

## Applying Activity Based Learning (ABL) in Improving Quality of Teaching at Secondary School Level

Mubashara Akhtar<sup>1</sup>

<sup>1</sup> PhD Scholar, Institute of Education and Research,  
University of the Punjab, Lahore – Pakistan  
[mobi\\_lcwu@yahoo.com](mailto:mobi_lcwu@yahoo.com)

Muhammad Saeed<sup>2</sup>

<sup>2</sup> Associate Professor, Institute of Education and Research,  
University of the Punjab, Lahore – Pakistan  
[drsaeed1961@hotmail.com](mailto:drsaeed1961@hotmail.com)

---

### KEY WORDS

Activity Based Learning (ABL),  
Secondary grade students,  
Pakistan

### ABSTRACT

The paper addresses the application of activity based approach to learning in a group environment of secondary grade students. To enhance the aspects of teaching and learning a shift from lecture method to activity based method was practiced. Students' learning was assessed by assigning them activities based on different topics of science and completion of those activities. The study was experimental in nature and conducted on 76 grade 9<sup>th</sup> students in an urban school of district Lahore who were selected randomly. They were alienated constantly in two groups i.e. 38 each in experimental and control group. The experimental group was exposed to variety of activities relevant to the subject of science while control group was educated by traditional method of teaching. Students were encouraged to share their problems with their fellows and the teacher. Mostly activities were carried out in pair form and the role of teacher was more like a facilitator so as to give ample opportunities to the students to acquire by captivating themselves in the activities. The results revealed that activity-based approach enhances students' learning. Therefore, the teachers should give emphasis on managing the activities in the class to promote their learning and make them confident.

---

## Introduction

Teaching is a process of imparting instructions to the learners for instilling skills, knowledge and expressions. Different teaching methods are adopted by teachers while teaching. Various psychologists, educationists and curriculum developers take up the requirement for multiplicity of teaching methods in teaching and infer three influences in favour of this situation: (1) when the same teaching methods are applied, all students do not learn equally well, (2) some teaching methods are more applicable than others in any specific condition, and (3) any sole teaching method is not best in order to improve students' learning (Safdar, 2007).

“The task to educate the students is very complex and important as well to be held exclusively by teachers or concluded the casual constructions of the entire periods. Modern humanity needs schools worked with expert and highly skilled teachers in procedure as well as content to give instructions to the students. As professionals are proficient, so they can practice finest way of teaching to support pupils to learn important skills, attitudes and information (Arends, 2004).” We are living in the age of science and technology; a world of scientific discovery shaped by factious interesting technologies. Just look at your favourite news channel or favorite newspaper; the chances are pretty good that in the next few moments you shall catch the news as a headline about genetically engineered food, global warming and cloning etc. Scientific issues are accelerating around the corner from environmental discourse on acid rain to ozone depletion.

All citizens need to be scientific literate to make personal choices on anything and it is the responsibility of the teachers to provide them background knowledge of the things to help them cope with the speedy changes of today and tomorrow. Science is simply a mixture of perceptions of philosophy and history and science education covers all the areas broadly and helps to recognize the systematic matters of the period. Moreover, the science students possess sufficient practicalities and terminology to understand the framework of regular report (Malhotra, 2006). In educational institutions, modern life be dependent on the learning and teaching skills established among students. By developing interest in their students, teachers have great influence on their students in schools encouraging them by providing procedural, meta-cognitive and conceptual knowledge about the world (Arends, 2004). Basically, science education develops the skills among students to think logically and organize the concepts of different things and to utilize these concepts in the benefit of mankind. Science is the fundamental and essential subject in the curriculum and can be very productive if learners can utilize their abilities to get benefit from it (Safdar, 2007).

At secondary level, mainly two approaches of science are discussed in the curriculum i.e. elementary science and natural science. These are learner centered approaches of teaching while focusing students' interest towards

learning and love of nature. The content of science at secondary level primarily focuses on plants, animals and ecology with teachers' emphasis on study of environment. There are several methods of teaching science in traditional formats: Lectures, Discussions, Demonstrations, Laboratories, Projects, Inquiry problem solving and activities.

