

Activity-Based Teaching, Student Motivation and Academic Achievement

Fizza Anwer

Forman Christian College, Pakistan

fizzaanwar@fccollege.edu.pk

Abstract

This research was conducted to determine the effects of activity-based teaching on student motivation and academic achievement. Pretest and post-test control group design of experimental research was employed for this study. Two MCQ achievement tests were used as research tools for the data collection as pre-test and post-test. The first step in this project was to gather information about what motivates students to learn. Pre-test was conducted from both groups and results were tabulated. The second step of the project was to examine the effect of hands-on activities on student motivation and for analysis MCQ achievement test was used along with specially designed work sheets from both groups. T-test was used to analyze the data. The results of this study showed that a majority of students' scores increased in experimental group as compared to the control group. The mean value indicated that participants from experimental group showed more achievement in post-test 15.6, while the control group students scored 10.7. The post-lesson survey showed that the majority students found the activity based teaching to be more interesting than lecture based teaching.

Keywords: activity based learning, student motivation, constructivist approach, students' achievement.

Introduction

In the field of education, teaching and learning go side by side. Education is the only tool that aims to equip and empower its learners with the right knowledge. This knowledge also works towards acquiring various competences and skills that are required for any citizen to capture good employment opportunities and have a positive impact on the society. However, the most important element to gain these

advantages is the teachers. In order to provide the youth and masses with the correct information, the teachers are the focal figure and have to set standards accordingly for their students. They are required to be competent enough and must possess the knowledge of the subject matter. This knowledge must be passed on to the students in the most neutral and creative way to enable the students to develop a clear insight along with stimulating critical thinking skills. Ericksen (1978) believes that “Effective learning in the classroom depends on the teacher’s ability to maintain the interest that brings students to the course in the first place.”

The emphasis of effective learning in a classroom has vital importance in student retention. The teachers are required to be adaptive to the changing classroom and student needs’ such that the students enjoy the course and establish goals. One such method is Activity Based Learning (ABL), which is defined as a learning process in which students are constantly engaged (Panko et al., 2007). Activity Based Learning is defined as a setup where students actively participate in the learning experience rather than sit as passive listeners. These writers emphasize that active learning method is different from the traditional method of teaching by: (a) the active role and involvement of students in the classrooms and (b) collaboration amongst the students in a learning environment. These two items are the key to ABL and aim to establish a positive learning environment in the classroom. Churchill (2003) propagates that activity-based learning aids students and learners to construct mental models that allow for higher-order performance such as applied problem solving and transfer of information and skills.

Activity-based learning is the baseline for creative and critical thinking skills enhancement. However, this method will not function properly if students are not motivated enough to achieve their actual potential. The most useful and effective method to teach concepts that are complex in nature is by involving students in interactive activities, which is also the backbone of ABL. By utilizing different activities in the classroom, critical thinking skills and creative skills of the students are also enhanced. Hake (1998) emphasizes on the importance of various activities and their relevance in everyday activity-based teaching methodologies. He brings light to the fact that ABL is a cognitive-based learning technique that works on constructive learning. Constructive learning comprises prior knowledge along with personal experiences. This theory emphasizes that learning is a process that comprises the psychological environment of an individual along with their

interactions with various other structures of the society. It is vital for learners in ABL classrooms to share personal experiences which enhance the whole constructive atmosphere. Using constructive method of teaching is believed to be far more effective than a traditional classroom setup as it enhances the learning process.

This research study was conducted to determine the effectiveness of activity-based teaching on student's motivation and to measure the effect of activity based techniques on individual students' academic achievement.

Research Questions

Specifically, this study sought answers to the following questions:

1. What is the effect of activity-based teaching techniques on students' motivation and academic achievement to the students in education at higher secondary level?
2. Is there a significant difference on the effect of activity-based teaching technique on students' motivation and achievement according to the two groups of respondents?

