	SE	Mean	SE
Control group	44.00	2.98	0.47	44.03	0.94
Experiment group	71.33	8.15	1.29	71.30	0.94

We clearly observed from the above table is,

- The mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 44.00±2.98 (SE=0.47) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 44.03 (SE=0.94) in control group.
- The mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 71.33±8.15 (SE=1.29) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 71.30 (SE=0.94) in experiment group. It clearly showed that, the both with and without adjusted mean scores are higher in experiment group as compared to control group

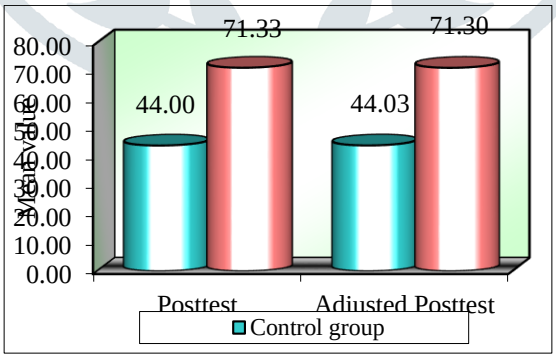
Table: Comparison of between control groupand experiment group with respect to posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard students of high schools by Analysis of covariance (ANCOVA)

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	15155.13	2	7577.57	215.0850	0.0001*
Intercept	1813.50	1	1813.50	51.4750	0.0001*
Pretest	222.02	1	222.02	6.3020	0.0140*
Groups	14861.86	1	14861.86	421.8450	0.0001*
Error	2712.76	77	35.23		
Total	283865.00	80			

*p<0.05

The results of the above table clearly shows that, the control and experiment groups differs significantly with respect to posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard students of high schools after pretest scores as a covariate (F=421.8450, p=0.0001) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is not rejected. It means that, the posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard students of high schools are different in control and experiment groups. In another words, the posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard students of high schools are significantly higher in experiment group as compared to control group. Also the model is found to be statistically significant with F=215.0850 and p=0.0001. It means that, the pretest scores are definitely influencing on posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard students of high schools. The details are also presented in the above table. The mean posttest and adjusted posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard students of high schools in control group and experiment group in the following figure

Figure: Comparison between control and experiment groups with respect to mean posttest and adjusted posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard students of high schools



Null Hypothesis: No significant difference between control group and experiment group with respect to posttest scores of academic performance or achievement in social science by pretest as a covariate of IX standard boy students of high schools.

Alternative Hypothesis: A significant difference between control group and experiment group with respect to posttest scores of academic performance or achievement in social science by pretest as a covariate of IX standard boy students of high schools.

To accomplish or achieve above hypothesis, the Analysis of covariance (ANCOVA) (pretest scores as covariate) technique has been applied and the results are highlighted in the table given below.

Table: Summery of posttest scores of academic performance or achievement in social science by pretest as a covariate of IX standard boy students of high schools

Groups	Posttest			Adjusted Posttest	
	Mean	SD	SE	Mean	SE
Control group	23.90	4.92	1.10	23.71	1.17
Experiment group	53.85	5.80	1.30	54.04	1.17

We clearly observed from the above table is,

- The mean of posttest scores of academic performance or achievement in social science in control group is 23.90±4.92 (SE=1.10) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of academic performance or achievement in social science in control group is 23.71 (SE=1.17) in control group.
- The mean of posttest scores of academic performance or achievement in social science in control group is 53.85±5.80 (SE=1.30) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of academic performance or achievement in social science in control group is 23.86 (SE=1.17) in experiment group. It clearly showed that, the both with and without adjusted mean scores are higher in experiment group as compared to control group

Table: Comparison of between control groupand experiment group with respect to posttest scores of academic performance or achievement in social science of IX standard boy students of high schools by Analysis of covariance (ANCOVA)

