VIRTUAL SYMPOSIUM ON TEACHING & LEARNING (VSTL)

2020

Redefining the Practice of Teaching and Learning

E-PROCEEDING

eISBN: 978-967-2354-12-3

First published, October 2020

PUBLISHED BY:

Akademi Pengajian Bahasa,

Universiti Teknologi MARA Cawangan Johor,

Kampus Pasir Gudang

CONTENTS

Level of Motivation in Project-based Learning of JKE Students In POLISAS

Lian Ai Fang[1], Marliana Binti Mahamad[2] &
Kafiza Binti Ahmad Kamaruzzaman[3]

[123]*Jabatan Kejuruteraan Elektrik, Politeknik Sultan Haji Ahmad Shah, Kuantan, Pahang*
[1]aflian@polisas.edu.my, [2]marliana@polisas.edu.my, [3]kafiza@polisas.edu.my

Abstract

In education, appropriate teaching method is very important to determine the students' motivation during teaching and learning process. Therefore, a paradigm shift needs to be implemented from teacher-based approach to student-based approach in order to enhance students' intrinsic motivation. Hence, project-based learning is one of the student-based teaching methods that will enhance students' intrinsic motivation. Typically, there are five elements in project-based learning which are autonomy, authentic problem, skills, cooperative learning and teacher's roles. Therefore, this research is aimed to determine the level of intrinsic motivation that is contributed by each element of project-based learning. The samples were selected randomly comprising 115 fourth semester students undertaking Diploma in Electrical Engineering during the December 2019 session from Polytechnic of Sultan Haji Ahmad Shah. This research was a survey that utilised questionnaire as the research instrument. Through Statistical Package for Social Science (SPSS) Version 26.0, the collected data was analysed for mean scores. The results showed that in project-based learning, all elements contributed to high level of intrinsic motivation. Based on the research findings, future research on project-based learning should be continued so that the project based-learning can be used as one of the teaching methods that will enhance students' interest and motivation in line with advancement of education system.

Keywords: Teaching method, project-based learning, intrinsic motivation

Introduction

In education, a lecturer becomes an effective moderator to all teaching and learning processes either in the classroom or outside the classroom. To create effective teaching and learning process, lecturers need to use appropriate teaching approach to increase students' motivation. It is a must for every lecturer to know how to motivate students so that they are truly engaged in learning process. Project-based learning integrates the concept of knowing and doing (Markham, 2011). Students do not only gain the knowledge and core elements of curriculum, but what is important is that they apply what they know to solve the real problem and make decisions. Project-based learning helps students to gain skills and enhance their ability to work in group and spend their times wisely (Ang & Ngu, 2014). Project-based learning gives many benefits such as enhancing the motivation of students if lecturers have great motivation to face it and increase it in the classroom (Lam et al., 2009).

Problem statement

The motivation of students to learn was low when the things they learned were irrelevant to the real life (Shah Rizal, 2005). Hence, students need changes in learning especially technical education to shift from teacher-based approach to student-based approach. To encourage students to be active in learning, lecturers in the higher learning institutions have to create intrinsic orientation inside students. The lecturers should guide students to use natural energy to enhance intrinsic motivation. This can be done by changing the students from external rewards to enthusiasm in learning. There are many approaches that can be used to enhance students' motivation for those who are lack of motivation (Tileston, 2004).

Research Objective

The objectives of the research are as follow:

     i.   To determine the level of motivation that is contributed by autonomy element in project-based learning.

    ii.   To determine the level of motivation that is contributed by authentic problem element in project-based learning.

   iii.   To determine the level of motivation that is contributed by skills element in project-based learning.

   iv.   To determine the level of motivation that is contributed by cooperative learning element in project-based learning.

    v.   To determine the level of motivation that is contributed by teacher's role element in project-based learning.

Literature Review

Students-centered learning is a teaching environment in which students are active in the learning process (Esah, 2004). The students do not only listen to the teacher's explanation, but they are also engaged in activities such as discussion, problem solving, drawing and so on. The interaction between students and lecturer creates a harmony and conducive situation for learning.

According to Solomon (2006), project-based learning is a progressive teaching style and involves students in cooperative learning to solve authentic and challenging problems. Project-based learning believes that it can increase the mind of students (Katz dan Chard, 2000). Project-based learning is a student-based strategy that encourages students to focus on real world project that can increase their motivation. The projects do not only cover knowledge or technical issues, but practical skills too (Macias-Guarasa, 2006).

Motivation is a combination of motive and action. Motivation is an encouragement to act (Asmadi, 2000). According to Muralidharan (2006), motivation is defined as preparation to achieve the goals and capability to fulfill needs. Intrinsic means in nature or inner. This motivation comes from the inside of an individual. When it is related to learning, an individual is forced to learn by a motive to understand that is caused by curiosity (Putcher et. al., 2002).

Research Methodology

This is a quantitative research that used questionnaire as the instrument to obtain data from the respondents. The samples were selected randomly comprising 115 fourth semester students undertaking Diploma in Electrical Engineering during the December 2019 session from Polytechnic of Sultan Haji Ahmad Shah (POLISAS). The data were analysed using mean scores to identify the level of intrinsic motivation.