Hypothesis

There is a significant difference on the effect of activity-based teaching technique on students' motivation and academic achievement of the respondents when grouped according to experimental and control.

Literature Review

Teachers are known to be the backbone of education for all ages of students and they play a vital role in the classroom by bringing a variety of learning methods and techniques. They bear the light for all students and aid them in better understanding and developing a unique skill set for every student in the classroom. It comes under the teacher to educate students and motivate them to learn in a classroom and outside it.

Schlechy (1994) states that students will engage and interact more in class if they understand the lesson and this is up to the teacher. The teacher should

enable the students to inculcate various characteristics to attract them towards the lesson. Students face various challenges and hurdles while learning new concepts and the teachers are liable to make those concepts easier to grasp and introduce various teaching strategies. In order to develop student understanding, the teaching strategies should be aligned with student goals and output should be visible. Interaction between the students and the teachers is the key to the enhancement classroom learning, which leads to increased communicative competency in the students.

Katy (2008) has suggests that communication and interaction between students and the teacher is the best technique to enhance learning. These interactions increase the required output from the students, who get the opportunities to use communication as a natural process rather than cramming the answers. Maintaining open dialogues in the class allows students to understand new perspectives of people from different backgrounds and experiences. Promoting interaction between students also requires active strategizing. Chafe (1998) puts forth the argument that focusing on cooperative learning instead of individual learning promotes communication and interaction, which is an effective technique of learning as opposed to competition based results and goals. Interactive based learning allows students to work in teams and groups with students from different backgrounds. This adds to the element of variety and increases the opportunities for students to learn and share ideas. By doing so, the input and output of students is also maximized and it creates a supportive and interactive learning environment.

Teaching is by far one of the most challenging profession and at times creates difficulties for the teachers to establish a strong rapport with the students which in turn makes it difficult to positively motivate them. The role of a teacher is to incorporate a variety of teaching methodologies and techniques to capture the attention and interest of difficult students as well. Many researches also agree with the importance of the element of motivation in teaching and learning outputs as it stimulates a person to move in a certain direction. President of Dean R. Spitzer & Associates (1996), reiterates that “The truth is that no matter how excellent any instructional program is, learning will be no greater than the student’s level of motivation.” He also stated that, “When motivation is low, learning will be low” (p. 45).

The question, what motivates students is vital and significant for teachers at every level of education. Teachers and educators need to comprehend the importance of keeping motivation as a vital part of their teaching strategy and also when designing assignments and group work. According to Pintrich (2003), student motivation should be taken into account. Educators should be aware of the fact that students come from different backgrounds and therefore, respond differently to motivation. It is vital to capture student interest as some students may show passiveness in class. Spitzer (1996) depicts the law of motion from an educationists' perspective as, "A body at rest tends to remain at rest; a body in motion remains in motion and the brain usually follows" (p. 47). Having a fun and interactive session will enable students to participate more and share ideas which in turn would give enough space to teachers to increase student motivation.

The trade-off between the traditional method of teaching and ABL has put many educators on the front-line where they have measured the pros and cons of both the techniques. Teo and Wong (2000) state that the traditional technique of teaching does not incorporate utilization of previous knowledge and also does not let creativity bloom. On the contrary, Boud and Feletti (1999) argue that the impact of ABL as a tool is to motivate students to encounter the HOW of learning by using various techniques and activities. Activity-based learning facilitates students to learn self-direction and develop critical thinking skills for problem solving at all levels of education. The major role of educationists is to work with students and pin-point the hurdles students face. They should aim to reduce these hurdles and keep room for an open dialogue with them for better understanding. It is vital to understand students' needs and requirements to allow for more interaction and better communication.

In Pakistan, it is extremely important that educationists understand the importance of ABL as it gives space for better understanding of concepts. Many developing countries, including Pakistan, require immense input in the educational sector as it lacks basic levels of teaching strategies. The training of teachers will add to the input for student learning. By providing training, teachers will be more capable to incorporate improvement on an individual and community level. Thus it will aid in improving the motivational attributes along with enhancing critical thinking skills and creativity of the teachers as well as the students.

