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ANALYZING THE EFFECTIVENESS OF ACTIVITY BASED TEACHING LEARNING STRATEGIES IN RELATION TO ACADEMIC ACHIEVEMENT IN 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. Therefore, in the present study an attempt has been made to find the effectiveness of this method among students in science. The primary data was collected through a structured questionnaire based on 5 point likert scale. The sample for the study comprised 60 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, Achievement, Science etc.,

INTRODUCTION

The Sarva Sikshya Abhiyana (SSA) the latest and the most fascinating programme launched by the MHRD, Government of India lays emphasis on thequality of Elementary and secondary education. Hence, sincere efforts need to be exerted by one and all who are more or less aware of the facts. There should be radical changes backed by quality in school environment and classroom environment to enhance the achievement of the learners. The achievement of the learner depends upon teachers effectiveness, which is yet to be streamlined. A lot of orientations, training programmes have been conducted to enhance teachers competency for quality teaching learning process. Hence, it is the first and foremost duty of a teacher to equip himself with the latest techniques of classroom teaching. Unless and until he becomes confident, with good attitude and Interest, thorough with the concept of the topics, subject wise and in the art of teaching skill no tangible progress can be expected.

As SSA is a time bound programme which attempts pertaining to classroom practices, TLM and evaluation procedures for enhancing learners achievement.

In activity based teaching learning process classification of concepts, and to develop good attitude and interest of learners in learning process through the use of teaching learning materials makes the process easier. From clarity point of view after implementation of activity based teaching, the teachers were oriented in conducting activity in the classroom. The faculty members of the DIET designed an activity bank matching the competencies of respective subjects. The investigators gave demonstration on activity based teaching learning process to some selected teachers.

The objective was to enhance the competency of the teachers in activity based teaching learning process supported by concept based teaching learning materials. For the benefit of the section / school teachers of Hangal town, the investigator decided to take up a study on the topic.

Children in a given classroom may not vary only in their knowledge and in their capability of learning but also in the approach and dealing with the given task. Hence it is essential to give tasks in which they direct themselves to do something such as activity based teaching learning strategies in science which play a significant role in developing scientific interest, scientific attitude and improving academic achievement among secondary students.

STATEMENT OF THE PROBLEM

The problem of the present study is stated as "An Effectiveness of activity based teaching learning strategies on attitude towards science, interest in learning science and achievement in science among IX std. students."

OBJECTIVES OF THE STUDY:

General Objectives

1.To study the attitude towards science among IX standard students.

2.To study the interest in learning science of among IX standard students.

3.To study the achievement in science of among IX standard students.

4.To prepare ABTLS modules in science to enhance attitude towards science, interest in learning science and achievement in science among IX standard students.

5.To study the effectiveness of ABTLS modules as instructional strategies in science on attitude towards science, interest in learning science andachievement in science among IX standard students.

6.To suggest measures to enhance attitude towards science, interest in learning science and achievement in science among IX standard students.

Specific Objectives

The following objectives were framed for the present study.

1.To study the effect of ABTLS on achievement in science among 9th std.students.

2.To study the effect of ABTLS on attitude towards science among 9th std.students.

3.To study the effect of ABTLS on interest in learning science among 9th std.students.

4.To compare the effect of ABTLS on achievement in science among boys andgirls students of 9th standard.

5.To compare the effect of ABTLS on attitude towards science among boys andgirls of 9th standard students.

6.To compare the effect of ABTLS on interest in learning science among boysand girls of 9th standard students.

7.To compare the effect of ABTLS with that of traditional teaching on attitudetowards science among 9th std. students.

8.To compare the effect of ABTLS with that of traditional teaching on interestin learning science among 9th std. students.

9.To compare the effect of ABTLS with that of traditional teaching onachievement in science among 9th std. students.

10. To compare the effect of ABTLS with that of traditional teaching on attitudetowards science among 9th std. boys.

11. To compare the effect of ABTLS with that of traditional teaching on interestin learning science among 9th std. boys.

12. To compare the effect of ABTLS with that of traditional teaching onachievement in science among 9th std. boys.

13. To compare the effect of ABTLS with that of traditional teaching on attitudetowards science among 9th std. girls.

14. To compare the effect of ABTLS with that of traditional teaching on interestin learning science among 9th std. girls.

15. To compare the effect of ABTLS with that of traditional teaching onachievement in science among 9th std. girls.

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 achievement in science of high school students in control group.

