

# Effect of Activity Based Teaching Method in Science

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**Abstract**—This research paper is based on the study conducted to find out the effectiveness of activity base teaching method on the learning of science students. The purpose of this research was also to explore the linkage between teaching technique and student learning. In this study, the measuring instrument was used an achievement test (post-test). The test was based on two chapters of the text book. Students were divided into two groups, that is experimental and control groups .Each group was consisted of 25 students, these groups were equated on the basis of marks achieved by the students in a test of 4th class science taken by DTE (District Teacher Educator).. The control group was taught by lecture method and the experimental group was taught by activity-based method. The duration of the teaching for both groups was 30 minutes per day for one month (30 days). At the end of the treatment, the post test was administered. The data of the study comprised up of scores of experimental as well as control group obtained on the post-test. The study revealed that the performance of experimental group was better than the performance of the controlled group of the students. Furthermore the there was significant difference between the performance of the experimental group as compared to the control group with reference to knowledge, comprehension, application skill. Overall, the findings of the study show that the activity based teaching was much effective than the lecture method teaching of science at elementary level.

**Keywords**— Activity based teaching method.

## I. INTRODUCTION

THE learner has the capacity to learner through personal actions and experience and start developing their ideas about world. They interpret things according to their own thoughts and experiences. Activity based teaching method helps them to construct their knowledge. According to Rillero, 1994 “A child best learns to swim by getting into water; likewise, a child best learns science by doing science”. Doing science is not only limited to reading or hearing but it holds students in laboratory work to test ideas and develop understanding (Ewers, 2001). Hence, science-teaching plan is incomplete without science experiences.

Present situation of education in Pakistan is very miserable. Teachers are still using traditional methods of teaching for teaching science which resulted in rote learning and true understanding of concepts does not occur especially at elementary level. Now a day's emphasis of science teaching is not to make every student scientist but to develop scientific

attitude and positive attitude towards science in every student's. Learners need to be actively engage with explanatory ideas, verification of scientific concept and theories and to make relationship between scientific concepts and theories.

In Pakistan teaching is teacher centered and based on memorization of factual knowledge. Unfortunately teachers teach classes by using typical lectures in science at all levels and especially at elementary level. The consequences of this situation lead to the rote learning of the learners with no deep understanding of scientific concepts , phenomenon and theories.

Yangin and Dindar (2007) has an idea that if the teacher has less resources, then he / she has to choose the traditional way of teaching that is the lecture method.

According to McDermott (1996), more competent teacher, who might be able to adopt lecture method, cannot be expected to follow the activity based instruction so rapidly.

In reality, teacher's uncertainty, lack of resources , material management problems, discomfort, lack of time, limited backgrounds with experiential approaches to science teaching and dependency on textbooks are the causes of using hands-on/minds-on activities oftenly than lecture and discussion (Lebuffe, 1994; Morey, 1990; Tilgner, 1990).

Activity-based learning (ABL) based on verity of activity-based teaching methods. The prerequisite for this learning should be based on doing experiments or activities.

If learner is provided the opportunity to think and solve the problems on their own then the learning becomes long lasting. The important features of the activity-based teaching are that it is learner centered and it encourageself-learning. It also allows the learner to study according to his / her own ability and skills.

## II. METHODOLOGY

The purpose aimed to find out the effectivness of the activity based teaching method on student learning in science. There was cause and effect relationship between Activities based teaching method and its effect on students learning in science. In order to control several factors which may affect the internal as well as external validity of this experimental design, posttest only equivalent group design was used for this study to control these variables. For this experimental study, a primary school in Government sector was selected in Jhelum city. The sample comprised up of 50 students of 4th class.