Methodology

An experimental study design utilized in this study consisted of an experimental group and a controlled group. The experimental group received treatment, while the control group received no treatment. Random assignment for selection of subjects was considered and pre-test and post-test control group design of experimental research was used for this study (Fraenkel & Wallen, 2012).

Sample

The sample of the study consisted of 120 students enrolled in higher secondary humanities education combination group. Thirty students were randomly selected as the participants of the study and distributed randomly to the experimental and controlled group.

Instruments

Three types of instruments were used to collect data. In the first step, academic interest survey was filled by both groups of students to gather information about what motivates students to learn. In the next step, students were assessed by pre-test and post-test and for testing two achievement tests, consisted of multiple type questions were developed. Expert opinion was taken for the validity of test. The improved version underwent pilot study and the alpha reliability of the test was computed at 0.93. Finally, post teaching survey was conducted to analyze lessons taught to both experimental and controlled group students. The researcher taught both classes. Five chapters from education text books grade 11 were selected and taught through hands-on activities. The controlled group was taught in the traditional way of instruction.

Findings

Although the mean score of experimental group is greater than the control group, there is a significant difference between the mean scores of both groups which proves that ABL is more effective; therefore, the null hypothesis that there no significant difference on the effect of activity-based teaching technique on students' motivation and achievement according to experimental and control group is rejected. Independent sample t-test was applied to analyze the data using SPSS application. Graphs are presented below.

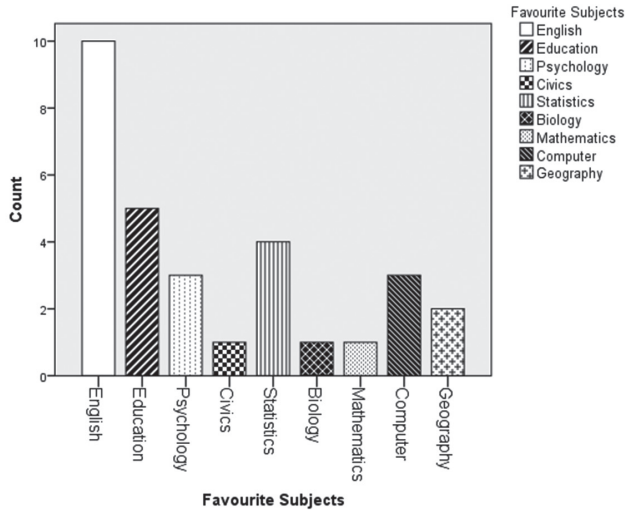


Figure 1. Student’s favorite subjects

Results from the academic interest surveys are shown in Figures 1, 2, 3 and 4. Figure 1 shows that the majority students chose English as their favorite subject. The second most favorite subject was education then statistics. The least favorite subjects were mathematics, biology and civics. The second question on the academic interest survey acted as a follow up of the first question in which the students were asked about the reasons for their favorite subjects.

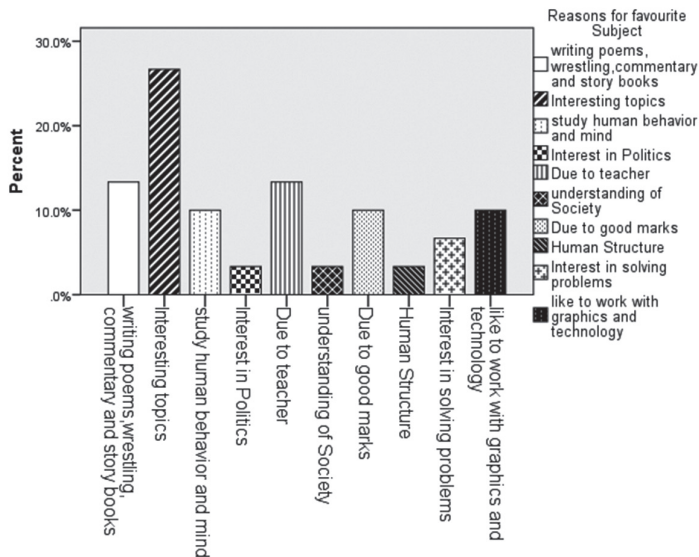


Figure 2. Reasons for favorite subjects.

