

Analyzing the Effectiveness of Activity Based Teaching and Traditional Teaching Method Through Students' Achievement in Sub Domain Knowledge at Secondary Level

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Abstract

The study was conducted to analyze and dig out the area of the role and impact of ABT (activity based teaching) on students learning in subject of science grade 7th. It was also aimed at to find out the impacts of activity based teaching on learners learning “abilities”, “to determine the achievement of students through lecture based method in science, to determine the achievement of students through activity based method in the subject of Science, to compare activity based teaching and traditional based teaching method through students’ achievement in sub domain knowledge, to compare students’ achievement through activity based teaching and traditional teaching method in sub domain comprehension and to compare students’ achievement through activity based and traditional teaching method in sub domain application”. The findings demonstrate that, ABT provided very excellent outcomes that must be implemented for all the subjects of the school in the classroom and especially for lab. All teachers must be completely aware from ABT, its process and components. Teachers must be motivated and encouraged to apply in the classroom the Activity based teaching method.

Keywords: Teacher role, ABT (activity based teaching), subject of Science, achievement of students and classroom activity.

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.

The modern psychology findings have given a central role to the learners compared to teachers for effective learning. It has been proved by researchers on the references of psychologist that activity based learning is much closed to learners conscious that stimulates his motivation for effective learning.

Activity based teaching style is a kind of academic method of teaching. Its basic theories contain the requirement that students learning must be based on activities and experimentations. The idea of ABT education is start from common thinking that the students should be active learners instead passive receivers. If a student is given an opportunity, He/she will feel happy and memories for long time. This is such a method that the student mentally and intentionally participating himself actively in activity based learning.

This classroom encourages students to be self – guided to explore an experiment. It provides students flexible and adoptable approaches for learning they need to ready for work place. Unlike the classroom may grow upping today is active learning classroom is going increasingly supportable of the skills students need to develop. Innovation in the classroom is encouraged and nurtured with in open mind set involve and understanding for how we learn.

As understand more about how the mind process retain and recalls information. It is important to design learning environment actively engaged this is important because experts explore that classroom space influences behavior. As teachers try to inspire students with life-long loving learning and desire to everyone do. Findlay ways to develop a critical thinking skills to solve problem independently and then communicate and collaborate on solution the demonstrate grow but understanding how they use or active learning classroom as a tool to further students success, to more students empower the learn to be more engaged and involve in the process of skill development.

Literature Review

Various types of teaching methods have been proposed by different educationist since long ago. Aristotle in his school of thought for the first time introduced a method of dialogue to Conway his message to others. Known philosophers of history including the Greeks, Romans and Muslims have given their expert opinion about various styles of convey knowledge to others. Majority of these educationists have prepared that type of learning in which the learners are actively engaged.

It has been proven by the modern psychologies that learning by doing initiates readiness and motivation which in turn increase interest of learners for accepting new ideas.

Ahlfeldt, et al. (2005), stated that if the teacher just provides all the knowledge related materials to some passive learners, will be the old method. The new educational methodologies is to provide an environment to the students so as to be actively engaged with the materials and with each other themselves. Similarly, as described by Benson and Blackman (2003) that if the students are not actively being engaged in learning it will be a learning in vain. They further stated that the difficult task for an educator is to motivate and encourage students to learn with the help of physical activities, as most of the student due to some psychological factors like the activities. Therefore, the current study is an experiment to introduce the Activity Based teaching and highlight the advantages. The previous experiments had done in Europe and USA which are successful. Researcher tries to smear experiment in Pakistan and especially in rural areas.

About the advantages of learning by doing activity, Petress (2008), determined that the students who are interestingly participating in different activities will be having the following characteristics.

The active learners will always be alert to ask questions because they wanted to clarify themselves.

These students will have the ability to challenge the content, the methods as well as the main ideas.

They will have the capacity to connect the fresh knowledge to the past one.

Also, these learners can compare their learning to acquire various skills.

They will discuss the new learning to others and will always be excited for learning.