Lecture method is an instructional procedure through which the instructor or tutor seeks to create interest, to stimulate, to influence or mold opinions, to promote learning among students, to impart information and to develop critical thinking among students (Iqbal, 2010). World widely, it is the most common method of instruction in the institutes and is expected to remain so and is the most efficient process of instructing a huge number of students at a time and is entrenched in the ethnicities of the academic limitations. Researches revealed that lecture as a teaching method is not as sufficient as they might be. One of the most important aspects of lecture method is to explain the things theoretically with the same flow from start to end. Certainly, the central activity of lecturing is the art of explaining, i.e. the ability to provide understanding to others, is Therefore, now it is our duty to explore new ways to improve the efficacy and efficiency of the lectures by introducing different aspects (Behr, 2006).

Lecture method is not quite suitable to real aim of teaching science but many of teachers find themselves spending at least 40 to 50 percent of their teaching time in lecturing. The teacher works as the dominating source in the classroom to deliver the instruction and making this method information centered and teacher controlled since the learners do not actively participate in this method of teaching. Lecturing is the sole alternative in situations where the number of students is a class is large or there is a scare of teaching resources. It also finds its utility in a situation where there are limited numbers of periods available on the time table to cover a syllabus (Iqbal, 2010).

Activity based learning is a general term for a variety of activities which make different demands on the abilities of both pupils and teachers and which have different purposes (Frost, 2010). Activity based learning has constructivist purposes, and activities both access to information-rich possessions and cooperative interaction. The series of activities is considered as the central backbone of the course pedagogy which extant the students with prospects for "learning by doing" (Macdonald & Twining, 2002).

Activity method is that students learn by doing different activities, by trying new challenging ideas and comparing these with the existing ones. A child can be helped by providing safety, learn interesting experiences to enhance knowledge in supportive environment. Activities that must be followed are designed specifically for students to use it at home and in the society for promoting knowledge. The activities are intended to show the students that how science is useful at home and in the community and to make them realize that science plays an important part in everyday activities

and it is used in many places and in solving different environmental complications. Learning science does not require any expensive equipment and complex experiments (Malhotra, 2006).

Previous researches in Pakistani context also reveal significance of activity-based teaching. For example, Hussain (2004) compared two methods of teaching science i.e. traditional and super-learning and explored that super-learning is the best teaching method, which is mainly based on engagement of students in activities, in contrast to conventional method. Khan (2008) investigated the best teaching method among co-operative learning and traditional methods of teaching and findings of that study showed that the control group performed better in the post-tests as compared to the pre-test which shows cooperative learning is best procedure as linked to lecture technique in the field of coaching. Mahmood (2004) compared traditional method and computer aided instruction and the result of this study revealed that computer aided teaching is an improved method of teaching as compared to the traditional method of teaching.

There are many research studies conducted on activity based learning (ABL) in different science subjects i.e. computer, physics and biology but no research study is conducted in the subject of General Science at secondary level. As teacher's teaching methodologies act as a bridge between his/her teaching and students' learning in minimizing the learning gap and improving quality of learning and teaching. It helps to increase the learning proficiency of students (Bitchener, 2008). In view of this, the researchers conducted the study on how activity-based approach enhances students' learning in the subject of General Science at grade 9 level. It is to be mentioned here that no adequate research has been found in Pakistan on applying activity-based approach in this subject at secondary level which is mandatory for all of the arts students.

### **Methodology**

The study was carried out in order to investigate the best teaching method towards improving the quality of teaching at secondary level. The study was expressed to analyze the students' learning by instructing them through lecture method and activity based method.

### **Design**

“Posttest only control group design was used for the study. Participants were classified into two groups – control and experimental group. These groups were exposed to two different treatments i.e. lecture method and activity based method and then post tested. The experimental group obtains a treatment that is instructing through activity based method, and after intervention, the mean test scores of the experimental and control groups were conducted to a test of statistical significance (Independent sample t-

test). This design is the same as the pretest-posttest control group design except there is no pretest: themes are randomly allocated to groups, showed to the independent variable, and post-tested. Posttest scores were then distinguished to determine the efficiency of the treatment. Posttest only control group design was designated because it delivers control for most sources of inaccuracy, random project to groups was conceivable and there is no pre-test in this design. The design can be seen in table 1.”