In this figure, students provided different reasons for their favorite subjects and the highest given reason was their interest, then teachers attitude towards the subject and achieved marks because if they are able to get good marks they will develop a liking towards that particular subject.

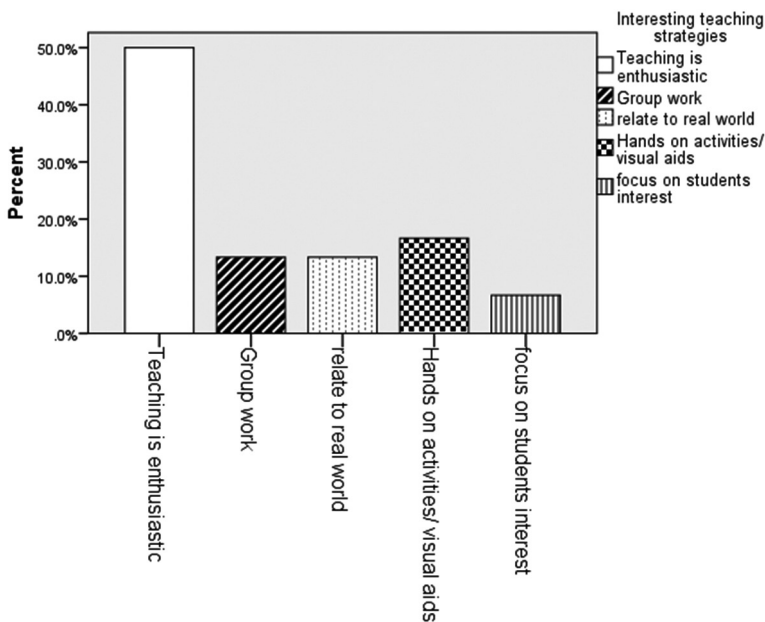


Figure 3. Students' favorite teachers' teaching strategies

In this figure the students explained which teaching strategies of their teachers they liked the most during class. Students liked those teachers the most who were energetic and enthusiastic and gave hands-on activities and used visual aids to make the class interesting. Some liked group work and explanation through real examples.

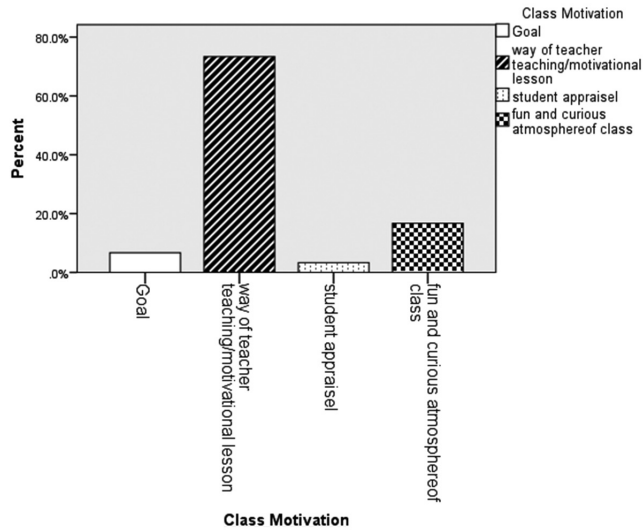


Figure 4. Students' elements of motivation

Figure 4 shows that elements which enhanced student level of motivation in class and the highest indicator was teacher teaching style, while the second indicator students mentioned was fun and curious atmosphere of class. Some students mentioned that goal setting also helped them to motivate towards learning as well as student appraisal.

