



ORIGINAL RESEARCH PAPER

Education

A STUDY ON EFFECTIVENESS OF ABL IN MATHEMATICS SUBJECT AMONG RURAL SCHOOL STUDENTS

KEY WORDS: Teaching-learning, Activity based learning, Teaching effectiveness, Creative learning

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ABSTRACT

Quality of education essentially relies upon the technique of coaching followed by the lecturers in the study room. Generally, child centered and participatory technique should be accompanied in the study room transactions. Teaching through activities for this reason yields appropriate results among the students in teaching-learning system. A kind of interactive activities designed primarily based on social constructionist concepts had inspired interest and involvement in the studying process with the effective outcome of seeing students truly taking part in the construction of their personal knowledge rather than being passive learners. The studies became an experimental examine aimed to assess the effectiveness of activity-based technique vs. conventional technique. The objectives were to examine and compare the learning outcomes of institution with conventional technique and Activity based technique. The research was conducted to 50 samples from Dindigul area. The study was experimental in nature. The research design followed by the researcher is the pre-check post-check group layout. Initially pre-test was administered in control group and latterly Activity based coaching approach was implemented on experimental group. Post-test was taken after completing the experiment. The response scale was taken from the learners of the experimental group. This means that the experimental group taught language classes using Activity-Based coaching approach accomplished considerably better than the control group taught the same classes using the Lecture teaching method.

INTRODUCTION

Education is the most effective tool that aims to equip and empower its learners with the proper understanding. This information also works towards obtaining numerous competences and talents that are required for any citizen to capture appropriate employment opportunities and have a positive impact on the society. Activity-based studying is the baseline for innovative and essential thinking abilities enhancement. However, this approach will not function well if learners are not encouraged enough to obtain their actual potential. The most beneficial and powerful approach to educate concepts that are complicated in nature is through involving learners in interactive activities, which is also the backbone of ABL. Activity-based learning is an education technique where students are busy in the educating process (Prince, 2004). Activities related to real life practice help out learners to exchange data into their individual information which they can associate in diverse conditions. (Edward, 2001). Çelik (2018) describes that It was realized that activity-based learning activities improve learners' academic performances and attitudes towards activities. According to Shah and Rahat (2014), Activity-based learning method generates an ideal situation for science instruction especially at Elementary level.

In activity-based teaching techniques, students 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 students to understand the scientific concepts. By using specific activities in the classroom, essential thinking abilities and creative abilities of the students are also enhanced. Mathematics is language of nature and performs dynamic function in human life. Its studying is a compulsory part of curriculum from early childhood to secondary schooling in the entire world. Mathematics originates from nature. Knowledge and understanding of the concepts of mathematics is essential for day-to-day problem solving and analytical thinking. This is very much important in various stages of their career. To ensure good understanding and to create interest in the subject instructors have to adopt modern teaching methodology like activity-based teaching.

Hence the present study focused on measuring the effectiveness of activity-based teaching methodology in Mathematics subject especially in the schools of rural area.

Review of literature

The purpose to teach all children in our nation has been tried in many approaches but the deadline of in the subsequent ten years has somehow been elusive (Kingdon, 2007; Yadav, 2007). Further, education has been restricted to literacy and not gone beyond that to teach the thoughts and therefore, for generations, our Indian society, is plagued with a large number of problems (Prabha Hariharan, 2011). The greater a part of instructing in lecture rooms is completed by conventional approach generally. Education when imparted to dynamic human resource leads the nation towards attaining greatness (Ajit Mondal, 2019). Educators remains more dynamic, more subjective and much less affective (Singh (2004). The kids sit silently in rows in the lecture rooms, the educator does all the lectures and the students inactively listen to the teacher. They speak just when approached and do just as they are told. In a traditional lecture room, the studying competencies of majority of the students are limited only to replicate what is written on the board and they are not able to successfully handling the information through thoughts, assessment and investigation. Because of this restricted intellectual capability, students get bored in studying. Traditional teaching approach works against the regular working of human mind (Weber, 2006). During the lengthy traditional teaching periods, interests and attention of students can't be looked after (Cangelosi, 2003).

