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Problem-Based Learning (PBL) Awareness among Academic Staff in Universiti Tun Hussein Onn Malaysia (UTHM)

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A B S T R A C T

The present study was conducted to determine whether the academic staff in UTHM was aware of Problem-based Learning (PBL) as an instructional approach. It was significant to identify if the academic staff in Universiti Tun Hussein Onn Malaysia (UTHM) had the knowledge about PBL. It was also crucial to know if the academic staff was aware of PBL as a method of teaching their courses in class as this could give the feedback to the university on the use of PBL among academic staff and measures to be taken to help improve their teaching experience. A workshop could also be designed if the academic staff in UTHM was interested to know more about PBL and how it could be used in their classroom. The objective of this study was to identify the awareness of PBL among academic staff in UTHM. This study was conducted via a quantitative method using a questionnaire adapted from the Awareness Questionnaire (AQ). 100 respondents were involved in this study. The findings indicated that the awareness of PBL among UTHM academic staff was moderate. It is a hope that more exposure could be done as PBL is seen as a promising approach in the learning process. In conclusion, the academic staff in UTHM has a moderate level of knowledge about PBL as a teaching methodology.

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1. Introduction

Problem-based learning (PBL) is one of the teaching approaches applied in the classroom by an instructor. It is an emerging pedagogical paradigm in Malaysia (Al-Naggar & Bobryshev, 2012). It can be used for various subjects or courses such as in Mathematics (Rohani & Sahar, 2010; 2012; Thambychik & Meerah, 2010), engineering, medicine, law, and even language (Zulida, 2013). At first, it was developed at McMaster University for medical training, and other disciplines began to adopt the PBL approach in the learning process (Gijbels, Dochy, Bossche, & Segers, 2005).

Students are provided with a set of problems to be solved within a period of time in a PBL classroom (Subadrah & Mohammed, 2011), while solving the set of problems, students are able to develop different skills such as problem-solving, critical thinking, inquiry and scientific thinking, all which are needed when they embark on their next chapter of life, i.e. employment. A variety of studies have shown that PBL has an immense impact on undergraduates in various disciplines (Chapman, 2002; Kim & Kwon, 2003; Goodnough & Woei, 2008). Having to play active roles in class helps students develop skills such as problem-solving, leadership, and decision making (Hmelo-Silver, 2004). In addition, Khairiyah, Zaidatun & Syed Ahmad Helmi (2005) found that the PBL approach is favourable among students and findings also showed that students who are exposed to PBL have better academic performance than those who are not. Nur Izzati, Rohani and Rosini (2010) looked at students' problem-solving skills in PBL class and their findings support the effectiveness of PBL in developing students' problem-solving skills. Zulida (2013) also found that students identify PBL as a positive approach, and posit that for successful implementation of a PBL classroom, teachers or instructors should play an active role as well.

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With all the positive notes and attitude towards PBL, supported by substantial data from researchers, there are also a number of studies conducted which show mixed outcomes on the application of PBL in the classroom (Schmidt, Rotgans & Yew, 2011). In a study conducted among K-12 Seventh-day Adventist Schools teachers in Florida, it was found that most teachers were not aware of PBL and were very much teacher-oriented. However, they were willing to learn more about PBL and implement it in their classroom, provided that the preconditions for successful implementation were met (Pilliner, 2003). Pilliner (2003) conducted research with four (4) research questions. One of them was to determine the extent to which the teachers were aware of PBL as a teaching method. Teachers' awareness of PBL is defined as whether the teachers know enough or are knowledgeable enough about the method. Thus, the researcher designed a 10-item Awareness Questionnaire (AQ) to find the answer to the research question in determining teachers' knowledge of PBL as a teaching methodology or strategy. The AQ internal consistency or reliability was calculated with the reliability coefficient of 0.7748, which advocates a high degree of consistency across items. From the findings, she (2003) found that the SDA K-12 teachers (57 percent) were not well-versed on PBL and training was obligatory to obtain enhanced awareness of the teaching method.

Meanwhile, Berkson (1993) discovered different findings on the implementation of PBL. Wijnia, Loyens and Derous (2010), in their study, also found that motivation in students remains stagnant even after attending PBL classes. Yadav, Subedi, Lundeberg, & Bunting (2011) pointed out that students were in favour of the traditional method, in specific, lectures, as compared to PBL. Both the teachers and students grappled with the transition from teacher-centred to a student-centred approach. Given these mixed results, the effectiveness of PBL as a student-centred instructional strategy remains ambiguous. With a lack of empirical studies on the efficacy of PBL in a local context, it further proves that making PBL a leading instructional method in the classroom is a challenge.