2.There is no significant difference between pretest and posttest scores of achievement in science of high school students in experiment group.

3.There is no significant difference between control and experiment groups with respect to pretest scores of achievement in science of high school students

4.There is no significant difference between control and experiment groups with respect to posttest scores of achievement in science of high school students

5.There is no significant difference between control and experiment groups with respect to change in achievement in science scores of high school students from pretest to posttest

6. There is no significant difference between control and experiment groups with respect to pretest and posttest scores of achievement in science of high school students.

7. There is no significant interaction effect of two groups (control and experiment) and gender (boys and girls) on change scores from pretest to posttest of achievement in science of high school students

8. There is no significant relationship between pretest attitude towards science, interest in learning science and achievement in science of high school studentsin control group

9. There is no significant relationship between pretest attitude towards science, interest in learning science and achievement in science of high school studentsin experiment group

10. There is no significant relationship between posttest attitude towards science, interest in learning science and achievement in science of high school studentsin control group

11. There is no significant relationship between posttest attitude towards science, interest in learning science and achievement in science of high school studentsin experiment group

METHOD OF THE STUDY

The study had experimental design. In this design two pre-assembled groups more or less similar were selected. One class IX designated as experimental group andanother class as control group. A pre-test was given to ascertain that both the groups do not differ significantly to begin with the experimental treatment with the help of ABTLS was given specified concept and the control group were taught with conventional method. The independent variable of the study were teaching methods with two levels i.e., ABTLS and conventional teaching. Gender with two levels i.e., boys and girls are taken as moderator variable. But the achievement in science,attitude towards science and interest in learning science are three dependent variables.

In the present experimental study two group pre-test, post-test design was used.

Table: 3.1 Experimental Design

Control group	**Experimental group**
Pre-test 1) Attitude Towards Science 2) Achievement test in Science 3) Scientific Interest Inventory	Pre-test 1) Attitude Towards Science 2) Achievement test in Science 3) Scientific Interest inventory
Teaching by conventional method.	Teaching by ABTL strategies
Post-test 1) Attitude Towards Science 2) Achievement test in Science 3) Scientific Interest inventory	Post-test 1) Attitude Towards Science 2) Achievement test in Science 3) Scientific Interest inventory

Section I: Paired t test was calculated between pre-test and post-test in two groups with respect to attitude towards science, interest in learning science and achievement in science scores of high school students in two groups (control and experiment).

In this section, the mean of pre-test and post-test scores of attitude towards science, interest in learning science and achievement in science of high school students in two groups (control and experiment) are analyzed by Paired t test and the results are presented in the following section.

Hypothesis-1: There is no significant difference between pre-test and post-test scores of attitude towards science of high school students in control group.

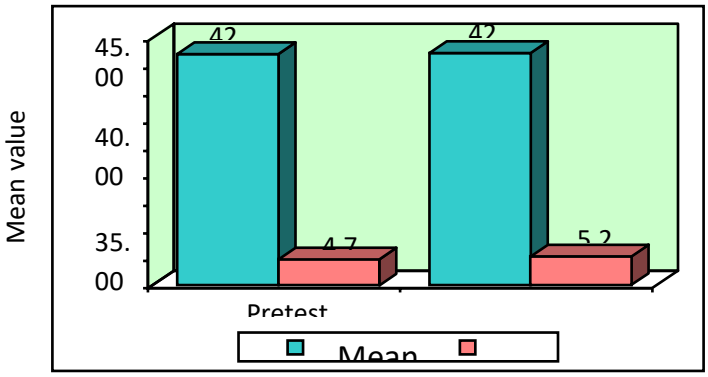
To achieve this hypothesis, the Paired t-test was applied and the results are presented in the following table.

Table 4.1: Comparison between pre-test and post-test scores of attitude towardsscience of high school students in control group

Test	n	Mean	SD	Mean Diff.	SD Diff.	Paired t	P-value
Pretest	50	42.10	4.74	-0.22	2.03	-0.7651	0.4479, NS
Posttest	50	42.32	5.27				

From the results of the above table, it can be seen that, no significant difference was observed between the pre-test and post-test scores of attitude towards science of high school students in control group (t=-0.7651, p>0.05) at significance level of 5 percent. Hence, the null hypothesis is not rejected and alternative hypothesis is rejected. It means that, the pre-test and post-test scores of attitude towards science of high school students in control group are similar. The mean scores of pre-test and post-test attitude towards science of high school students in controlgroup are also presented in the following figure.