Importance of Mathematics

Mathematics commenced with easy counting and these numbers adopted new forms with the passage of time. Abstract thoughts in mathematics helped in discovery of new formulae which made abstract thoughts clear to man (Babar, 2011). Mathematics is the specific key which turns the lock of the physical universe (Pound, 2011). It is actual that Mathematics enables us in each and every sphere of life. We use Mathematics in our day-to-day problems, food, clothing, concept of quality and quantity, daily account of profits and expenditure, allocation of budget etc (Singh, 2004).

Mathematics is at the sentiment of several effective vocations and powerful lives for improvement, especially in extraordinary and quickening change circumstances (Amirali, 2010). However, as a general, a great many individual and students specially hate Math. The survey of school-based instructive studies has discovered that the larger a part of students discovers Math as the most tough, theoretical, destructive tiresome, and tedious subject. Ericksen (1978) believes that the Effective studying in the lecture room depends on the instructor's capacity to maintain the interest that brings learners to the course in the first place. Most of the existing literatures unanimously agree about the importance of morale in influencing work performance (Sabarirajan, 2016) The instructors are required to be adaptive to the converting lecture room and learner needs' such that the students enjoy the course and set up goals (Fizza Anwer, 2019). One such approach is Activity Based Learning (ABL), which is described as a studying technique in which learners are continuously engaged (Panko et al., 2007).

Activity Based Learning

Motivation is the art of inspiring attention on a specific activity in the classroom of a school (Maria and Michael, 2019). Activity Based Learning is described as a setup where students actively take part in the studying experience rather than sit as passive listeners. Activity based teaching is a method centered on the concept that students have to be included through activities. Activity based learning or ABL offers various pedagogical strategies to teaching. Its center premise includes the requirement that studying have to be depending upon performing some hands-on experiments and activities (Johan et al., 2014). Activity based teaching is a technique followed by a instructor to emphasize his or her approach of teaching through action in which the students take interest comprehensively and recognize effective learning practices (Razia Noreen and Abdul Majid, 2019). Under Activity based studying instruction key focus is on child or we can state that it is one of child centered approach. Churchill (2003) propagates that activity-based learning aids learners and students to construct intellectual models that permit for higher-order overall performance such as applied problem solving and transfer of data and abilities. According to Hussain, Anwar and Majoka (2011), Activity-based learning incorporated with peer instruction creates a perfect situation for teaching science topics and in particular physics. As per Fallows and Ahmet (1999), "education is great when learners' association, contribution and collaboration are maximized." McGrath and MacEwan (2011) clarified, "In activity-based training, the learner participates in the educational technique during demonstration of 'doing' than in traditional approach.

Hake (1998) emphasizes on the significance of numerous activities and their relevance in everyday activity-based teaching techniques. Activity based mathematics teaching is based on activity by involving students in reading, discussion, practical activities, engagement in solving problems, analysis, and evaluation (Festus, 2013). Innovative teaching techniques that provide positive mathematical studying experiences could help to enhance learners' success in mathematics (Riley et al., 2017). The need for clear delineation of studying outcomes and better pedagogical practices and evaluations has been emphasized by educationists (Kingdon, 2007; Yadav, 2007). This studying approach means reversing the conventional teacher-focused understanding of the studying technique and placing students at the center of the studying process (Golji & Dangpe, 2016). Mathematics makes our life orderly and prevents chaos. Certain characteristics that are nurtured through mathematics are power of reasoning, abstract or spatial thinking, creativity, critical thinking, problem-solving capacity or even effective communication capabilities. Knowledge and understanding are essential to learning mathematics and shape the base from which to discover

concepts and broaden problem-solving abilities. Through knowledge and expertise students improve mathematical reasoning to make deductions and solve problems.

So, the researcher has picked up the concept to develop activity-based learning program. The ABL will offer diverse task-based activities to the learners to enhance their mathematical skills. By adopting Activity based approach of teaching the following criteria are used to observe student improvement.

- 1) Increased knowledge of the subject.
- 2) Improved problem-solving capabilities.
- 3) Willingness to take part in group activities.
- 4) Ability to relate the subject to real life situations.

Activity-based approach of coaching is gaining its momentum because of its divergent application in secondary schools. There are some vital principles in Mathematics which need unique interest while teaching. With the support of numerous research work in the area of effectiveness of educational method and other associated literature, it become found that many researches were carried out in the area of effectiveness of activity-based learning, over conventional approach of teaching however very constrained work is executed in the area of using different techniques to educate Mathematics. By considering all regards, the present study aims to expand and to test the effectiveness of activity-based teaching to educate Mathematics in Schools. This research was developmental cum experimental hence it's an attempt to find efficacy of the Activity based teaching over conventional approach of teaching.