Table 1

*Design of the study based on post-test only control group*

Groups	Assignment	N	Treatments	Posttest
1	Random	38	Lecture Method	Teacher made test
2	Random	38	Activity based Method	Teacher made test

Symbolically the design is described as;

$$\begin{array}{ccccc} R & X_1 & O \\ R & X_2 & O \end{array}$$

Here, R is for random assignment, X stands for treatment, and O stands for posttest.

The posttest only control group design was used for this experiment because the subject matter was entirely new and in such setting pre-test was not appropriate. In this experiment, subject matter taught to the control and experimental groups was completely new for the students. It was not grounded in the science courses of prior classes or in continuation with the text material read in the previous class. For that reason, pretest was not considered appropriate in this situation and pretest posttest control group design was not appropriate.

### Sample

The target population of the study was all the 9<sup>th</sup> grade students of public sector schools located in district Lahore. The accessible population comprised of 257 students studying in an urban public-sector girls' high school of Lahore. The researchers got formal permission from the school principal and the relevant teacher showed her willingness for the experiment. A sample of 76 students was selected using simple random sampling technique that was equally divided into control and experimental groups for the intervention. The process of selecting a sample is simple random sampling in such a technique that all individuals in the definite population have an equivalent and independent chance of selection for the sample, as Gay (2010) states that simple random sampling (SRS) is the only method to attain a representative sample from the population. Another reason to choose SRS was that it is essential for many statistical analyses and these analyses

permits the researchers to make decision about a population built on the behavior of the sample. Researchers made the list of the 257 students and then assigned numbers to them from 0-257. After assigning numbers, they selected 76 students by using random table. These students were again randomly divided in two equal groups; hence the experimental group and control group each contained 38 students. The experimental group was instructed through activity based learning and the control group was instructed through the lecture method.

### **Instrument**

One of the most important components in research design is the research instrument because it helps in collecting data or information. The type of instrument used by the researchers depends on the nature of data required. There are some guidelines that should keep in mind while developing an instrument: it is related to the purpose of research, based on theoretical framework of the study. To measure academic achievement of the students in the science, an achievement test was developed. The test was designed following principles of test item construction. Table of specification was designed to give due weightage to each of the four sampled chapters. It contained 30 multiple choice items, three labeling pictures items and one matching column. Reliability of the instrument was ensured by split half method and validity of the test was ensured by the experts of research and science. After incorporating suggested changes in the instrument, it was finalized. The time period of the test was fixed as 45 minutes. The test contained four chapters of the General Science textbook recommended by the Punjab Textbook Board, Lahore (Pakistan). The material used in the present study was lesson plans and activities that were organized separately on each topic as the necessity of each teaching lesson. Activities were developed according to the nature of the topics considering the students' interest.

### **Procedure**

This study was experimental in nature. Two groups were made: one is experimental group and the other is control group. Treatment was randomly assigned to both the groups by using lottery method. Two teachers taught both classes randomly. The study was designed for nine weeks. The control group was taught using lecture method and the teacher's role was only to transmit the knowledge to the students. On the other hand, experimental group was taught by using activity based technique. Teacher plays the role of the facilitator in the experimental group. In the experimental group, both teachers and students designed activities according to the need of the subject matter to grasp the concept well.

After the teacher presented a new topic, the students completed in pairs

to perform different activities exploring topics associated to the key idea offered in the lesson. The same subject matter was taught to both the groups. The students of the experimental group were paired up to perform the activities. Both groups were taught at the same time as two teachers were available to teach them and they had the same exercise and reading assignments. Academic objectives were the same for both classes and the posttest test was also the same for both the groups. After treatment, the teacher conducted science test to both groups to make comparison.

### Data Analysis

Data were examined by using the social statistical package (SPSS) version 17.0 by applying independent sample t-test. Mean scores of the experimental group and the control group were used to find out the best teaching method. Table 2 shows the comparison of experimental and control groups.