While comparing the traditional and modern activity based learning, it can be concluded that learning act of doing is the more precise and beneficial method as compared to the old traditional techniques. The reason being the modern activity based teaching is interesting and according to the needs of individuals compare to single way education of traditional teaching where learners are passive, McGrath and Mc Ewan (2011).

Gleson et al (2011), have given various strategies for learning with activities based method. They stated the following strategies of learning through activities.

Student presentation: In this strategy a specific topic is assigned to the class which is to be researched. Then after field work the topic is presented to the whole class.

Think pair share: In this technique a specific problem is given to the student who are asked to think about the problem alone. The students then share their thoughts with each other and make a report to be shared with whole class.

Case study: In this case the students are stimulated to use their own knowledge to solve a problem.

Puzzles: In this the students are forced to a puzzles situation and they are asked to plan for solving the situation faced by them through their own thinking.

Minute's writing: Here the students are presented with a question and they are asked to write their responses in a short time less than two minutes.

Socratic questioning: The students are encouraged to give answer to specific questions related to a subject.

Activity-based Teaching (ABT)

ABT is a method concentrating on the concept or thought that learners must be involved through activities. In this method the teacher facilitates and guides the students. Several activities and responsibilities can be used and recycled in this kind of platform, allowing schoolchildren to become directly involved and participate in the learning practice, instead of being passive.

The purpose of this method (activity based teaching) for any teacher is to engage learners directly, into a lesson as a result that they come to be a contributor in their own learning. Various traditional methods of education often depend on the educator as an experienced expert who just provided information to learners. In this form of environment, the students were expected to do as they pleased, absorb new information, anyway of any particular style of struggle made on their own behalf. The learners were educated, but there was not of necessity a focus on them being a participant and actively learning in a classroom.

Bell and Kahrhoff (2006) concluded from their research on the related topic with comments that, "All the educators agree on the point that an active learning environment is more conducive compared to a passive one. Various processes through which students can be engaged to build conceptual ideas and understanding the basic skills that will be beneficial for them in future."

The ABT is more effective for obtaining permanent results as concluded by Shah I and Rahat (2014). They say, “After analyzing the information gathered it is now cleared that effectiveness of learning depends upon the method of teaching being employed learning by physical involvement of children give more outstanding results compare to lecture method.”

Fallon et al (2013) conducted a research on activity based approach. They targeted the undergraduate students for their research studies. They concluded that if students are not engaged by the teachers, they will not gain the full advantages of knowledge also that the ABL increases students’ involvement which make the education more interesting and easy for the students. They explain the view that different barriers to the of ABL must be understand and managed properly to get maximum result.

Advantages of Activities Over Other Approaches

Advantages of activities as a method of learning over other approaches. What activity is? How is it used? How it is more useful in teaching? Why is it preferred by teachers over other approaches?

Activity combines these three important elements of teaching-learning process. These are three important aspects:

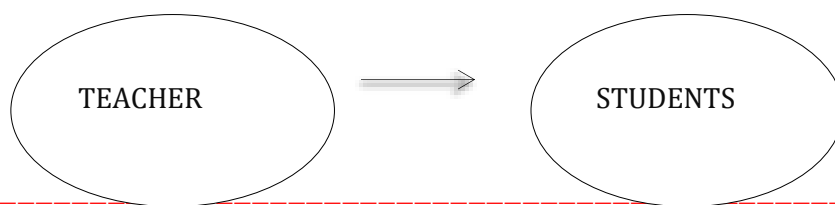
Teacher: Who is supposed to be the knowledge given?

Learner: Who is the knowledge receiver or constructor of knowledge?

Subject’s integration: So, all these are combined. The teacher is taken into account, the learners are learning, and the subject matter, so all these processes are combined.

Learner-Centered Approaches are better than other approaches. Activity is a learner-centered approach. Activity means learning by doing, the knowledge is gain, or is constructed by the students. While learning, doing the activity, this is in his/her own environment. So, the child is very comfortable because he/she is in his/her own environment and is doing activity according to their own piece. This approach tacks into account to four essential elements which are required for learning.