OBJECTIVES OF THE STUDY

- To examine the effectiveness of Activity based techniques of teaching employed during Teaching Learning Process.
- To identify and measure the Change in the level of achievement of the students due to the Activity based techniques of teaching.
- To evaluate the use of Activity based techniques of teaching in Mathematics subject.

METHODOLOGY

The Independent Variables in present study is Activity based teaching techniques for teaching of Mathematics given to the experimental group and formed dependent Variable is the achievement of students in Mathematics test conducted. The research was conducted by experimental research. The researcher employed pretest and posttest assessment in two groups. In one by applying Activity based methods of teaching and in the other not applying any new Activity based methods for the same content. The study consists of grade - V students of the State Board school in rural areas of Dindigul District. Schools with two sections were identified in this area for testing experimental and control group. For each group 25 students were taken, hence the sample size turned to 50. The school for the study was selected based on feasibility and willingness to cooperate on part of the school authorities. Thus, purposive sampling was used. Achievement test was used to collect data regarding points of students. Data collected from experimental and control group for study is analyzed through Descriptive statistics like Mean, Standard deviation and t-value and p-value were calculated for the purpose of data analysis. Mean score and t-test were used to estimate and investigate the test points of two groups. Independent sample t-tests at .05 level of significant were used on both the tests scores to identify whether there is actually significant difference between the performance of two groups previously, and afterward the Activity based teaching methods.

Analysis and Interpretation

The findings shows that the mean score of pre-test of experimental group is 19.5 with SD 4.21, and the mean score

of pre-test of control group is 19.5 with SD of 4.14. The estimated t value is less than table value. Hence, it may be concluded that results of both groups were the similar before the implementation of activity-based methods.

Table I: Performance in pre-test of both groups

Groups	N	Mean	SD	t-value	df	P value
Experimental Group	25	19.5	4.21	0.000	48	1.000
Control Group	25	19.5	4.14			

Table II: Performance in post-test of both groups

Groups	N	Mean	SD	t-value	df	P value
Experimental Group	25	43.5	2.37	26.90	48	P <.001
Control Group	25	20.5	4.32			

The mean score of post-tests of experimental group is 43.5 with SD of 2.37 and the mean score of post-tests of control group is 20.5 with SD of 4.32. The computed t-value is greater than table value, hence the null hypothesis is rejected and alternative hypothesis is accepted, which means there is significant differentiation in mean performance marks of the students instructed by activity-based teaching and the traditional teaching method in Mathematics at elementary school level. Therefore, it may be concluded that results of both groups were the different in post-test and the activity-based methods helped the students in understanding the concepts effectively as a result their grade also improved.

DISCUSSION

The activity- based coaching strategy- was observed to be effective, the mean value of experimental group is better than control group. It shows that the Activity based learning approach has been proved more beneficial than the traditional approach of teaching. The activity-based technique is easier to learn, improve understanding, enjoyable and increase learning confidence. The results of this study are supported by the findings as noted by and Razia Noreen and Abdul Majid Khan Rana (2019). It was noted that activity-based learning activities improve students' academic performances and attitudes (Celik, 2018). As specified by Shah and Rahat (2014), Activity-based learning teaching method generates an ideal situation for science teaching especially at Elementary level. Students take active participation in it. Activity-based learning is such education in which student is dynamically involved in doing or in ensuring something prepared.

CONCLUSION

The findings of the study indicated that there is considerable difference between Pretest and posttest marks of experimental group. It implies that performance of learners of Experimental Group showed outstanding improvement in the Mathematical skills after undergoing experimental treatment using activity games. It means that teaching with activity-based technique has reflective influence in the achievement of the marks. The activity-based learning method was found to be effective in enhancing the ability to answer the question related content Difference in means proved that, the use of activity-based method during teaching learning process is effective. The response of learners towards activity-based learning strategy is also found positive.