Two equivalent groups (control group as well as experimental) were formulated on the bases of marks achieved by the students in a monthly test taken by DTE (District Teacher Educator from class 4th science, published by Punjab Text Book Board, Lahore. For the data collection, the post-test was constructed. The techniques of test construction were reviewed for it. The post test was based upon two chapters (Introduction to sound, Investigating electricity and machines) selected from upon the 4th grade science text book. This test comprises of 21 multiple choice questions with 7 item related to knowledge, 7 items related to comprehension, 7 items related to application and 2 short questions were associated to skill development. For the validation of the test, pilot testing was done. The judgmental validation as well as test retest validation method was also used for the same. For treatment purpose 13 lessons were organized for activity based teaching and 13 lessons were organized for traditional lecture method. the activity based teaching was used as a treatment for experimental group where as lecture methods was used for the teaching of control group.

The post-test was administered on both groups (experimental and control groups) after the 30 days treatment. The instructions was done by the researcher for both groups (experimental and control groups). The data of the research was obtained from the scores of the students on pre-test and post-test. In order to analyze the data, t-test, mean score and standard deviation were used.

### III. RESULTS

After the treatment, the scores of both groups of students were analyzed by using such t-test, mean score and standard deviation. The data analysis is as follows:

TABLE I  
COMPARISON OF SCORES OF STUDENTS ON POSTTEST

Learning Domain	Group	N	Mean	SD	t-value	p
Knowledge	Experimental	25	5.16	1.24	25.33	<0.001
	Control	25	2.88	1.14	df(48)	
Comprehension	Experimental	25	5.52	1.75	20.625	<0.001
	Control	25	2.88	1.47	df(48)	
Application	Experimental	25	4.52	1.92	16.285	<0.001
	Control	25	2.24	1.50	df(48)	
Skill development	Experimental	25	6.6	1.4	46.095	<0.001
	Control	25	1.76	1.2	df(48)	

Table 1 shows the significant difference of experimental and control group. The mean scores for learning domain of knowledge, comprehension, application and skill development ( $P<0.001$ ).

The result of this study in terms of hypothesis signify that

on mean of scores on posttest of experimental group in the learning domains of knowledge, comprehension, application, skill development were greater than the mean scores of control group in these domains with  $p< 0.001$ .

The results of the study indicate that the significant difference between activity Based teaching and traditional teaching method.

The clear picture that emerged from the table 4.5 is shown below in the form of bar diagram.

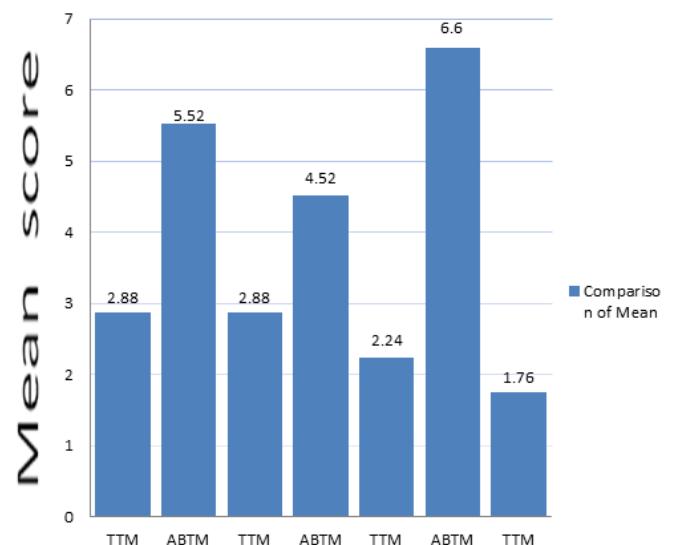


Fig. 1 Comparison of scores of students on posttest

The results have been drawn keeping in view the objectives formulated for this study and by the testing of the hypotheses framed thereafter. Major findings of the study are as follows:

1. Activity Based teaching method enhances the learning of the students.

2. A significant difference was found the achievement scores of the students in the subject of Science taught through Activity Based teaching method and Traditional teaching methods.

### IV. CONCLUSIONS

Activity-based learning teaching method generates an ideal situation for science teaching especially at Elementary level. In activity-based teaching methods, learners are involved actively in hands-on minds on experiences and acquire an opportunity to relate intangible concepts and theories with actual observations. Activity based teaching method helps learners to understand the scientific concepts. Students' actively involved in teaching learning process and activities help them in application of scientific knowledge in various real life situations.

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