Traditional Teaching Method



Traditional teaching method Figure 2.5

Commonly, the teacher provides information; the class provides content only to the entire classroom and inclines to strain simply on the factual information of the learners. So, it can guess what teacher says and, also the learners listen only. Hence, “the learning procedure is expected to be passive and take very tiny part in their learning procedure.” (Ulrich et, al. 1998.)

Various scholars of education have reached that traditional lecture method has limited effectiveness in teaching and learning procedure. Learners tend to remain inactive and their devotion becomes extinct approximately fifteen-twenty minutes after the academic lecture.

Objectives of the Study

1. To find out the achievement of students through lecture based method.
2. To determine the achievement of students through activity based method.
3. To assess activity based teaching and traditional teaching method through students’ achievement in sub domain knowledge.
4. To compare traditional teaching method and activity based method through students’ achievement in sub domain comprehension.
5. To compare activity based teaching and traditional teaching method through students’ achievement in sub domain application.

Research Methodology

This is an experimental study to investigate the effect of Activity Based Teaching on students’ performance in the subject of science on grade seven students at public sector elementary schools. There were two variables: teaching methodology and students’ achievement. The first one is an independent variable while the second one is the dependent variable.

Research Design

This study is based on an experimental design to define the influence or effects of activity based teaching on students learning outcome. For this study, the subject of general science was taught to 7th. class students at the selected public school for six months. Forty students of grade seven were selected on voluntary basis. These total students were divided into two groups. First group was control group which was taught with traditional teaching methods. The second group was the experimental group that was taught through modern activity based teaching. Before starting the experiment, pre-test was taken from both groups. The score was recorded accordingly.

After completion of the experiment the post-test was conducted, and the result was correlated with the first score.

Based on Bloom 1956 taxonomy of objectives, the first three cognitive i.e., knowledge, comprehension and application ability of the students was analyzed.

Population of the Study

All the students of grade 7 of the govt. boys' schools of Dist. Dir. constituted the population of the study.

Sample

Gay (1996) has suggested a minimum of 15 students in a subject in each group for an experimental study. So, investigators selected 21 students in every group to confirm the inner quality validity of the experimentation. In this method overall sample consists of forty-two (42) students (boys) of 7th grade. Volunteer sampling was utilized to select a school for leading this experimental study. The school headmaster was requested to volunteer cooperation. The students were distributed on the basis of pre-test score in experimental and control groups -- students' score good, average and below average.

Simple random sampling was utilized for the selection of schoolboys in both the control and experimental group.

Control and Experimental Groups Strategy

There were 42 students voluntarily selected the GHS of district Dir (KP) for this investigational experimental study. The overall number of students was distributed into 2 groups equally, experimental and control group. For the determination of this experimental study, there were three groups based on their marks obtained in the pre-test, such as good students, average, and below average. Descending order was used by the help of scorecard, the best (14) students from whom obtained the scorers i.e. From 1 to 14 were considered as the group of good students, and then the next fourteen (14) from 15 to 28 were as average students. And those students, who got score from 29 to 42, were considered below average, Control and experimental group comprised seven (7) students from every group of good, average and below average as per their scores of pre-test.

Good Test Analysis of Pretest

The table display independently the total mean with the standard deviation score of the pre-test of the two groups (experimental, control) in the demonstrate portions of the test the total mean value was 47.903 as well the standard deviation was

it 12.68 8 for the experimental group. There was a minor difference found between the two groups, so the value was not important. A result of the performance of both groups in pre-test was average. The value of significance of both the groups was 0.417 which are more than 0.05; it indicates the significant change between the two groups. The Cohen's d value noted 0.2 which was shown in the study defined constant; to T-test significance displays greatness of influence Cohen's has allied these following phases of the verified effect.