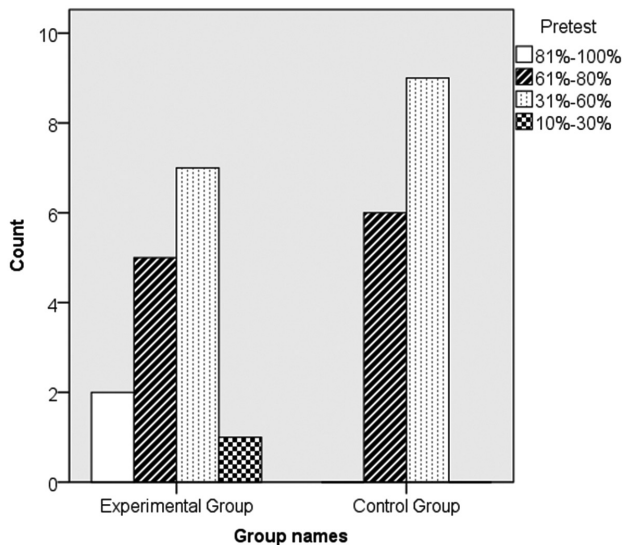


Figure 5. Students pre-test scores

Figure 5 illustrates that results from pre-test of first achievement test of both groups. In experimental group, out of 15, 2 students scored more than 80% marks, 5 students scored between 61% to 80% marks; 6 students scored between 31% to 60% marks and one student scored between 10% to 30% marks. In control group no student scored between 10% to 30% and as well 81% to 100%. Six students scored between 61% to 80% and nine students scored between 31% to 60%.

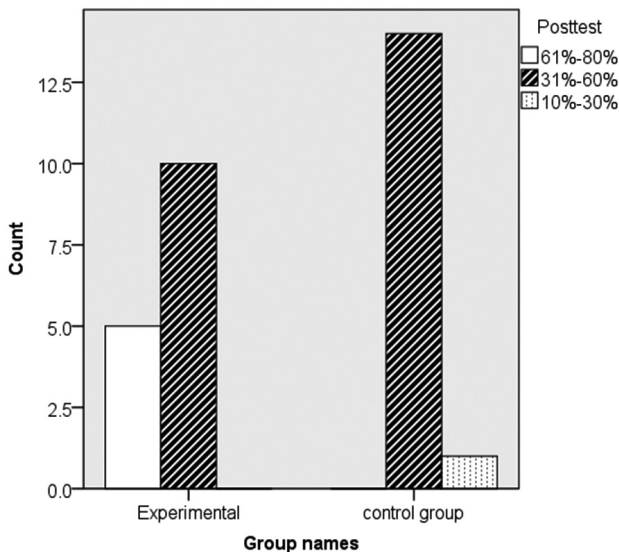


Figure 6. Student's post-test scores

Figure 6 shows more improvement in control group, but interestingly few control group students showed less improvement in their scores and when investigated, it was observed that after lecture worksheets helped in their better understanding. Ten students from experimental group scored between 31% to 60% and five scored between 61% to 80%. 14 students from control group scored between 31% to 60% and one scored between 10% to 30% marks.

Table 1

Comparison of Experimental and Control Group on Achievement in Education

Groups	N	Mean	Std.	t	df	sig (2-tailed)
Experimental	15	15.6	2.99	4.65	28	.000
Controlled	15	10.7	2.81			

Independent samples t-test as seen in Table 1, revealed that there was a significant difference between mean education achievement scores of experimental and female control group students. The mean value indicated that participants from experimental group showed more achievement in post-test 15.6 while control group students scored 10.7. The sig value is .000 is less than .05 so it is proved that there is a significant difference between achievements of students in experimental group.