Figure 4.1: Comparison between pre-test and post-test scores of attitude towardsscience of high school students in control group



Hypothesis-2: There is no significant difference between pre-test and post-test scoresof attitude towards science of high school students in experiment group.

To achieve this hypothesis, the Paired t-test was applied and the results arepresented in the following table.

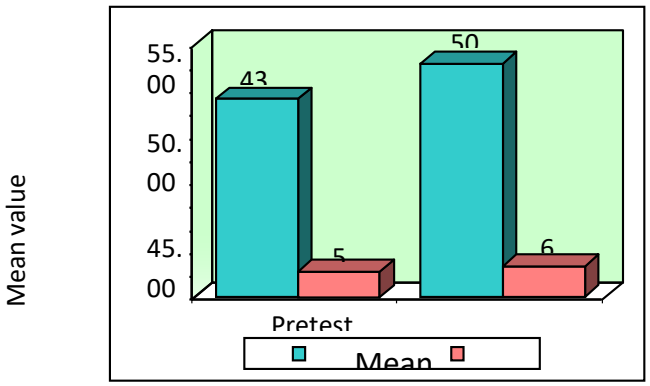
Table 4.2: Comparison between pre-test and post-test scores of attitude towardsscience of high school students in experimental group

Test	n	Mean	SD	Mean Diff.	SD Diff.	Paired t	P-value
Pretest	50	43.18	5.52	-7.60	5.76	-9.3233	0.0001*, S
Posttest	50	50.78	6.73				

*p<0.05

From the results of the above table, it can be seen that, a significant differencewas observed between the pre-test and post-test scores of attitude towards science of high school students in experimental group (t=-9.3233, p>0.05) at significance levelof 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the pre-test and post-test scores of attitude towards science ofhigh school students in experimental group are different. It means that, the post-test attitude towards science scores of high school students is higher as compared to pre- test attitude towards science scores of high school students in experimental group. The mean scores of pre-test and post-test attitude towards science of high school students in experimental group are also presented in the following figure.

Figure 4.2: Comparison between pre-test and post-test scores of attitude towardsscience of high school students in experiment group



Hypothesis-3: There is no significant difference between pre-test and post-test scores of interest in learning science of high school students in control group.

To achieve this hypothesis, the Paired t-test was applied and the results arepresented in the following table.

Table 4.3: Comparison between pre-test and post-test scores of interest inlearning science of high school students in control group

Test	n	Mean	SD	Mean Diff.	SD Diff.	Paired t	P-value
Pretest	50	216.24	14.32	-0.68	2.57	-1.8731	0.0670, NS
Posttest	50	216.92	14.08				

From the results of the above table, it can be seen that the there is no significant difference was observed between the pre-test and post-test scores of interest in learning science of high school students in control group (t=-1.8731, p>0.05) at significance level of 5 percent. Hence, the null hypothesis is not rejected and alternative hypothesis is rejected. It means that, the pre-test and post-test scores of interest in learning science of high school students in control group are similar. The mean scores of pre-test and post-test interest in learning science of high schoolstudents in control group are also presented in the following figure.

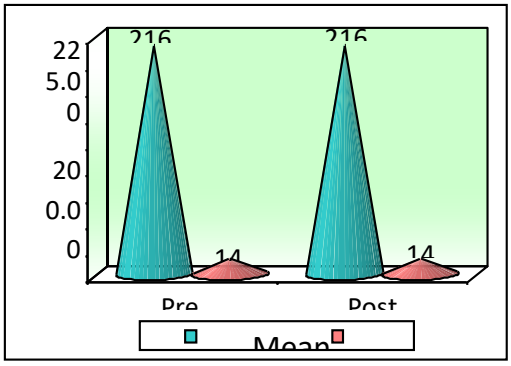


Figure 4.3: Comparison between pre-test and post-test scores of interest inlearning science of high school students in control group

Hypothesis-4: There is no significant difference between pre-test and post-test scoresof interest in learning science of high school students in experiment group.

Mean value

To achieve this hypothesis, the Paired t-test was applied and the results are presented in the following table.