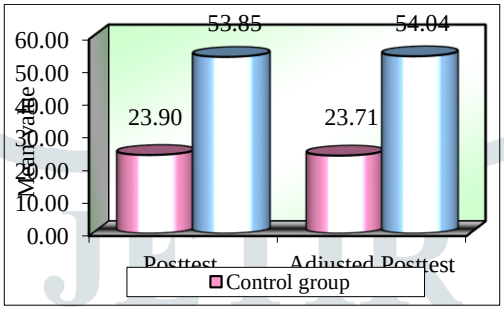
Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	9066.54	2	4533.27	167.4230	0.0001*
Intercept	2721.54	1	2721.54	100.5120	0.0001*
Pretest	96.51	1	96.51	3.5640	0.0670
Groups	9063.98	1	9063.98	334.7520	0.0001*
Error	1001.84	37	27.08		
Total	70519.00	40			

*p<0.05

The results of the above table clearly shows that, the control and experiment groups differs significantly with respect to posttest scores of academic performance or achievement in social science of IX standard boy students of high schools after pretest scores as a covariate (F=334.7520, p=0.0001) at significance level of 5 percent. Hence,

the null hypothesis is rejected and alternative hypothesis is not rejected. It means that, the posttest scores of academic performance or achievement in social science of IX standard boy students of high schools are different in control and experiment groups. In another words, the posttest scores of academic performance or achievement in social science of IX standard boy students of high schools are significantly higher in experiment group as compared to control group. Also the model is found to be statistically significant with F=167.4230 and p=0.0001. It means that, the pretest scores are definitely influencing on posttest scores of academic performance or achievement in social science of IX standard boy students of high schools. The details are also presented in the above table. The mean posttest and adjusted posttest scores of academic performance or achievement in social science of IX standard boy students of high schools in control group and experiment group in the following figure

Figure: Comparison between control and experiment groups with respect to mean posttest and adjusted posttest scores of academic performance or achievement in social science of IX standard boy students of high schools



Null Hypothesis: No significant difference between control group and experiment group with respect to posttest scores of interest in social science by pretest as a covariate of IX standard boy students of high schools.

Alternative Hypothesis: A significant difference between control group and experiment group with respect to posttest scores of interest in social science by pretest as a covariate of IX standard boy students of high schools.

To accomplish or achieve above hypothesis, the Analysis of covariance (ANCOVA) (pretest scores as covariate) technique has been applied and the results are highlighted in the table given below.

Table: Summery of posttest scores of interest in social science by pretest as a covariate of IX standard boy students of high schools

Groups	Posttest			Adjusted Posttest	
	Mean	SD	SE	Mean	SE
Control group	98.60	5.28	1.18	98.63	1.42
Experiment group	190.40	7.07	1.58	190.37	1.42

We clearly observed from the above table is,

- The mean of posttest scores of interest in social science in control group is 98.60±5.28 (SE=1.18) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of interest in social science in control group is 98.63 (SE=1.42) in control group.
- The mean of posttest scores of interest in social science in control group is 190.40±7.07 (SE=1.58) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of interest in social science in control group is 190.37 (SE=1.42) in experiment group. It clearly showed that, the both with and without adjusted mean scores are higher in experiment group as compared to control group

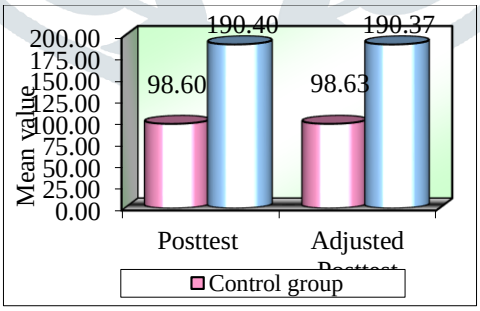
Table: Comparison of between control groupand experiment group with respect to posttest scores of interest in social science of IX standard boy students of high schools by Analysis of covariance (ANCOVA)

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	84273.91	2	42136.96	1056.2150	0.0001*
Intercept	2613.57	1	2613.57	65.5120	0.0001*
Pretest	1.51	1	1.51	0.0380	0.8470
Groups	82342.71	1	82342.71	2064.0220	0.0001*
Error	1476.09	37	39.89		
Total	920960.00	40			