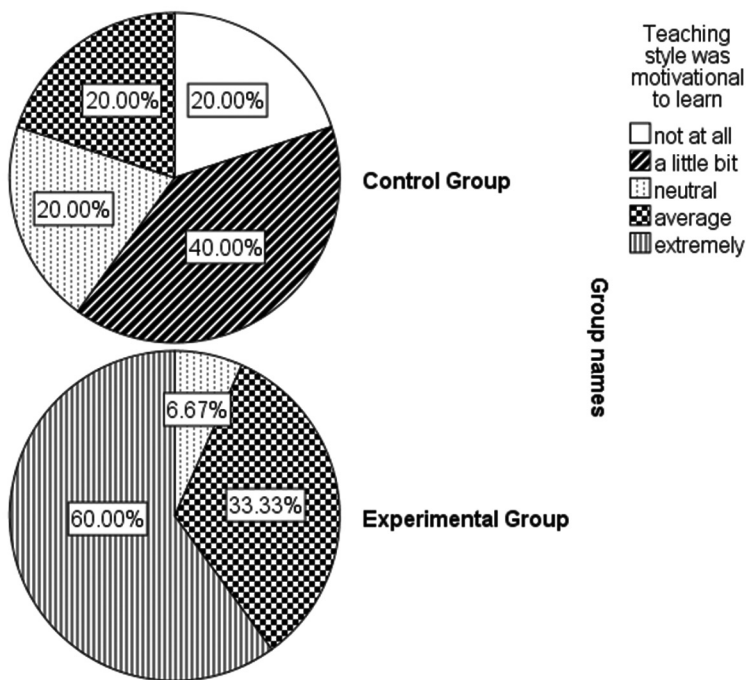


Figure 7. Post lesson survey result about teaching style

Figure 7 to 11 indicates post lesson survey results. 60% of the experimental group students selected extremely motivational option, 33.3% students selected average and 6.6% opted neutral option. 40% students in control group selected a little bit option and 20% chose not at all, average and neutral option respectively, which depicted that students in experimental group found lectures more motivational as compared to control group students.

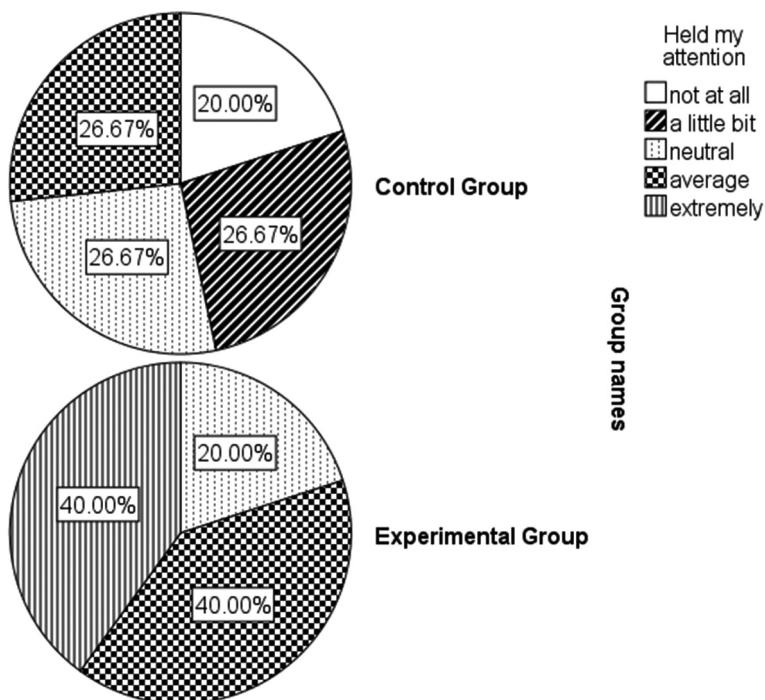


Figure 8. Students' attention level

In experimental group, 40% students chose that activity based teaching held their attention level and 40% chose average indicator; while 26.6% students opted a little bit option, 26.6% selected average option and 20% selected not at all in control group.

