FACTORS CONTRIBUTE TOWARDS CHALLENGES FACED BY THE STUDENTS IN THE IMPLEMENTATION OF PROBLEM BASED LEARNING (PBL)

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ABSTRACT

Problem Based Learning (PBL) has been introduced in many professional fields and appeared to be a growing interest in higher learning education system. The implementation of PBL will trigger strengths and weaknesses faced by the facilitators and students. However, the aim of the study is to investigate the weaknesses of PBL implementation faced by the students. The methodology for this research is based on qualitative analysis using focus group discussion. PBL is one of the method of delivery in teachings. The adoption of PBL generates clear understanding on the subject matter taught in class. Taking into consideration of the good and bad factors that contribute to the success of Problem-Based Learning implementation, a more comprehensive action can be taken to enhance its implementation. This research will contribute to the success of Problem-Based Learning implementation.

Keywords: Problem Based Learning, PBL

Introduction

Problem Based Learning (PBL) has been introduced into education in many professional fields and appears to be of growing interest to educators. In its modern guise, PBL started to become a feature of educational programs and had steady growth in the number of academic programs that have adopted PBL around the world. Many attempts have been made to define the concept of "problem-based learning". Barrows (1996), who was involved in the early stages of the development of PBL at Canada, define the concept in terms of specific attributes as being student-centered, taking place in small groups with the teacher acting as a facilitator, and being organized around problems. However, the actual design will be very different from institution to institution.

Problem Based Learning (PBL) is a learning process through problem solving system. According to the first edition of Project Based Learning Handbook (2006) by the Education Technology Division, Ministry of Malaysia Education defines PBL as a model for classroom activity that is different from the normal classroom practices which are more traditional and focus on teacher-centered learning as such system is a long term, structured, student-centered learning, and associate with the real world issues and practices. In practice, this system starts with a problem, which encourages the students to acquire information themselves and apply such information to solve the problem (Poon and Mimmy, 2014).

PBL is a student-centred instructional strategy in which students work in small groups to develop solutions to the triggering problems in a collaborative mode (Azer 2011). PBL helps students to become deep and active learners by encouraging them to assume active ownership of their own learning process (Ahern 2010). Students will work in small groups to define the stimulus problems and deliver solutions to those problems (Raja Maznah et al. 2007).

PBL education build the students' background, expectations, and interests. It is common for students to be motivated to work

much harder with the PBL model than with traditional models. Student participation is much less in conventional courses, where the students have no say in the problem formulation. There is a connection between the teaching method and the depth and complexity of the learning, as the student may be expected to reach an analytically complex level of comprehension through the project work, which would not be possible in conventional classes.

Currently student faced difficulties in understanding using the teacher-centered learning. This consumes more effort and time rather than focusing on the level of understanding in a particular subject matter. Students need more exposure on the Student Centered Learning to enhance learning's quality. Failing to understand the courses taught in classroom give a negative impact on the student academic results. Therefore, by using PBL, students may possess a higher level of understanding.

PBL as a tool of delivery in education can also be part of the motivation factor to encourage conducive learning environment. The implementation of PBL will trigger the strengths and weaknesses. This paper will focus on the challenges faced by the students in the implementation of PBL which includes facilities and support, time and knowledge.
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Literature Review

When discussing on student experience on PBL, majority appreciates it as a positive experience and a few see it as a burden (Salimah and Zaitun, n. d.). Sandra and Goncalves (2014) mentioned that some students felt more comfortable with non PBL assessment because they prefer more on individual performance rather than in group performance. Thus, factors contribute towards challenges faced by students in the implementation of PBL are discussed below:

a)   Facilities and supports

Environment
Maurer and Neuhold (2012) claimed that setting-up a university programme based fully on PBL is resource-intense. Maurer and Neuhold (2012) stated that there are lots of things to be considered such as an appropriate number of smaller rooms with the necessary equipment is needed such as whiteboard, computer, internet access etc and others. As self-study is a central element of students to learn in a PBL environment, experience at Maastricht also showed that the importance of the library also increased considerably, students are supposed to have access to various kinds of literature, and students also spend a vast amount of their time in the library reading and preparing during their self-study (Maurer and Neuhold, 2012).