*p<0.05

The results of the above table clearly shows that, the control and experiment groups do not differs significantly with respect to posttest scores of interest in social science of IX standard boy students of high schools after pretest scores as a covariate (F=2064.0220, p=0.0001) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is not rejected. It means that, the posttest scores of interest in social science of IX standard boy students of high schools are different in control and experiment groups. In another words, the posttest scores of interest in social science of IX standard boy students of high schools are similar in experiment group as compared to control group. Also the model is found to be statistically significant with F=1056.2150 and p=0.0001. It means that, the pretest scores are definitely influencing on posttest scores of interest in social science of IX standard boy students of high schools. The details are also presented in the above table. The mean posttest and adjusted posttest component of interest in social science of IX standard boy students of high schools in control group and experiment group in the following figure.

Figure: Comparison between control and experiment groups with respect to mean posttest and adjusted posttest scores of interest in social science of IX standard boy students of high schools



Null Hypothesis: No significant difference between control group and experiment group with respect to posttest scores of attitude towards activity based teaching learning strategies in social science by pretest as a covariate of IX standard boy students of high schools.

Alternative Hypothesis: A significant difference between control group and experiment group with respect to posttest scores of attitude towards activity based teaching learning strategies in social science by pretest as a covariate of IX standard boy students of high schools.

To accomplish or achieve above hypothesis, the Analysis of covariance (ANCOVA) (pretest scores as covariate) technique has been applied and the results are highlighted in the table given below.

Table: Summery of posttest scores of attitude towards activity based teaching learning strategies in social science by pretest as a covariate of IX standard boy students of high schools

Groups	Posttest			Adjusted Posttest	
	Mean	SD	SE	Mean	SE
Control group	44.55	2.56	0.57	44.71	1.31
Experiment group	70.80	7.88	1.76	70.64	1.31

We clearly observed from the above table is,

- The mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 44.55±2.56 (SE=0.57) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 44.71 (SE=1.31) in control group.
- The mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 70.80±7.88 (SE=1.76) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 70.64 (SE=1.31) in experiment group. It clearly showed that, the both with and without adjusted mean scores are higher in experiment group as compared to control group

Table: Comparison of between control groupand experiment group with respect to posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard boy students of high schools by Analysis of covariance (ANCOVA)

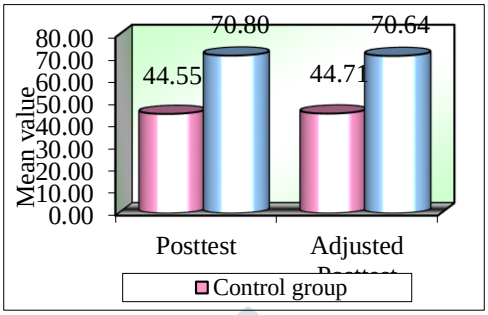
Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	6939.94	2	3469.97	102.3150	0.0001*
Intercept	999.69	1	999.69	29.4770	0.0001*
Pretest	49.32	1	49.32	1.4540	0.2360
Groups	6577.41	1	6577.41	193.9410	0.0001*
Error	1254.83	37	33.91		
Total	141251.00	40			

*p<0.05

The results of the above table clearly shows that, the control and experiment groups differs significantly with respect to posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard boy students of high schools after pretest scores as a covariate (F=193.9410, p=0.0001) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is not rejected. It means that, the posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard boy students of high schools are different in control and experiment groups. In another words, the posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard boy students of high schools are significantly higher in experiment group as compared to control group. Also the model is found to be statistically significant with F=102.3150 and p=0.0001. It means that, the pretest scores are definitely influencing on posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard boy students of high schools. The details are also presented in the above table. The mean posttest and adjusted posttest

scores of attitude towards activity based teaching learning strategies in social science of IX standard boy students of high schools in control group and experiment group in the following figure

Figure: Comparison between control and experiment groups with respect to mean posttest and adjusted posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard boy students of high schools



Null Hypothesis: No significant difference between control group and experiment group with respect to posttest scores of academic performance or achievement in social science by pretest as a covariate of IX standard girl students of high schools.