- (1). "Slight if = or < than 0.2"
- (2). Medium if approximately 0.5

- (3). "Large if = or > than 0.8"

Mean		The Standard Deviation		T	Df	Significance (2-tailed)	Cohen's D. Value
Control	Experimental	Control	Experimental				
6.3	5.1	3	3.3	0.346	40	0.187	0.4

Table: Control and experimental groups' pre-test score results in sub domain cognitive ability "knowledge":

The mentioned table shows the standard deviation on the sub part of the cognitive ability "knowledge" through pre-test of both groups (control and experimental). The mean value of control group was 6.3 and Standard Deviation was individually 3.0; As well the mean, value was 5.1 and Standard Deviation was 3.3 of the experimental groups. So In both groups "T value" was 0.346, the variation was 40 and the signature was 0.187 which was insignificant. There was no Cohen's D score of both the groups calculated 0.4, it was little than 0.5. That difference was very little. Both the groups looks like equal.

Table: Pre-test values of the two groups (experimental and control) in the sub domain of cognitive ability "Application"

Mean	The Standard Deviation	T	Df	Significance	Cohen's D. Value

Control	Experimental	Control	Experimental			(2-tailed)	0.2
29.713	----	11.4766	----		40		
	32.380		12.6746	-714		478	

The table shows the similarity of both groups (experimental & control). The control group mean was noted 29.71 with Standard Deviation 11.47. While the experimental group mean was noted 32.380 and the “Standard evaluation” was 12.674.

The considered “T value” was 71 using DF of 40. Thaws displays Insignificant

Deferred of both the groups. The little difference was too verified the Cohen's D, value was 0.2. It was slighter than the 0.5; the situation shows that the change was insignificant.

To realize the test scores the regularity of the both groups, The Leavens test was used, which shows that the data was generally divided as well as the performances of experimental group was very nearly related in the pre-test and not deference was studied.

Table Post-test scores in subdomains of cognitive ability "knowledge" of both the groups .

Mean		The Standard Deviation		T	Df	Significance (2-tailed)	Cohen's D. Value
Control	Experimental	Control	Experimental				
13.91	----	4.311	----		40	.000	1.90

Mean		The Standard Deviation,		T	Df	Significance (2-tailed)	Value of Cohen's D.
Control	Experimental	Control	Experimental				
30.18	6.56	13.854	4.341	5.49	40		0.25
	26.66		13.121	845		401	

In the table, the means value in "knowledge" based questions of the experimental group was 6.56 with the standard deviation 4.34, although the mean value was 13.91 with the Standard Deviation value was 4.31 of the control group. The Cohen's D value was considered as 1.90, so it was bigger than 0.5. As a result of these complete statistics show the significant variance of both the groups in the performance.

Table: Post-test scores in subdomains "Application" of the two groups: (experimental and control)

Mean		The Standard Deviation		T	Df	Significance (2-tailed)	Value of Cohen's D.
Control	Experimental	Control	Experimental				
18.94	26.66	4.030	3.363	5.818	40	.000	1.78
	12.28		3.363				

The above table appearances the total mean value in the sub domain of cognitive abilities "application" of the experimental group was it 26.66 also the Standard Deviation be present 13.12, Although the control group the mean value was 30.18 with the standard deviation be present 13.121 in that order. The Cohen's D value was it considered as 0.25. Therefore all these data shows the significant variance in both groups performance.

Recommendations

The following recommendations can be made regarding the findings initiate from the current research:

- 1- The findings demonstrate that, ABT provided very excellent outcomes that must be implemented for all the subjects of the school in the classroom and especially for lab.
- 2- All teachers must be completely aware from ABT, its process and components.
- 3- Teachers must be motivated and encouraged to apply in the classroom the Activity based teaching method.
- 4- Pre-service teachers must be offered more chances for practice to experience activity-based teaching.
- 5- Activity based teaching is necessary it must be the part of training in pre-service as a teaching method.
- 6- The study had been restricted to select some units for the grad 7th the Science subject Textbook. It must be extended for other zones as fine.
- 7- The sample of this study was very partial hence the researcher tackled various critical problems and difficulties for the normalcy of data. In the future, some additional studies would be accomplished in moderately extended areas.
- 8- Experimental studies must be supported to determine the effect of activity-based teaching on pre-service trainers' cognitive, affective, and motor skills.
- 9- The observation was led by a single observer, was engaged in relative ABT. Additional researchers need to be engaged and additional educators' thoughts on the ABT may be considered.

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