Table 2

*Posttest results of "control and experimental" groups on achievement test taught through lecture method and activity based method*

Teaching Methods	N	Mean	SD	Std. Error Mean	t-value	df	Sig (2-tailed)
Lecture Method	38	24.60	8.267	0.731	9.529	74	0.000
Activity Based Method	38	37.05	9.000	0.671	9.865		0.001

Table 2 indicates that the means of the control and experimental groups in the posttest were 24.60 and 37.05 respectively which shows that the experimental group showed better performance than the control group. Spread of individual scores around their respective means was from 8.26 to 9.00. It is also inferred from the results that mean achievement scores of both the groups are significantly different and the value of t is 9.529 which was greater than the critical value 2.024 (df = 74) at 0.05 level of significance. Similarly, value of p is  $0.000 < 0.05$ . So, the hypothesis stating there is no significant difference between the achievements scores of students in the subject of General Science taught through activity based learning and lecture method was rejected. It is concluded from the table that the students of experimental groups who studied through activities shows significantly better achievement than those of control group students who were taught through lecture method.

### Discussion of Results

Education is a blend of theory and activity; we can say that good ideas lead to excellent activities and brilliant action modifies ideas. In educational

system ideas and activities appear in the form of method of teaching. As ideas are dynamic in nature, therefore, they keep on bringing inventions and educational system must have such flexibility to adopt suitable necessary innovations. There was one methodology in use i.e. Lecture Method and for centuries they enjoyed its monopoly in method of teaching; supporters of lecture method extol while praising it. But their exaggerations could not keep innovative ideas away and many other teaching methodologies and strategies were introduced. Activity based method is one of the most effective means of getting the fundamental skills of a subject within a very short time. It serves as a basic method introducing students to new skills, for developing understanding and for making students to accept new and better way of doing things.

It is evident that there are a number of hurdles linked while using activity based learning approach, both in the literature and in the operation and development of this experiment in spite of the evident and researched benefits to students. Bonwell and Eison (2007) explored that the facilities available for learning in the classroom context were not always suitable for such type of learning. To interact in small groups is not an easy job because the rooms are either too big or too small. The results of the study explored that sometimes extra time and efforts and resources are required for the successful implementation of the project that has to be built into the overall management of a program. Both methods were under discussion have their own advantages and limitations. This experimental study was conducted to analyze that which method is better for 9<sup>th</sup> class students while studying General Science as a subject.

“The findings however do not concur with the literature (Benson & Blackman, 200; Bonwell & Eison, 2007) regarding the risks that students will not participate in active learning while carrying out this research; researchers have never found that students are unwilling to take the risk and participate in active learning. This may be because the numbers in the class are small (comparatively speaking) and that this experiment is being conducted in the high class where students have become very familiar with one another and therefore are not afraid to participate. Major findings of the study showed that there is a significant difference found between the achievement scores of students in the subject of science taught through activity based method and lecture method as measured by experimental tool (Achievement Test). It was considered that both groups were equal and they had no idea about the study. Both the experimental and control groups were compared on the achievement of post-test scores. The performance of experimental group was significantly better than that of control group on post-test. The percentages show that there was a significant position effect of activities on experimental group.” The two teaching methodologies vary in these objectives. The difference between the general frameworks of these two methodologies affected the overall performance of students. Results



obtained by activity based method shows better comprehension of students. It helps to develop logical reasoning among students and helps them to apply the knowledge to the best use of it.

Large scale research efforts necessary for conduction of activity based method effectively. Research at student level just to fulfill the course requirements may not be sufficient to meet the required level of research. It is necessary to carry out studies in area of comparative study with respect to academic performances of elementary school students offering science in a wider geographical area, covering schools in the local government. An acceptable catalogue of inhibiting factors in relation to academic performances in science at elementary schools should be developed so as to enable future researchers to know more of associated problems.