To accomplish or achieve above hypothesis, the Analysis of covariance (ANCOVA) (pretest scores as covariate) technique has been applied and the results are highlighted in the table given below.

Table: Summery of posttest scores of academic performance or achievement in social science by pretest as a covariate of IX standard girl students of high schools

Groups	Posttest			Adjusted Posttest	
	Mean	SD	SE	Mean	SE
Control group	24.05	5.41	1.21	24.10	0.81
Experiment group	55.60	3.41	0.76	55.55	0.81

We clearly observed from the above table is,

- The mean of posttest scores of academic performance or achievement in social science in control group is 24.05±5.41 (SE=1.21) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of academic performance or achievement in social science in control group is 24.10 (SE=0.81) in control group.
- The mean of posttest scores of academic performance or achievement in social science in control group is 55.60±3.41 (SE=0.76) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of academic performance or achievement in social science in control group is 55.55 (SE=0.81) in experiment group. It clearly showed that, the both with and without adjusted mean scores are higher in experiment group as compared to control group

Table: Comparison of between control groupand experiment group with respect to posttest scores of academic performance or achievement in social science of IX standard girl students of high schools by Analysis of covariance (ANCOVA)

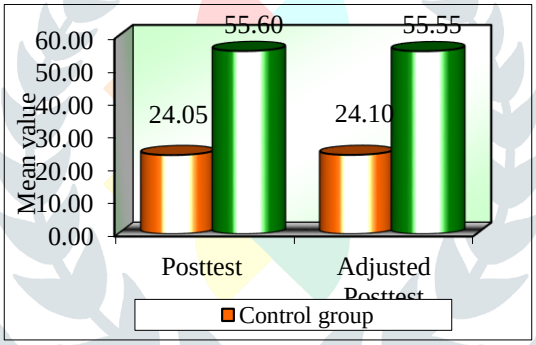
Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	10248.33	2	5124.17	392.1740	0.0001*
Intercept	1316.53	1	1316.53	100.7600	0.0001*

Pretest	294.31	1	294.31	22.5240	0.0001*
Groups	9882.68	1	9882.68	756.3630	0.0001*
Error	483.44	37	13.07		
Total	74173.00	40			

*p<0.05

The results of the above table clearly shows that, the control and experiment groups differs significantly with respect to posttest scores of academic performance or achievement in social science of IX standard girl students of high schools after pretest scores as a covariate (F=756.3630, p=0.0001) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is not rejected. It means that, the posttest scores of academic performance or achievement in social science of IX standard girl students of high schools are different in control and experiment groups. In another words, the posttest scores of academic performance or achievement in social science of IX standard girl students of high schools are significantly higher in experiment group as compared to control group. Also the model is found to be statistically significant with F=392.1740 and p=0.0001. It means that, the pretest scores are definitely influencing on posttest scores of academic performance or achievement in social science of IX standard girl students of high schools. The details are also presented in the above table. The mean posttest and adjusted posttest scores of academic performance or achievement in social science of IX standard girl students of high schools in control group and experiment group in the following figure

Figure: Comparison between control and experiment groups with respect to mean posttest and adjusted posttest scores of academic performance or achievement in social science of IX standard girl students of high schools



Null Hypothesis: No significant difference between control group and experiment group with respect to posttest scores of interest in social science by pretest as a covariate of IX standard girl students of high schools.

Alternative Hypothesis: A significant difference between control group and experiment group with respect to posttest scores of interest in social science by pretest as a covariate of IX standard girl students of high schools.

To accomplish or achieve above hypothesis, the Analysis of covariance (ANCOVA) (pretest scores as covariate) technique has been applied and the results are highlighted in the table given below.