Reading Materials
Suraiya, Ahmad Raflis and Sarmila (2015) stated that by developing open-ended materials because learning should transition from the use of textbooks to the use of a few texts to provide background and an introduction to the subject matter.

Facilities
Azer, (2011) claimed that in order to implement PBL in schools and universities is a demanding process that requires resources, a lot of planning and organization including managing learning resources and facilities that support self-directed learning.

Cost
Finucane, Shannon, and McGrath (2009) stated that the cost of its delivery is often cited as a significant issue. Although there appears to be no shortage of opinion as to the perceived cost of PBL, Finucane, Shannon, and McGrath (2009) claimed that no institution that has accurately measured its cost, even in financial terms. Although the cost of delivering PBL will be greatly influenced by the approach taken at different institutions, there is ongoing debate on the strengths and weaknesses of PBL.

b)   Time

Workload
PBL has been linked with perceptions of demanding workloads for students (García González and Veiga Díaz, 2014). For instance, Van den Berg et al., (2006) noted that students perceived the workload as heavy, and staff described students finding the workload "overwhelming". Joyce et al., (2013) also found the introduction of PBL, led to perceptions of rising workloads among students.

Time consume
The time and resource intensive nature of PBL was another significant challenge identified in the literature (Van den Bergh et al., 2006 and Stauffacher et al., 2006). Students need to spend more time than necessary on searching for information, despite having been guided to look for relevant information rather than all the information. Besides, students need to spend more time on the subject. Sometimes, they had difficulty connecting to the university's internet connection. This may affect their discussions with their teammates and also submission of their work.

c)   Knowledge

Understanding
In a study that correlated student directed study and faculty objectives, it was found that students did not stay on track and many important objectives were omitted (Dolmans, Snellen, Wolfhagen & Vleuten, 1997). It has even been speculated that if students divert from their anticipated directions during their solution generation, they may completely miss the main content if not redirected by their instructor. Studies comparing program learning outcomes for students taught via problem based learning

versus traditional approach show that when implemented well, PBL increases long-term retention of content, helps students perform as well as or better than traditional learners in high-stakes tests, improves problem-solving and collaboration skills, and improves students' attitudes towards learning (Strobel & van Barneveld, 2009; Walker & Leary, 2009). Moreover, Giguere (2006) implemented PBL in a course in cost accounting in 2000, and found PBL students' learning outcomes significantly better than those of conventional cost accounting students (rated through semester grade point average scores.

Experience
An unanticipated problem with problem based learning is the traditional assumptions of the student. Most students have spent their previous years assuming their teacher was the main disseminator of knowledge. Because of this orientation towards the subject-matter expertise of their instructor and the traditional memorization of facts required of students, many students appear to have lost the ability to "simply wonder about something" (Reithlingshoefer, 1992). This is especially seen in first year students who often express difficulties with self-directed learning (Schmidt, Henny, & de Vries, 1992).

Communication Skills
The central to PBL is the use of group work (Van Kotze & Cooper, 2000). Student activity revolves around a complex series of interactions between team members over time and draws on a range of key transferable skills such as communication, planning and team working. However, while leading to valuable skills, group work is also identified as holding potential for conflict and student dissatisfaction. Conflicts between students often lead to poor team performance.

Group work
Group work was frequently identified in the academic literature as one of the most significant challenges faced by learners undertaking PBL. Stauffacher et al., (2006) found the majority of challenges came from group work and Frank and Barzilai (2004) discovered from reading students' personal reflective reports that they experienced conflict in their work. Free-riding by group members (García González and Veiga Díaz, 2014), unequal division of work and some students' poor attendance (Gibbes and Carson, 2013) were significant issues identified.

Expertise
The PBL literature itself shows the value of having expertise in the quality of the student experience in implementing PBL. Studies show that the students in groups led by content experts generate twice as many learning issues and spend twice as much time in self-study and yet not all colleges and universities have sufficient numbers of expertise for PBL. Students themselves prefer expert instructions that are more likely to give timely, specific, and accurate feedback for their work. However, teaching is a complex process, and it is appreciated that expertise does not guarantee better effectiveness. (Paul and Shanley, 2007).