REFERENCES

- Ajit Mondal, (2019), Teaching as a profession of Indian context – A debatable issue, *Research and Reflections on Education*, 17(3)
- Amirali, M. (2010). Students, concepts of the nature of mathematics and attitude towards mathematics learning. *Journal of Research and Reflection in Education*. 4(1), 27.
- Babar, S. (2011). Relationship between methods of mathematics teaching at B.ed teacher training programme and its applications in the actual classrooms (Un-Published Thesis). Islamabad: AIOU
- Cangelosi, (2003). Quoted by National Science Foundation, Vol. 1, No. 1 (2006) pp. 62–82, *Applications and Applied Mathematics (AAM): An International Journal*
- Celik, H. C. (2018). The Effects of activity based learning on sixth grade students' achievement and attitudes towards mathematics activities. *Eurasia*

- Journal of Mathematics, Science and Technology Education, 14(5), 1963-1977.
- Edward, N. S. (2001). Evaluation of a constructivist approach to student induction in relation to students' learning style. *European Journal of Engineering Education*. 26(4) 429-440.
- Ericksen, S. C. (1978). *The Lecture. Memo to the Faculty*, 60. Ann Arbor: Center for Research on Teaching and Learning, University of Michigan.
- Fallows, S., & Ahmet, K. (Eds.) (1999). *Inspiring students: Case studies in motivating the learner*. London: Kogan Page/Staff and Education Development Association.
- Festus, A. B. (2013). Activity-based learning strategies in the Mathematics classroom. *Journal of Education and Practice*, 8-14. 4(13),
- Fizza Anwer, (2019), Activity-Based Teaching, Student Motivation and Academic Achievement, *Journal of Education and Educational Development*, 6(1), 154-170
- Golji, G. G., & Dangpe, A. K. D. (2016). Activity-based learning strategies (ABLS) as best practice for secondary mathematics teaching and learning. *International Advanced Journal of Teaching and Learning*, 2(9), 106-116
- Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, 66(1), 64-74.
- Hussain, Anwar and Majoka, (2011). ABL is more effective to teach physics at secondary level as compared to traditional method of teaching. *International Journal of academic research*, vol. 1(3), 35-47.
- Johan @ Eddy Luaran, Nur Nazleen Samsuri, Fazyudi Ahmad Nadzri, Kamarol Baharen Mohamad Rom, (2013), A study on the student's perspective on the effectiveness of using e-learning, *Procedia - Social and Behavioral Sciences*, 123, 139-144
- Kingdon, G. C. (2007). The progress of school education in India. *Oxford Review of Economic Policy*, 23(2), 168-195.
- Maria Jeslin, M, Michael J Leo, A, (2019), Friendship motivation among special children, *Research and Reflections on Education*, 17(2)
- McGrath, J. R., & MacEwan, G. (2011). Linking pedagogical practices of activity-based teaching. *The International Journal of Interdisciplinary Social Sciences*, 6(3), 261 274.
- Panko, M., Kenley, R., Davies, K., Piggot-Irvine, E., Allen, B., Hede, J. & Harfield, T. (2005). Learning styles of those in the building and construction sector. *Report for Building Research, New Zealand*.
- Pound, L. (2011). *Teaching mathematics creatively*. London and New York: Routledge Taylor & Francis Group
- Prabha Hariharan, (2011), Effectiveness of Activity – Based – Learning Methodology for Elementary School Education, *ABL Methodology*, Paper Submitted for National Child Rights Research Fellowship 2010, 1-87.
- Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3), 223-231.
- Razia Noreen Abdul Majid Khan Rana, (2019), Activity-Based Teaching versus Traditional Method of Teaching in Mathematics at Elementary Level, *Bulletin of Education and Research*, 41(2), 145-159
- Riley, N., Luban, D., Holmes, K., Gore, J., & Morgan, P. (2017). Movement-based mathematics: Enjoyment and engagement without compromising learning through the easy minds program. *EURASIA Journal of Mathematics Science and Technology Education*, 13(6):1653-1673.
- Sabarirajan, A (2016), A Study on Employee Morale and Job Satisfaction among the Employees of Spinning Mills at Dindigul District, *Shanlax International Journal of Management*, 4(2), 135-141
- Shah, I., & Rahat, T. (2014). Effect of activity-based teaching method in science. *International Journal of Humanities and Management Sciences (IJHMS)*, 2(1), 39-41.
- Singh, M. (2004). *Modern teaching of Mathematics*. New Delhi: Anmol publications PVT. LTD.
- Weber E. (2006). Brain based business. Retrieved from [http:// brain based business.com](http://brainbasedbusiness.com). on December 23, 2007.
- Yadav. S.K. (2007). Implementation of school curriculum at primary stage in different states. *Indian Education Review*, 43(1), 107-119