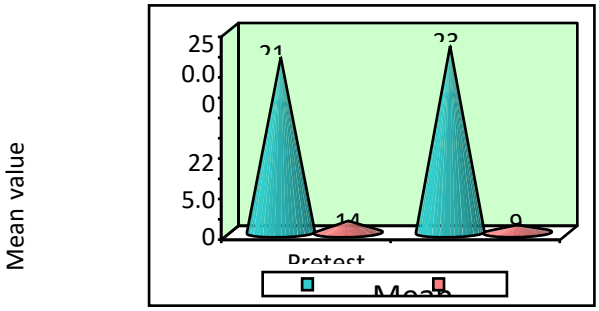
Table 4.4: Comparison between pre-test and post-test scores of interest in learningscience of high school students in experiment group

Test	n	Mean	SD	Mean Diff.	SD Diff.	Paired t	P-value
Pretest	50	216.56	14.42	-13.68	13.09	-7.3912	0.0001*, S
Posttest	50	230.24	9.36				

*p<0.05

From the results of the above table, it can be seen that significant difference was observed between the pre-test and post-test scores of interest in learning science of high school students in experiment group (t=-7.3912, p>0.05) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the pre-test and post-test scores of interest in learning scienceof high school students in experiment group are different. It means that, the post-test interest in learning science scores of high school students are higher as compared to pre-test interest in learning science scores of high school students in experimentgroup. The mean scores of pre-test and post-test interest in learning science of high school students in experimental group are also presented in the following figure.

Figure 4.4: Comparison between pre-test and post-test scores of interest inlearning science of high school students in experiment group



Hypothesis-5: There is no significant difference between pre-test and post-test scores of achievement in science of high school students in control group.

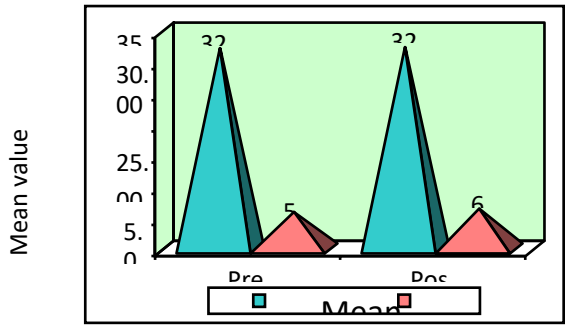
To achieve this hypothesis, the Paired t-test was applied and the results are presented in the following table.

Table 4.5 : Comparison between pre-test and post-test scores of achievement inscience of high school students in control group

Test	**n**	**Mean**	**SD**	**Mean Diff.**	**SD Diff.**	**Paired t**	**P-value**
Pretest	50	32.10	5.89	-0.22	1.80	-0.8647	0.3914, NS
Posttest	50	32.32	6.38				

From the results of the above table, it can be seen that the there is no significant difference was observed between the pre-test and post-test scores of achievement in science of high school students in control group (t=-0.8647, p>0.05) atsignificance level of 5 percent. Hence, the null hypothesis is not rejected and alternative hypothesis is rejected. It means that, the pre-test and post-test scores of achievement in science of high school students in control group are similar. The meanscores of pre-test and post-test achievement in science of high school students in control group are also presented in the following figure.

Figure 4.5: Comparison between pre-test and post-test scores of achievement inscience of high school students in control group



Hypothesis-6: There is no significant difference between pre-test and post-test scores of achievement in science of high school students in experiment group.

To achieve this hypothesis, the Paired t-test was applied and the results arepresented in the following table.

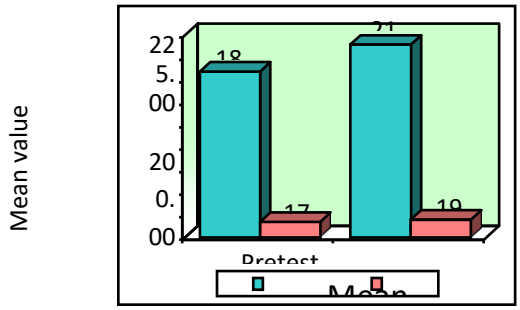
Table 4.6: Comparison between pre-test and post-test scores of achievement inscience of high school students in experiment group

Test	**n**	**Mean**	**SD**	**Mean Diff.**	**SD Diff.**	**Paired t**	**P-value**
Pretest	50	32.44	5.51	-4.74	3.26	-10.2924	0.0001*,S
Posttest	50	37.18	5.94				

*p<0.05

From the results of the above table, it can be seen that the significant difference was observed between the pre-test and post-test scores of achievement in science of high school students in experiment group (t=-10.2924, p>0.05) at significance level of 5 percent. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the pre-test and post-test scores of achievement in science of high school students in experimental group are different. It means that, the post-test achievement in science scores of high school students is higher ascompared to pre-test achievement in science scores of high school students in experiment group. The mean scores of pre-test and post-test achievement in science of high school students in experiment group are also presented in the following figure.