Methodology

Jack and Norman (2006) mentioned that the purpose of qualitative research is to know the meaning of people and their experiences in the world by their own perspectives. The study conducted two ways of qualitative researches; the open ended survey and the video recording (Graham and Celia, 2005) among undergraduate accounting students in College of Business Management and Accounting, Universiti Tenaga Nasional. It showed students' PBL experiences and their perception on PBL in their academic life throughout their study. Furthermore, from the above two ways of qualitative researches, respondents are able to describe and examine their academic and contributions to education.

The self-developed open ended survey were developed based on the previous literatures as stated in literature review section and it was conducted in the last third week of the semester during the class period. Gery and Russell (n. d.) mentioned that the heart of qualitative data analysis is the task of discovering themes and thus, the instrument of the study was developed based on previous literatures. Instruction was given by researchers and approximately students responded within 20 minutes. There was two parts in the open ended survey; 1) To identify strengths of Problem-Based Learning activities and 2) To identify weaknesses of Problem-Based Learning activities. Researchers also encourage respondents to ask any queries from the open ended survey and a convenient sample of 30 was selected as respondent of the study. Selection of respondents considered to have a good vision in PBL activities because they went through the PBL activities during the class. Further, researchers also proceed to the video recording from three respondents within the same sample and approximately it took for 30 minutes for the purpose of to hear or see the further insights from respondents with their permission.

Then, researchers conduct the analytic tools for qualitative research procedures such as coding the data, identified themes or patterns and organized the data into coherent categories by using the abbreviation codes and illustrated it in a diagram of boxes as adopted and adapted by Sorie (2012). In order to ensure the reliability of the coding system, each member of the research team reviews the transcript and some changes have been made.

Research Findings

Table 1 presents the profiles of thirty respondents that had participated in this study. At time of this study respondents are currently pursuing their Bachelor's Degree at Universiti Tenaga Nasional (UNITEN), Bandar Muadzam Shah, Pahang. They were chosen at random in a particular class as a form of focus group to obtain their feedback. Since there are more female students as the major population in UNITEN, most of our respondents are female. Respondents are sponsored students by a well-known and established sponsors.

This study was conducted on a particular course using PBL as a delivery methods. All respondents were from the accounting major. Their feedback were recorded and analyze to determine their experience in learning using PBL compare to the traditional way of teaching and learning. Few of them were video-taped as to evidence the findings. Respondents were in their third year of study taking a particular subject conducted via PBL as a learning tool.