Question about teaching. For the students belonging from experimental group, 46.67% students found extremely understandable concepts and 40% found average understandable; while 33.33% students found lesson average understandable and 20 % found a little bit understandable in the control group.

Students' engagement. In experimental group, 80% students selected highly engaged option; while 40% students felt somewhat engaged in control group; therefore, activity-based teaching engaged more students instead of traditional teaching.

Students' favorite learning strategy. In experimental group, 46% students selected usage of activities, 20% found role of teacher, 20% found conceptual worksheet and 13% found questioning technique helpful for better understanding; while 26.6% found questioning technique, 33.3% found role of teacher, 13% found listening attentively and 26.67% students selected explanation through examples in control group.

Discussion

In this study, it was revealed that there is a lack of resources such as books, equipment, classrooms and teachers. Large classes hinder effective classroom interactions. All these obstructions should not be a block for effective classroom teaching. There is a possibility of creating teaching materials and deploying teaching techniques despite the challenges in schools. In addition, teachers should take interest and participate in in-service teacher training programs to equip themselves with current methodologies and techniques.

Interaction between teachers and students' play a crucial role in the motivation of students. Teaching through interaction could broaden student's thinking horizon especially in discussion method to develop reflective journals. Such classes reflect positive impact on student's achievement and motivation and help teachers to control disruptive behavior more smartly. Classroom management could be better while involving students in activities. Literature review also shows that interactive teaching enhances students' self-confidence to share their views and solve their problems by asking questions. The academic interest survey was a useful tool in finding what enchants student's interest. The reasons given by students to explain their choice of favorite subject supports previous research conducted on the topic of motivation. In academic classrooms, the contributing factor for the lack of student motivation is the lack of inclusion of fun (Spitzer, 1996).

According to Anderman and Young (1994), teachers have a significant effect on student's motivation towards learning, which was supported through this research as well. In the survey conducted, students indicated differing responses regarding student's ability in their favorite subject. This result supports the research on the effect of student's ability on motivation. Pintrich (2003) in his research study found that students were more motivated to work in the classroom if they had confidence in their ability to succeed in a class and chances are that they will

achieve at a higher level. Another survey question was about interesting teaching strategies that teachers use to make even a boring subject more interesting. The students' response supported Freedman's (1997) study that hands on activities makes a boring class more interesting.

It was concluded from the results that there was a positive effect of activity-based teaching in developing motivation and improving academics of the students of education at higher secondary level. For the development of higher order thinking skills for the students, activity-based teaching is more effective (Dean, 1999; Lieux & Thornton, 2001; Martin, Chrispeels & D'Emidio-Caston, 1998; Schmidt & Van Der Molen, 2001; Schmidt, Vermeulen & Van Der Molen, 2006).

Gallagher and Stepien, (1996), Lieux, (2001) and Zumbach et al. (2004) reached the conclusion about the effectiveness of activity based teaching. Interesting data were provided about the students' feelings about each part of the lesson by the comments on the post-lesson survey. Students from the experimental group had more positive responses. There are strengths and weaknesses associated with both instructional styles in this study, that is, lecture and hands-on activities. Students identified clarity and organization as strength of the lecture component and the activities were described as fun and interesting. Although most students rate activity based teaching as highly engaged, more interesting and enjoyable as compared to the lecture method.

Conclusion and Recommendations

Based on the results and discussion, this study concluded that activity-based teaching enhances student motivation and improves academic achievement in education at higher secondary level. Teaching styles attract students and play a positive role in student motivation and improve academic achievement for better results in learning.

The following recommendations are hereby proposed on the basis of result of the study:

1. In order to develop higher order thinking skills, it is important to conduct lessons using activity-based teaching.

2. Teacher training programs on activity-based teaching may also be conducted by educational institutions to enhance teachers' teaching skills.
3. Further studies may be conducted in all disciplines on different levels in order to validate the result of this study.