Therefore, this study is substantial in order to increase the number of studies conducted in this area. In addition, the present study was conducted to determine whether the academic staff in Universiti Tun Hussein Onn Malaysia (UTHM) was aware of PBL as an instructional approach that is student-centred and can be applied in their classes. The following research objective was addressed in the present study: (i) to identify the awareness of PBL among academic staff in UTHM. Based on the research objective, the following hypothesis was proposed; H1: The UTHM academic staff is aware of PBL as an instructional approach in class. The findings from this research were essential to give feedback to the university on the use of PBL among academic staff and what could be done to help the staff to improve their teaching experience. A course could also be considered if the academic staff was interested to understand more about PBL and how to utilise it in their classroom.

2. Method

This study was conducted using a quantitative method. A set of questionnaires was prepared and adapted from the Awareness Questionnaire (AQ) by Pilliner (2003). The reliability coefficient for this Awareness Questionnaire (AQ) in the original test by Pilliner (2003) was 0.7748, in which, according to Cronbach (1959), is acceptable. For this particular study, the reliability test was conducted and the Cronbach's Alpha obtained was 0.893, which implied the high reliability of the adapted questionnaire.

There were two (2) parts in the questionnaire utilised in this study: (i) Demographic Information (eight items), and (ii) Awareness on PBL (ten items). The Awareness on PBL was five Likert scale items. This study was conducted to all academic staff in UTHM during Semester 1, 2018/2019 and Semester 2, 2018/2019 sessions in UTHM (Parit Raja and Pagoh campuses). It was not administered to students and the non-academic staff in UTHM. The questionnaire was distributed manually and via an online survey application, namely Google Form to all academic staff from eight (8) faculties in UTHM. Link to the online survey was sent to all academic staff in UTHM by the use of UTHM email.

The population of academic staff in UTHM is approximately two thousand. The questionnaire was distributed to the academic staff several times. However, the return rate was quite low. With the responses, the researchers proceeded with the data analysis by keying in the data into SPSS version 20. Based on the objective of this study, which is to identify the awareness of PBL among academic staff in UTHM, a descriptive analysis was done to get the percentage. The demographic part was analysed in getting the background of the respondents. Below is the result and discussion of the analysis.

3. Results and Discussion

1.1 3.1 Demographic Information

Table 1. Demographic Information

a)	Gender	35% (Male)	65% (Female)		
b)	Field	46% (Engineering)	54% (Non-engineering)		
c)	Highest Academic Qualification	6% (Diploma in Education)	3% (First Degree)	43% (Master's Degree)	48% (PhD)
e)	Age	52% (20 – 35 years old)	39% (36 – 45 years old)	9% (46 – 55 years old)	0% (≥ 56 years old)
f)	Teaching Experience	28% (≤ 4 years)	33% (5 – 9 years)	19% (10 – 14 years)	20% (≥ 15 years)
g)	Have you ever heard about PBL?	89% (Yes)	11% (No)		
h)	Have you received any training on PBL?	60% (Yes)	40% (No)		
i)	Have you ever had any experience teaching using PBL in class?	54% (Yes)	46% (No)		

Table 1 shows the responses provided by 100 respondents on eight (8) demographic questions. From the table, 35 percent of respondents were male, while another 65 per cent were female. All respondents were academic staff of UTHM. Meanwhile, 45 percent of the respondents were in the engineering field, and 54 per cent were in the non-engineering field. Most of the respondents received high academic qualification with 48 per cent of the respondents with PhD, 43 percent with Master's degree, while 3 percent were first degree holders and the remaining 6 percent held a Diploma in Education. In terms of age group, the highest was between 20 to 35 years old (52 percent), and the lowest was between 46 to 55 years old. None of the respondents was more than 56 years old. Regarding teaching experience, 33 % of the respondents had 5 to 9 years of experience, followed by 4 years or less (28 percent), 15 years and above (20 percent), and 10 to 14 years (19 percent). In regards to their exposure to PBL, most respondents have heard about PBL (89 percent) while only 11 percent were unaware of what PBL is. Among the respondents, 60 percent had received training on PBL while another 40 percent never received any training on PBL. However, only 54 per cent of them had tried using PBL in class, while another 46 per cent never applied PBL in their classes.

From these findings, it can be said that although PBL is well-known among the academicians in UTHM, there are still a number of them who have not yet receive any formal training on PBL. It indicates that the respondents are not very knowledgeable of PBL. Meanwhile, looking at the findings, it can also be concluded that although most respondents have heard of the term PBL, they are reluctant to apply or use it in their classes. This unwillingness to use PBL in the classroom may be due to various reasons such as difficulty to conduct PBL due to lack of experience, and lack of confidence.

Despite the fact that most of the respondents were of the younger generation with high academic qualifications and moderate years of teaching experience, the findings indicated that the application of PBL in class is not determined by the age, years of teaching experiences and academic qualification. This is similar to the research conducted by Pilliner (2003) who found that the teachers' age does not affect the choice to apply PBL in class even if PBL might be the solution in dealing with unchallenged and unmotivated students. Instead, the teachers' philosophy of teaching may be the one affecting the likelihood of conducting classes using PBL (Pilliner, 2003). Those with traditional teaching philosophy may choose their autonomy to take charge in class over their students', thus rejecting PBL. Even though the shift from teacher-centred teaching method to student-centred teaching method is essential to improve students' learning experience (Zulida, 2013), some academic staff may have the fear to do so.