Table 1: Detail profile of the respondents

		Address	Gender	Program	Year	Sponsorship
1.	Amirah Binti Abdul Ghapor	Petaling Jaya, Selangor	Female	Bachelor of Accounting (Hons.)	3	MARA
2.	Azlin Bt Khalid	Kluang, Johor	Female	Bachelor of Accounting (Hons.)	3	Jabatan Perkhidmatan Awam
3.	Hanis Syahirah Binti Zainuddin	Kuarters Polis Bukit Aman, Kuala Lumpur	Female	Bachelor of Accounting (Hons.)	3	MARA
4.	Hazirah Binti Ahmad	Sepang, Selangor	Female	Bachelor of Accounting (Hons.)	3	MARA
5.	Jannatul Ain Binti Md Saman	Kuantan, Pahang	Female	Bachelor of Accounting (Hons.)	3	MARA
6.	Kamini A/p Chandran	Tampin, Negeri Sembilan	Female	Bachelor of Accounting (Hons.)	3	PTPTN
7.	Muhammad Hanif Bin Muhammad Nassir	Skudai, Johor	Male	Bachelor of Accounting (Hons.)	3	MARA
8.	Muhammad Israq Bin Che Izham	Rawang, Selangor	Male	Bachelor of Accounting (Hons.)	3	MARA
9.	Nabilatul Husna Binti Hamid Khan	Semenyih, Selangor	Female	Bachelor of Accounting (Hons.)	3	MARA
10.	Nadzarina Anis Binti Ahmed Rahim Zakri	Rawang, Selangor	Female	Bachelor of Accounting (Hons.)	3	MARA
11.	Noor Dahliah Binti Yunus	Pasir Mas, Kelantan	Female	Bachelor of Accounting (Hons.)	3	MARA
12.	Norhazreena Bt Mohd Faudzi	Kluang, Johor	Female	Bachelor of Accounting (Hons.)	3	MARA
13.	Nur Aimi Jannah Bt Mohamad Rani	Gerik, Perak	Female	Bachelor of Accounting (Hons.)	3	MARA
14.	Nur Alia Aqila Binti Azmi	Tumpat, Kelantan	Female	Bachelor of Accounting (Hons.)	3	MARA
15.	Nur Alia Binti Mohd Sa`ad	Batu Pahat, Johor	Female	Bachelor of Accounting (Hons.)	3	MARA
16.	Nur Arina Binti Zurkurnan	Pasir Puteh, Kelantan	Female	Bachelor of Accounting (Hons.)	3	MARA
17.	Nur Farrah Diyana Binti Samsudin	Sungai Petani, Kedah	Female	Bachelor of Accounting (Hons.)	3	MARA
18.	Nur Syafiqah Binti Zainal Abidin	Shah Alam, Selangor	Female	Bachelor of Accounting (Hons.)	3	MARA
19.	Nur Syahidah Binti Nasir	Kajang, Selangor	Female	Bachelor of Accounting (Hons.)	3	MARA
20.	Nurul `azyyati Binti Ahmad Zainal	Nibong Tebal, Pulau Pinang	Female	Bachelor of Accounting (Hons.)	3	MARA
21.	Nurul Nabila Izzaty Binti Adnan	Bandar Baru Bangi, Selangor	Female	Bachelor of Accounting (Hons.)	3	MARA
22.	Sharifah Nurul Adilah Binti Syed Abd Rahman	Maran, Pahang	Female	Bachelor of Accounting (Hons.)	3	MARA
23.	Sharlyn Sharmini Venu	Seremban, Negeri Sembilan	Female	Bachelor of Accounting (Hons.)	3	MARA
24.	Siti Zulaikha Bt Khairil Anuar	Ampang, Selangor	Female	Bachelor of Accounting (Hons.)	3	MARA
25.	Teo Kia Yong	Kluang, Johor	Female	Bachelor of Accounting (Hons.)	3	Jabatan Perkhidmatan Awam
26.	Vithyashini D/o Sathiaselan	Kulim, Kedah	Female	Bachelor of Accounting (Hons.)	3	PJMY (D)
27.	Wan Muhammad Hafeez Bin Wan Roslan	Shah Alam, Selangor	Male	Bachelor of Accounting (Hons.)	3	PTPTN

28. Wanita A/p Maniam	Seremban, Negeri Sembilan	Female	Bachelor of Accounting (Hons.)	3	PTPTN
29. Yarshini A/p Nanthakumar	Batu Gajah, Perak	Female	Bachelor of Accounting (Hons.)	3	PTPTN
30. Yeshitiraa A/p Muniandy	Bukit Mertajam, Pulau Pinang	Female	Bachelor of Accounting (Hons.)	3	PTPTN

Table 2 shows the summary of the finding analysis based on the focus group feedback. This study has classified the analysis into three major segments, facilities and supports, time, and knowledge. Facilities and supports is based on the cost incurred to run the PBL methods in terms of classrooms, internet facilities and relevant information technologies. Students are required to incur cost in purchasing or acquiring relevant materials and facilities to support the implementation of PBL.

Timing is a major factor that affect student learning time as it take more time in gathering information and writing report together with the time taken and frequency of meetings and discussions. Time taken for PBL implementation need to be managed properly as submission of report are within a specific time period.

Finally the transfer of knowledge in a know-how situation of a subject matter in nurturing knowledge through PBL. These factors comprise of understanding, interaction, cooperation, and level of difficulties on the subject itself. PBL conducted in a group and thus fullest cooperation among members is a priority. Members must have high level of commitments to support the level of difficulties and meeting the time frame given by the instructor,

Table 2: Summary of the findings

No of Item	Item	No of Response
	A. Facilities and supports	
1	Financial/ Costly	11
	B. Time	
2	Time Consuming	30
3	Learn how to manage time	3
4	Punctual: Submission of Task	6
	C. Knowledge	
5	Understanding on field	12
6	Cooperation among Team Members/ Strong Relationship	12
7	Interaction & Communication	12
8	Work in a team	6
9	Cooperation among Team Members/ Strong Relationship	11
10	Difficult Case Studies	3
11	Many opinions/ Different opinions/ Judgement	9
12	Non- cooperative of team members	4

The implementation of PBL as part of learning experience applicable to higher learning institutions offering academic programs at different level of education. Face to face mode of deliveries has been widely used since decades by educational institutions. PBL as part of flexible learning process in conducting respective academic programs to nurture better knowledge and understanding of a particular academic subjects. Experts or academic scholars has given full support in complementing PBL implementation through publishing their experience in scholarly articles in various well-established academic journals. The impact of PBL implementation provides challenges faced by the instructors and students.