Figure 4.6: Comparison between pre-test and post-test scores of achievement inscience of high school students in experiment group



Findings Achievement in Science

1. The pre-test and post-test scores of achievement in science of high school students in control group are similar.

2. The post-test achievement in science scores of high school students is higheras compared to pre-test achievement in science scores of high school students in experiment group.

3.The pre-test scores of achievement in science of high school students are similar in control and experimental groups.

4.The post-test scores of achievement in science of high school students are significantly higher in experimental group as compared to control group.

5.The change in achievement in science scores of high school students from pre-test to post-test are significantly higher in experimental group as compared to control group.

6.The pre-test achievement in science scores of high school students are similar in control and experimental group, the post-test achievements in science scores of high school students are significantly higher in experimental groupas compared to control group.

7.The students of high schools of control and experimental groups have differentchange scores from pre-test to post-test of achievement in science, the boy andgirl students of high schools have similar change scores from pre-test to post- test of achievement in science.

8.The control group boys of high schools and control group girls of high schoolshave similar change scores from pre-test to post-test of achievement in science.

• The control group boys of high schools have significant smaller in change scores from pre-test to

post-test of achievement in science as compared to experiment group boys students of high schools.

• The control group boys of high schools have significant smaller in change scores from pre-test to post-test of achievement in science as compared to experiment group girls of high schools.

• The control group girls of high schools have significant smaller in change scores from pre-test to post-test of achievement in science as compared to experiment group boys of high schools.

• The control group girls of high schools have significant smaller in change scores from pre-test to post-test of achievement in science as compared to experiment group girls of high schools.

• The experiment group boys of high schools and experiment group girls of high schools have similar change scores from pre-test to post-test of achievement in science.

Following are some of the Implications:

1. Activity based teaching learning strategies help the students to take partactively in learning process.
2. Students get opportunity to take part in the experiments conducted in theclassrooms.
3. Activity based learning helps in better retention among secondary students.
4. Activity based teaching learning strategies promote creativity among secondarystudents.
5. Students prepare models which helps in their self-learning.
6. These modules sketch a sequence on various activities involved in teaching learning process.
7. To bring out qualitative changes in secondary education we should implement these modules in our class room teaching with certain modifications.
8. ABTLS is especially useful to structure curriculum sequence or courses and to instruct students systematically in the key ideas of a field
9. 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.
10. ABTLS can provide the teacher to help the students to grasp relationship and make connections.
11. It can help the students to relate new information to prior knowledge.
12. These modules help the students to retain the knowledge in proper directions.
13. School should organize science exhibitions that enhance the self-confidence, positive attitude and interest in science.

14. Schools should develop among students a positive attitude towards science.

15. Curriculum should be modified at school level so that lessons should promote the development of positive attitude and interest in learning 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.

References

- AartiKalari (2008). *A study on the effectiveness of CAM over conventional method in teaching science in relation to achievement.* Retrieved from https://shodhaganga.inflibnet.ac.in.
- Abungu, H.E.O., Okere, M.I.O., & Samuel Wachanga. W. (2014). *Effect of Science Process Skills Teaching Strategy on Boys' and Girls' Achievement in Chemistry* in Nyando District, Kenya.
- Aggarwal J.C. (1997) *Essentials of educational technology: Teaching learning innovations in education.* New Delhi: Vikas Publishing House.
- Aggarwal Y.P (1990) *Statistical methods.* New Delhi; Sterling Publishers private limited.

- Aktamis, H., &Ergin, O. (2008). *The effect scientific process skills on students'* scientific creativity, scientific attitude, and academic achievements, *Asia Pacific Forum on Science Learning and Teaching*,9, 1. 6. Alport G.W. (1973) *The hand book of social psychology*, pp 789-884 marks; Clark University press, Worcester.
- American Association for the Advancement of Science (AAAS) (1993),
- Benchmarks for science literacy, Retrieved from: *http://www.project2061.org/ publications/bsl/online/index.php.*
- Amruthavalli and Sivakumar (2014). Impact of activity based learning on learning science at primary level. *Shanlax International Journal of Education. 2*(2), 60-69.
- Anandan, K. &Manimaran, G. (2009). Opinion of the Primary Teachers towards the Activity-Based Learning, *EDUTRACKS*, 9(4), 35-37.