Research Findings and Discussion

Table 1 shows the mean scores and level of motivation for elements of problem-based learning among students in JKE. Firstly, the level of intrinsic motivation is highly contributed by autonomy element which is 4.34. This is in line with the research by Henry (1994) that autonomy is based on student's interest in which students can control the learning process that will increase their motivation. The autonomy to choose group member gives satisfaction to them because the group members can help and give full cooperation to complete the project.

Secondly, the level of intrinsic motivation is highly contributed by autonomy authentic problem which is 4.34. According to Gulbahar & Tinmaz (2006), the students in project-based learning environment are dealing with authentic problem. When students can identify the problems, their minds and thoughts are being challenged. Hence, they will attempt to find solution to overcome the problem.

The level of intrinsic motivation is highly contributed by skills element which is 4.06. The finding supports the research by Thomas (2000) that the project involves students in research process consisting designing, decision making, searching and problem solving, exploring and model building. These skills are important for engineers.

The level of intrinsic motivation is highly contributed by cooperative learning element which is 4.26. The finding is in line with Macraken (2005) that cooperative learning can increase interest, motivation, success, creativity, understanding and similarity of students. Each group member is aware of one's roles and responsibilities. Discussion with group members gives chances to exchange and share views among themselves.

Last but not least, the level of intrinsic motivation is highly contributed by teacher's roles element which is 4.24. This is in line with Frank et., al. (2000) that lecturers do not only give lesson to the students but enhance motivation, give guidance and help students to build their own knowledge. Besides that, discussion with students also encourages students to be actively involved in implementing the project. Furthermore, the lecturer can monitor the progress of the students' projects from time to time so that the project could be completed on time. This is opposed to the research by Ainon & Abdullah (2002) that a lecturer becomes a motivator to students when positive relationship exists between students and lecturer.

Table 1
Mean scores and level of motivation for elements of problem-based learning

Elements	Mean	Level of Motivation
Autonomy	4.34	High
Authentic problem	4.04	High
Skills	4.06	High
Cooperative learning	4.26	High
Teacher's role	4.24	High

Conclusion and Implication

The research findings showed that all elements which are autonomy, authentic problem, skills, cooperative learning and teacher's roles contributed to high level of intrinsic motivation among students in Electrical Engineering Department when doing projects. In terms of autonomy, the students who are exercising it while doing a project can increase their effort to do their best because they can make their own decisions in all aspects. In terms of authentic problem, the students feel more motivated if they are exposed to the real problem and this has caused them to make an attempt to overcome the problem. Throughout the projects, the students will be more confident as they utilise the skills such as problem-solving, information-handling, decision-making and communication. Cooperative learning happens when a group of students working towards one goal or searching out solution for the problems. When sharing knowledge culture is applied in the project-based learning, their intrinsic motivation will be increased to be involved actively in the project. Instead, lecturers also play an important role in enhancing students' motivation in doing projects. Lecturers act as supervisors that always give support and advice in order to make sure that the project could be completed on time.

This research indirectly gives big implications to all authorities in education nowadays. In student context, project-based learning exposes students to dealing with authentic problems that leads them to figure out the possible solutions. They do not only gain the knowledge, but they are also equipped themselves with generic skills that become an added value to them in working environment. In lecturer context, it is recommended for lecturers to identify elements that will increase intrinsic motivation and improve the existing project-based learning according to the need of the courses and students' interests. For the Ministry of Education, project-based learning could be applied in curriculum and improved from time to time in line with the industrial needs and technologies. In industrial context, polytechnics can create continuous collaboration with industries to increase the activities in research and development.

References

Ainon, M., & Abdullah, H. (2002). Guru Sebagai Pendorong Dalam Darjah. Pahang: *PTS Publications & Distributor Sdn. Bhd.*

Ang, C.K., & M. K. Ngu. (2014). Meaningful Learning in the Teaching of Culture: The Project Based Learning Approach, *Journal of Education and Training Studies*.

Guarasa, J.M., Montero, J. M., Segundo, S., Araujo, R., & T.O. Nieto. (2006). A Project-Based.

Gülbahar, Y., & Tinmaz, H. (2006). Implementing Project-Based Learning and E-Portfolio Assessment in an Undergraduate Course, *Journal of Research on Technology in Education*.

Henry, J. (1994). Teaching Through Projects, London: Kogan.4.

Katz, L. & Chard, J. (2000). Engaging Childrens' Mind: The Project Approach, Connecticut: Ablex..

Lam, S. F., Cheng, W. Y., & Ma, Y. K. Teacher and Student Intrinsic Motivation in Project-Based Learning Instructional Science*, Instructional Science*.

Markham, T. (2011). Project Based Learning.*Teacher Librarian*.

McCracken, P. (2005). Cooperative Learning as a Classroom Management Strategy," Momentum.

Muralidharan, V. S. (2006), "Intelligent Manager," New Delhi: Ane Books India.

Pucher, R. A., & Wahl, H. (2002). How to Motivate Students in Project Based Learning, *IEEE*.

Shah, R. Z. (2005). Perlaksanaan Pembelajaran Aktif Dalam Mata Pelajaran Umum Kursus Kejuruteraan Mekanikal di Pusat Latihan Teknologi Tinggi (APTEC), Kolej Universiti Teknologi Tun Hussein Onn: Tesis Sarjana.

Solomon, A. M. (2006). Creating a Motivational Climate to Foster Engagement in Physical Education. *Journal of Physical Education, Recreation & Dance*.

Thomas, J. W. (2000). A Review of Research on Project-Based Learning, California: *The Autodesk Foundation*.