References

- Anderman, E. M., & Young, A. J. (1994). Motivation and strategy use in science: Individual differences and classroom effects. *Journal of Research in Science Teaching*, 31(8), 811-831.
- Boud, D., & Feletti, G., Eds. (1991). *The challenge of problem-based learning*. New York: St. Martin's Press.
- Chafe, A. (1998). *Cooperative Learning and the Second Language Classroom*. Retrieved from <http://www.stemnet.nf.ca/~achafe/cooplang.html>
- Churchill, D. (2003). *Effective design principles for activity-based learning: The crucial role of 'learning objects' in science and engineering education*. Paper Presented at the Ngee Ann Polytechnic, 2.
- Dean, C. D. (1999). Problem-Based Learning in Teacher Education. Paper presented at the Annual Meeting of American Educational Research Association, April 19–23, Montreal, Quebec (ERIC Document Reproduction Service No. ED 431 771).
- Ericksen, S. C. (1978). *The Lecture. Memo to the Faculty*, 60. Ann Arbor: Center for Research on Teaching and Learning, University of Michigan.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). New York: McGraw-Hill.
- Freedman, M. P. (1997). Relationship among laboratory instruction, attitude toward science, and achievement in science knowledge. *Journal of Research in Science Teaching*, 34(4), 343-357.
- Gallagher, S. A., & Stepien, W. J. (1996). Content acquisition in problem-based learning: Depth versus breadth in American studies. *Talents and Gifts*, 19(3), 257-275.
- Harfield, T., Davies, K., Hede, J., Panko, M., & Kenley, R. (2007). Activity-based teaching for Unitec New Zealand construction students. *Emirates Journal for Engineering Research*, 12(1), 57-63.
- 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.
- Duch, B. J., Groh, S. E., & Allen, D. E. (2001). *The power of problem-based learning: A*

-
- practical how to for teaching undergraduate courses in any discipline*. Virginia: Stylus Publishing, LLC.
- Martin, K. J., Chrispeels, J. H., & D'Emidio-Caston, M. (1998). Exploring the use of problem-based learning for developing collaborative leadership skills. *Journal of School Leadership* 8, 470-500.
- 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.
- Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology*, 95(4), 667.
- Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3), 223-231. Retrieved from http://ctl.jhsph.edu/resources/views/content/files/150/Does_Active_Learning_Work.pdf
- Schmidt, H. G. (1983). Problem-based learning: rationale and description. *Medical Education*, 17(1), 11-16. Retrieved from http://repub.eur.nl/res/pub/2745/eur_schmidt_143.pdf 03 Jan, 2012.
- Schmidt, H. G., & Van Der Molen, H. T. (2001). Self-reported competency ratings of graduates of a problem-based medical curriculum. *Academic Medicine*, 76(5), 466-468.
- Schmidt, H. G., Vermeulen, L., & Van Der Molen, H. T. (2006). Longterm effects of problem-based learning: A comparison of competencies acquired by graduates of a problem-based and a conventional medical school. *Medical Education*, 40(6), 562-567.
- Schlechty, P. (1994). *Increasing student engagement*. Columbia: Missouri Leadership Academy.
- Spitzer, D. R. (1996). Motivation: The neglected factor in instructional design. *Educational Technology*, 36(3), 45-49.
- Teo, R., & Wong, A. (2000). Does problem based learning create a better student: A reflection. *2nd Asia Pacific Conference on Problem-Based Learning: Education Across Disciplines* (pp. 4-7).
- Zumbach, J., Kumpf, D. & Koch, S. (2004). Using multimedia to enhance problem-based Learning in elementary school. *Information Technology in Childhood Education Annual*, 2004(1), 25-37.

Citation of this Article:

Anwar, F. (2019). The effect of activity-based teaching techniques on student motivation and academic achievement. *Journal of Education and Educational Development*, 6(1), 154-170

Received on: January, 2017

Revised on: February, 2018

Accepted on: March, 2019