Perceptions and Acceptance Towards PBL Approach: A Case Study on Technical & Vocational Students

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Abstract

Problem-based learning (PBL) is widely regarded as a successful and innovative learning method in technical and vocational education. The main reason of the implementation of PBL in Faculty of Technical Education, Universiti Tun Hussein Onn Malaysia (UTHM) is to enhance self-directed learning among students. The purpose of this study is to find out students perceptions and acceptance towards PBL implementation. As many as 108 technical and vocational education final year matriculation intake students were randomly selected as the respondents of this study. This research uses the quantitative approach and the instrument used was questionnaires. The data was analyzed using *Statistical Packages for Social Science (SPSS)* version 15.0. Study revealed that students' perceptions and acceptance on PBL were at high and moderate level respectively. Study also pointed self time-management as a major problem among students which affect their acceptance towards PBL. As a conclusion, the implementation should be developed and raised among these students especially to enhance their acceptance towards PBL learning.

Keywords: Technical and Vocational Education – PBL – perceptions – acceptance – self time-management

1. Introduction

PBL as an approach in teaching and learning (T&L) has been widely promoted to engineering students since 2003 by Universiti Teknologi Malaysia (UTM) [1]. Whereas PBL in UTHM was rapidly raised up starting in the year of 2004 after several times of academic visit and PBL mentoring from UTM and the Aalborg University of Denmark [2]. PBL is part of Self Directed Learning (SDL) which due to Robert et. al [3] is a way to enhance students' problem solving skills. Problem solving needs students to apply critical and creative thinking in decision making at the same time implementing several critical soft skills needed in working life situation such as leadership, communication skills, teamwork and so on. Dewey in Shahabuddin *et al.* [4] listed learning using problem approach involves five decision making steps namely; problem identification, information exploration, making hypothesis, hypothesis testing and evaluation. These steps will lead

students to experience major learning processes which will end up satisfaction in learning outcomes.

Through SDL, students' knowledge is developed through numbers of generic skills including research finding skills and independent working. This statement is supported by Piskurich [5] who agreed SDL is an ideal approach in generating students' performance towards independent working. Through implementation of PBL approach, in the end students should conquer not only knowledge but also the major soft skills needed in problem solving that could be applied to survive in their real life working situation. Due to that, the advantages of implementing PBL are undeniable.

1.1. Problem Background

In spite of the benefits of PBL implementation, Rong Huang however in his research discovered negative perceptions and acceptance towards PBL implemented in teaching and learning (T&L) process [6]. These negative sentiments lead to the failure of the main objective in applying PBL. Students in his study met the first difficulty at the very first step in implementing PBL. According to Rong Huang this is due to lack of understanding towards the problems and to highlight important facts that could be a clue in solving the problems given. Rong Huang also discovered that his respondents faced problems in PBL due to excess workload from various subjects. In order to fulfil all subjects' requirements, most of the students were likely to choose the preferred assignments to be done. Senevitratne *et al.* [7] supported Rong Huang's study where their respondents also faced problem to satisfy the needs for all subjects they were taking. In addition, those respondents also comment about the role of the lecturers as facilitators should be improved.

In the other hand, previous study revealed students were shocked with the sudden transformation from conventional learning to PBL [1]. This rapid change in T&L approach has brought up negative issues such as limited problem solving skills including information searching skills and disconfirmation in validity and reliability of the gathered information. Major problem however is to understand the problem scenario and to gather contents as the information references will widely be in English. According to Rong Huang [6] and Larsen [9], PBL will always end unsuccessfully especially to students from countries that do not use English as their native language.

1.2. Research Objective

PBL is no doubt an effective learning approach. However, previous researches had proven that students' perceptions and acceptance towards PBL could affect the effectiveness of this learning approach. TVET students in UTHM also could have their own perceptions and acceptance towards this learning approach since it has been widely applied in their T&L process. Hence, this study was to identify the perceptions and acceptance towards PBL on UTHM Technical and Vocational Training (TVET) Students.

2. Methodology

Instrument used in this study was 48 items using five Likert Scale questionnaires. According to Majid [10], questionnaire is an instrument commonly used to interpret a phenomenon currently happening and is commonly used in educational researches. The questionnaire was adapted and modified based on instruments used by Mark [11] and Maslinda [12]. It was then distributed to 108 final year TVET students who had experienced PBL in a 20 minutes session during class. The questionnaire was divided into three sections where sections (A) and (B) were aimed to obtain perceptions and acceptance towards PBL approach applied in T&L they experienced, while section (C) was for students to freely comment or suggest on any issue related to PBL implemented in their studies. In addition, they were also required to list down technical subjects learned using PBL approach and duration given to complete a PBL task at the first part of the questionnaire. Analysis was done using the Statistical Packages for Social Science (SPSS) version 15.0 to determine the average mean score interpreted from Landell in Suriani [13] for each section.