This research paper focuses on the challenges faced by the students using PBL as part of their learning process. Respondents for this research are students pursuing their bachelor degree. There are 30 respondents being interviewed through focus group discussion. Their feedback has been noted and recorded and transcribe into useful analyzed information. The feedback gathered

from the students has been summarized into three major area that is, facilities and support, time, and knowledge. Therefore the analysis of data will follow according to the feedback gathered.

a)   Facilities and Supports

Maurer and Neuhold (2012) claimed that setting-up a university programme based fully on PBL is resource-intense. PBL requires proper facilities and support to garner a conducive environment. Learning environment covers facilities such as proper room, table and chairs, reading materials, internet and other related tools or stationeries. These facilities if provided incurred cost to the institution. Concerned were raised during the discussion on facilities and support which should be provided or upgraded to ease the using of PBL as a lecture delivery tool. A round table layout is more appropriate with suitable cushioned chairs for comfort sitting. Sufficient reading material is required to support referencing activities to get a situation or problem solved. High speed internet and data processing to facilitate information retrieval in solving problem based task on the given by the instructor. In addition, other related stationeries need to be easily allocated and accessed.

b)   Time

Time is always a major factor in getting a task completed within a given specified time frame. It has been discussed in literature by Van den Bergh et al., 2006 and Stauffacher et al., 2006. In any situation to solve a problem we need a good time management. Feedback given by the respondents that conducting PBL in class is time consuming and cause lacking of focus on other academic subjects. In actual fact time factor affect both the instructor and the students. Time constraint may reduce with the support of the instructors conducting PBL. If more time allocated by the instructor in assisting the implementation of PBL, it may ease the students in getting a task or project completed within a given time frame. Another main factor for time is the load or topics allocated using PBL as mode of delivery. These topics need to be at minimum level and focused so as to streamline the implementation. Student's awareness is important right from the beginning and thus manage their study time accordingly.

c)   Knowledge

It was found that students did not stay on track and many important objectives were omitted in the implementation of PBL (Dolmans, Snellen, Wolfhagen & Vleuten, 1997).The effectiveness of teachings depend on the mode of delivery. At the end of a session a set of learning outcomes must be achieved. This is to gauge the level of understanding in each subject taken for a particular semester. It is not viable if the level of readiness among students are low and need more knowledge and experience. Due to low level of readiness will trigger unexpected stress throughout the learning process. Stressful learning environment is a major concerned among students to cope with student learning time suggested by the learning regulatory body. Another main factor for garnering good knowledge is getting task done in a group of people. Teamwork is vital but not just teamwork but to get everyone work in a team so as to complete the task promptly and meeting dateline given. Good communication among members will hinder delays in completing the task. This is not easy to achieve as team members were from different backgrounds and have different character and attitude. Finally the expertise owned by the instructor and students contribute towards challenges faced by them.

Conclusion

Problem Based Learning (PBL) basically has it benefits and drawbacks. The objective of this study had successfully determined what are the factors that contribute towards the implementation of PBL. Although a specific group of students has been selected to measure their level of knowledge and other relevant factors, but these measurements can be expanded to other field of study inclusive of various level of education.

There are limitation to the study due to PBL implementation is not a comprehensive effort and not applicable to all subjects. Thus, as initial findings, this study contributes towards the objective in determining elements of challenges faced by the students. Taking into consideration of the good and bad factors that contribute to the success of PBL implementation, a more comprehensive action can be taken to enhance its implementation. In whatever circumstances, time is a major factor depends on the weight of the load. PBL as a summary, can be widely used but considerations must be given according to the class capacity and type of subjects.

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