It is also important to note that PBL is introduced as one of the teaching methods to be used in UTHM for many years. As UTHM is a technical and vocational university, PBL is deemed fundamental to help students learn better. However, possibly due to time restriction, a lot to catch up with the course syllabus and examinations, some academic staff resort to traditional, teacher-centred teaching methods. Another reason may

be because the academic staff received no formal training or real exposure to what, how, when, and where PBL can be used in class, leading to some of them to be unsure of the success of using it, thus ignoring it altogether. They might have heard of PBL, but the potential of failing when using it class may hinder them from doing so. Although the term PBL is familiar among lecturers or teachers, having to execute a PBL classroom is not something they are willing to do. This is due to the inexperience of conducting a PBL classroom and lack of PBL instructor training. Added to the fear of potentially failing when applying PBL in their classes, it is not a wonder that these lecturers and teachers decided to avoid it altogether. These were the most frequent reasons stated by the respondents when they were asked on their reasons for not implementing this approach in their class. Using a teaching method that they are comfortable with seems to boost their confidence in teaching, rather than having to explore unfamiliar territories in teaching methodology. Plus, having to experiment in the classroom can be a gamble, but the one they would not take.

1.2 3.2 Awareness of Problem-based Learning

Table 2. Mean and Standard Deviation on the Awareness of Problem-based Learning (n=100)

No.	Item	Mean	Std. Dev.
1	Problem-based Learning is …	2.55	1.56
2	Problem-based Learning is …	3.14	1.03
3	For knowledge/information to be acquired in Problem-based Learning …	3.20	1.39
4	In Problem-based Learning, problems are …	2.92	1.45
5	In Problem-based Learning, the teacher functions as …	3.27	1.00
6	The design of problem in Problem-based Learning is to …	3.41	0.85
7	In Problem-based Learning, learning is assessed …	3.24	1.27
8	In Problem-based Learning, students are required to …	2.61	1.26
9	Problem-based Learning …	2.62	1.37
10	In problem-based Learning …	2.38	1.54

The findings in Table 2 show that the respondents of this study had average awareness towards PBL as the highest mean score for the 10 items was only 3.41 while the lowest mean score was 2.38; “Problem-based Learning is …” (M = 2, SD = 1.56), “Problem-based Learning is …” (M = 3.14, SD = 1.03), “For knowledge/information to be acquired in Problem-based Learning …” (M = 3.20, SD = 1.39), “In Problem-based Learning, problems are …” (M = 2.92, SD = 1.45), “In Problem-based Learning, the teacher functions as …” (M = 3.27, SD = 1.00), “The design of problem in Problem-based Learning is to …” (M = 3.41, SD = 0.85), “In Problem-based Learning, learning is assessed …” (M = 3.24, SD = 1.27), “In Problem-based Learning, students are required to …” (M = 2.61, SD = 1.37), “Problem-based Learning …” (M = 2.62, SD = 1.37) and “In problem-based Learning …” (M = 2.38, SD = 1.54).

From the results, it can be said that the respondents were moderately knowledgeable about PBL as a teaching method, and this shows that the respondents were aware of PBL, though not entirely. The reason may be because the respondents did know about PBL, having heard about it and received training of it, but, since they have average knowledge on the subject matter, this may lead to their reluctance in using PBL in class (refer Table 1). PBL is a student-centred teaching strategy that can enhance students’ problem-solving skills, leadership and decision-making skills (Hmelo-Silver, 2004). However, adopting it in class requires lots of understanding of the principles and procedures, and of course, a lot of preparation (Pilliner, 2003). Some respondents may not even try to use PBL in class due to their lack of understanding of PBL. With limited understanding, the respondents might find it a challenge to use this teaching method. Instead, they make use of other student-centred teaching strategies which they are more familiar with to save time, energy and effort into learning in-depth about PBL and its implementation. It may seem easier to do things that they are familiar with instead of exploring something new which they are not sure of. Thus, the results from this study supported the hypothesis that UTHM academic staff was aware of PBL as an instructional approach to be used in class.

4. Conclusion

In conclusion, the overall findings based on the analysis of data showed that the academic staff in UTHM has moderate awareness of PBL. Future research can be done to find out what is the underlying teaching philosophy of the academic staff in UTHM, what other student-centred teaching techniques are used instead of PBL and probably to find out whether traditional, teacher-centred teaching method is used in class as opposed to the student-centred teaching method. Student-centred seems to be a promising approach in helping the students to be better graduates later in terms of them possessing better soft skills. These skills are essential as the preparation for them in the working world (Zulida, 2013). In addition, the variety of approaches done in class can boost the process of teaching and learning as it may add the creativity of the instructors. It is recommended that the future study would concentrate on the implementation of PBL from the students' perspective in gauging their perception of this approach.

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