Group Code	Average	Level
1	1.00 – 2.40	Low
2	2.41 – 3.80	Moderate
3	3.81 -5.00	High

Table 1: Average Score Mean Interpretation

3. Results and Discussion

From the questionnaire, it was noted that technical subjects taken using PBL approach were Graphic in Engineering, Industrial Design, Industrial Automation and Information Technology in TVET. These subjects were facilitated by different facilitators depending in which class they were in. From the questionnaire, it was also stated that duration given to students to complete the PBL tasks were normally four to eight weeks.

3.1. Perceptions towards PBL Approach

Questions related to perceptions were asked using 26 items in Section A. The results revealed that the average mean score for this section was 3.93. This data showed that students have high perceptions towards PBL approach in T&L. In particular, item 9 have the maximum score with 4.57 while item 2 and 25 has the minimum score; 3.75 and 3.74 respectively.

The maximum score was obtained by the description that students could apply democratic in group work where they could frequently listen to other group members' opinions. Debating or more or less reflections in small groups are one of the critical learning components in PBL [14]. Through reflections, one could enhance not only the understanding of the matter, but also could upgrade their self confidence and communication skills. This statement was supported by

Senevitratne et. al [7] and Yip [15] in their study where they found out students who were pleased to learn using PBL in group usually develop and enhance most of the generic skills needed. In addition, Hwang [16] also supported that the learning process via group work will encourage students to be more positive and responsible. As a whole, applying PBL in such a way, it can be confirmed that students will learn in an effective learning environment and could end up successfully in their grades.

As for the minimum mean scores, students expected they will have problems in building up flow charts in order to complete the task. This may happen due to lack of knowledge of the importance in building up a flow chart and also less experience in developing them. According to Anne [17], building flowchart is one of the action plans in solving a problem. Hence, it can be said that the respondents face problems building it due to lack of problem solving skills. Students perceptions towards PBL were also low in terms of judging their own choices of problem solutions. Rong Huang [6] and Chu et. al [18] recommended that the role of a facilitator is critical here where students need their guidance to make the best judgement. Larsen [9] in the other hand added that in order to succeed in decision making, students should conquer all kinds of undeniable sources such as journals, books, published papers and so on.

3.2. Acceptance towards PBL Approach

In order to analyze the acceptance towards PBL, 22 questions were asked to the respondents. The study indicates that the average mean score for this section was 3.57. The data showed students acceptance towards PBL was at moderate level. Analysis showed that the maximum score was obtained from item 10 with a score of 3.88 while item 4 have the minimum score of 3.30.

Upon experiencing PBL approach, students were clear on the objectives of a PBL topic. Objectives in a topic are important in order to ensure the students gain the learning outcomes. The roles of facilitators are also important to guarantee students will always be in the right track during their problem solving process. UTHM efforts in organizing PBL courses [2] in order to expose facilitators to the varieties of teaching PBL were one of the causes that could be the reason of this success.

Analysis showed the lowest score was for the fact that students faced stress in completing PBL assignments. From their comments, it is caused by the flow of the PBL assignment itself and also due to workloads from other subjects. This result was the same as the study conducted by Khairiyah [1] and Hwang [16] where respondents not only will be stressed due to workloads from various subjects, but also from the excess time they have to spend during the whole PBL processes. Inappropriate schedule and fewer infrastructures for PBL purposes could also be the reasons due to the university not yet provide a suitable time table for PBL implementation.

Rather than that, students also feel stressed facing language problems. It is understood that most technical references would be in English. Due to that, understanding English language had become a challenge for them. It was added in the comment that knowing assignments in English could low down their

motivation to even start the PBL process. As said earlier by Rong Huang [6] and Larsen [9], this problem could lead a failure in achieving the objectives of a lesson.

3.3. Comments

Comments given by students for this section were mostly related to stress. Most of the students comment that they were stressed for not being given enough time in completing PBL assignments. This is due to lots of assignments to be completed and PBL processes sometimes only add a burden to them. Worse was when almost all of their workloads given by lecturers were in PBL approach.

Previous study however did reveal time management could be the basis cause of stress problem. Fatah [17], Sherina [18] and Fadzli [19] agreed that students should create an appropriate and effective self time-management schedule that can assist them however it has to be complied with high discipline and motivation.

4. Conclusion

As a whole, it can be concluded that perceptions and acceptance towards PBL approach by TVET students in UTHM were high and moderate level respectively. However, it is unquestionable that PBL approach in T&L process is definitely effective. Due to that, the implementations should be developed and raised among these students especially to enhance their acceptance towards PBL learning.

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