Table: Summery of posttest scores of interest in social science by pretest as a covariate of IX standard girl students of high schools

Groups	Posttest			Adjusted Posttest	
	Mean	SD	SE	Mean	SE
Control group	104.20	7.49	1.68	103.78	2.39
Experiment group	193.35	13.00	2.91	193.77	2.39

We clearly observed from the above table is,

- The mean of posttest scores of interest in social science in control group is 104.20±7.49 (SE=1.68) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of interest in social science in control group is 103.78 (SE=2.39) in control group.
- The mean of posttest scores of interest in social science in control group is 193.35±13.00 (SE=2.91) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of interest in social science in control group is 23.86 (SE=2.39) in experiment group. It clearly showed that, the both with and without adjusted mean scores are higher in experiment group as compared to control group

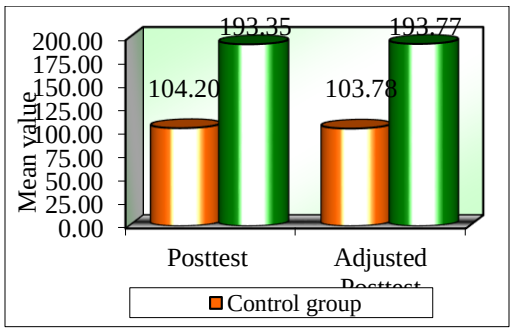
Table: Comparison of between control groupand experiment group with respect to posttest scores of interest in social science of IX standard girl students of high schools by Analysis of covariance (ANCOVA)

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	79619.48	2	39809.74	356.0030	0.0001*
Intercept	2778.15	1	2778.15	24.8440	0.0001*
Pretest	142.26	1	142.26	1.2720	0.2670
Groups	77101.54	1	77101.54	689.4890	0.0001*
Error	4137.49	37	111.82		
Total	969117.00	40			

*p<0.05

The results of the above table clearly shows that, the control and experiment groups do not differs significantly with respect to posttest scores of interest in social science of IX standard girl students of high schools after pretest scores as a covariate (F=689.4890, p=0.0001) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is not rejected. It means that, the posttest scores of interest in social science of IX standard girl students of high schools are different in control and experiment groups. In another words, the posttest scores of interest in social science of IX standard girl students of high schools are similar in experiment group as compared to control group. Also the model is found to be statistically significant with F=356.0030 and p=0.0001. It means that, the pretest scores are definitely influencing on posttest scores of interest in social science of IX standard girl students of high schools. The details are also presented in the above table. The mean posttest and adjusted posttest component of interest in social science of IX standard girl students of high schools in control group and experiment group in the following figure.

Figure: Comparison between control and experiment groups with respect to mean posttest and adjusted posttest scores of interest in social science of IX standard girl students of high schools



Null Hypothesis: No significant difference between control group and experiment group with respect to posttest scores of attitude towards activity based teaching learning strategies in social science by pretest as a covariate of IX standard girl students of high schools.

Alternative Hypothesis: A significant difference between control group and experiment group with respect to posttest scores of attitude towards activity based teaching learning strategies in social science by pretest as a covariate of IX standard girl students of high schools.

To accomplish or achieve above hypothesis, the Analysis of covariance (ANCOVA) (pretest scores as covariate) technique has been applied and the results are highlighted in the table given below.

Table: Summery of posttest scores of attitude towards activity based teaching learning strategies in social science by pretest as a covariate of IX standard girl students of high schools

Groups	Posttest			Adjusted Posttest	
	Mean	SD	SE	Mean	SE
Control group	43.45	3.32	0.74	43.21	1.37
Experiment group	71.85	8.58	1.92	72.08	1.37

We clearly observed from the above table is,

- The mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 43.45±3.32 (SE=0.74) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 43.21 (SE=1.37) in control group.
- The mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 71.85±8.58 (SE=1.92) and after considering the pretest scores as a covariate, the adjusted mean of posttest scores of attitude towards activity based teaching learning strategies in social science in control group is 72.08 (SE=1.37) in experiment group. It clearly showed that, the both with and without adjusted mean scores are higher in experiment group as compared to control group