### **Conclusion and Recommendations**

The study concluded that students in experimental group are significantly superior in learning and writing as compared to those of control group students. Two methods of teaching i.e. lecture method and activity based learning were used to conduct experiment to promote quality teaching. Both teaching methodologies vary in objectives and the difference between the general frameworks of these two methodologies affected the overall performance of students. Results obtained by activity based method shows better comprehension of students as compared to lecture method. Lecture method is comparatively less effective for 9<sup>th</sup> grade students in teaching of General Science. Activity based learning helps to develop scientific skills and attitude among the students. The students taught by activity based method achieved cognitive, effective and psychomotor objectives more effectively than those taught through lecture method. Using an approach of activity based learning while teaching science enhances students' engagement in learning and makes teaching and learning process more enjoyable and easier to understand. It was also concluded that to apply activity based learning is not a hectic task. Teacher can easily manage to plan the activities to improve the quality of teaching with in classroom although prior planning of activities and management of material is required for effective teaching. Based on this conclusion, following recommendations are put forwarded.

1. The curriculum developers may incorporate application of activity-based approach in teaching of General Science at secondary level.
2. The teacher trainers should emphasize application of activity-based approach in training of teachers in the subject of General Science at secondary level.
3. Further research may be conducted on the application of activity-based approach in public sector boys' secondary schools. Similar studies may be replicated in the secondary schools of private sector.

## References

- Arends, R. I. (2004). *Learning to teach* (6<sup>th</sup>ed.). New York: McGraw Hill Company.
- Bitchener, J. (2008). Evidence in support of written corrective feedback. *Journal of Second Language Writing*, 7(1), 102 – 118.
- Behr, A. L. (2006). *Exploring the lecture method: An empirical study*. South Africa: University of Durban-Westville. Retrieved from <http://www.tandfonline.com/loi/cshe20>
- Benson, A., & Blackman, D. (2003). Can research methods ever be interesting. *Active Learning in Higher Education*, 4, 39-45.
- Bonwell, C. C., & Eison, J. A. (2007). *Active learning: Creating excitement in the classroom*. ASHE-ERIC Higher Education Report No. 1. Washington, DC: George Washington University.
- Chaudhry, M. S., & Mahmood, S. Y. (2007). *Research methodology*. Lahore: Ilmi Kitab Khana.
- Frost, J. L. (2010). *A history of children play and play environments: toward a contemporary child-saving movement*. New York: Routledge.
- Gay, L.R. (2010). *Educational research, competencies for analysis and application* (9<sup>th</sup> edition). National Book Foundation. Islamabad.
- Hussain, S. (2004). *Comparison of traditional and super-learning techniques for teaching science at elementary level* (Unpublished Ph.D. thesis). University of Arid Agriculture, Rawalpindi, Pakistan.
- Iqbal, P. (2010). *Methods of teaching science*. Lahore: Majeed Book Depot.
- Khan, S. A. (2008). *An experimental study to evaluate the effectiveness of co-operative learning vs. traditional learning method* (Unpublished Ph.D thesis). International Islamic University, Islamabad.
- Macdonald, J., & Twining, P. (2002). Assessing activity-based learning for a networked course. *British Journal of Educational Technology*, 33(5), 102-107.
- McGrath, J. R., & MacEwan, G. (2011). Linking pedagogical practices of activity-based teaching. *The International Journal of Interdisciplinary Social Sciences*, 6(3), 261-274.
- Mahmood, M. K. (2004). *A comparison of traditional method and computer assisted instruction on students' achievement in general-science* (Unpublished Ph.D thesis). Institute of Education and Research, University of Punjab, Lahore.

Malhotra, V. (2006). *Encyclopedia of modern methods of teaching science*: Common Wealth Publisher.

Safdar, M. (2007). *A comparative study of Ausubelian and traditional methods of teaching physics at secondary school level in Pakistan* (Unpublished Ph. D thesis). National University of Modern Languages, Islamabad.

....\* \* \*....

***Citation of this Article:***

Akhtar, M. & Saeed, M. (2017). Applying Activity Based Learning (ABL) in Improving Quality of Teaching at Secondary School Level. *Pakistan Journal of Educational Research and Evaluation*, 2(2), 37-47.