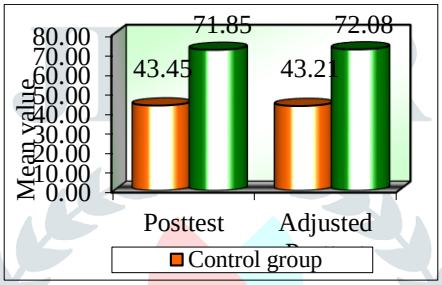
Table: Comparison of between control groupand experiment group with respect to posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard girl students of high schools by Analysis of covariance (ANCOVA)

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	8284.54	2	4142.27	110.3760	0.0001*
Intercept	736.86	1	736.86	19.6350	0.0001*
Pretest	218.94	1	218.94	5.8340	0.0210*
Groups	8252.57	1	8252.57	219.9010	0.0001*
Error	1388.56	37	37.53		
Total	142614.00	40			

*p<0.05

The results of the above table clearly shows that, the control and experiment groups differs significantly with respect to posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard girl students of high schools after pretest scores as a covariate (F=219.9010, p=0.0001) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is not rejected. It means that, the posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard girl students of high schools are different in control and experiment groups. In another words, the posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard girl students of high schools are significantly higher in experiment group as compared to control group. Also the model is found to be statistically significant with F=110.3760 and p=0.0001. It means that, the pretest scores are definitely influencing on posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard girl students of high schools. The details are also presented in the above table. The mean posttest and adjusted posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard girl students of high schools in control group and experiment group in the following figure

Figure: Comparison between control and experiment groups with respect to mean posttest and adjusted posttest scores of attitude towards activity based teaching learning strategies in social science of IX standard girl students of high schools



Educational Implications

The findings of the study will have following educational implications:

- Activity Based Teaching Learning Strategies help the students to take part actively in learning process.
- Students get opportunity to take part in the experiments conducted in the classrooms.
- Activity based learning helps in better retention among secondary students.
- Activity Based Teaching Learning Strategies promote creativity among secondary students.
- Students prepare models which helps in their self-learning.
- These modules sketch a sequence on various activities involved in teaching learning process.
- To bring out qualitative changes in secondary education we should implement these modules in our class room teaching with certain modifications.
- Activity based teaching learning strategies is especially useful to structure curriculum sequence or courses and to instruct students systematically in the key ideas of a field
- The modules can also be shaped to teach the skills of effective perception, critical thinking and cognitive recognition which can be explained to the learner who perceive direct instruction in orderly thinking and in the notion of knowledge hierarchies.
- Activity based teaching learning strategies can provide the teacher to help the students to grasp relationship and make connections.
- It can help the students to relate new information to prior knowledge.
- These modules help the students to retain the knowledge in proper directions.
- School should organize social science exhibitions that enhance the self-confidence, positive attitude and interest in social science.
- Schools should develop among students a positive attitude towards social science.
- Curriculum should be modified at school level so that lessons should promote the development of positive attitude and interest in learning social science.

CONCLUSION:

Activity Based Teaching Learning Strategies help the students to take part actively in learning process. Students get opportunity to take part in the experiments conducted in the classrooms. Activity based learning helps in better retention among secondary students. Activity Based Teaching Learning Strategies promote creativity among secondary students. Students prepare models which helps in their self-learning. These modules sketch a sequence on various activities involved in teaching learning process. To bring out qualitative changes in secondary education we should implement these modules in our class room teaching with certain modifications. Activity based teaching learning strategies is especially useful to structure curriculum sequence or courses and to instruct students systematically in the key ideas of a field. The modules can also be shaped to teach the skills of effective perception, critical thinking and cognitive recognition which can be explained to the learner who perceive direct instruction in orderly thinking and in the notion of knowledge hierarchies. Activity based teaching learning strategies can provide the teacher to help the students to grasp relationship and make connections. It can help the students to relate new information to prior knowledge. These modules help the students to retain the knowledge in proper directions.

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