BLENDED PROBLEM BASED LEARNING (BPBL): OPPORTUNITIES AND CHALLENGES TO BE IMPLEMENTED IN MALAYSIAN CONTEXT

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ABSTRACT

One of the key objectives in the National Education Blueprint is to produce students with higher order thinking skills. The concern is raised based on the poor performances of Malaysian students in the international assessments of Trends in Mathematics and Science Study (TIMSS) and Programme for International Student Assessment (PISA). One of the factors that might contribute to the decline in achievement is the teaching approach applied in Malaysian schools. A revolution in current teaching approach is thus needed. Problem based learning (PBL) is one of the teaching approach being widely implemented and is proven to be beneficial in stimulating students' higher order thinking skills through solving real-world problems. Similarly, the integration of technology during teaching and learning process such as online learning has also been proven to improve students' higher order thinking skill. Based on these foundations, the blended problem based learning (BPBL) that integrates face-to-face PBL and online learning platforms, is believed seems to be an effective teaching approach that can improve PBL and thus enhancing students' higher order thinking skill. This is due to BPBL offers the benefit of both face-to-face PBL and online learning. However, the studies in this area are still insufficient particularly in Malaysian schools' context. Thus, this paper is aimed at discussing on the opportunities and challenges faced in the implementation of BPBL in Malaysian context.

KEYWORDS: Problem based learning; Blended problem based learning

1.0 INTRODUCTION

The report of Programme for International Student Assessment (PISA) revealed that Malaysia was ranked 55th out of 74 countries in the assessment in 2012 [1] and the performance in *Trends in Mathematics and Science Study* (TIMSS) for Science and Mathematics subject has statistically decreased from 21st rank in 2007 to 32nd in 2011 [2].

The above scenario was believed to be caused by limited exposure and practice to higher order thinking skills (HOTS) in current teaching and learning settings in Malaysia [3]. The current teaching practices apply conventional teaching approach, which is teacher-centred classroom [4].

The major drawback of this approach is students are not actively involved in knowledge construction process. Instead, they were exposed to rote-memorization and thus, were ineffective in cultivating higher order thinking skills [5].

2.0   HIGHER ORDER THINKING SKILLS

Resnick [6] describes HOTS as skills that are complex, unstructured, multi disciplinary, reflective and deal with uncertainties. In addition, Lewis and Smith [7] explicate that HOTS require active linking of new and prerequisite knowledge, which will be further improvised as a new set of knowledge in aiding problem solving skills [7]. The aforementioned definitions are inline with Malaysian Examination Syndicate's (Lembaga Peperiksaan Malaysia) [8] assertion that HOTS require active reasoning and reflection of new and prerequisite knowledge in constructing relevant ideas and solutions to a problem.

In realizing the aspiration to inculcate HOTS among Malaysian students, the Ministry of Education Malaysia has highlighted seven initiatives to reform education system, and one of them is the revamp in teaching pedagogy in schools [9]. To achieve, an explicit teaching of HOTS [10], [11] with real-world experiences [12], [13] is found to be effective in improvising the mastery of HOTS among Malaysian students.

3.0   PROBLEM-BASED LEARNING IN IMPROVING HIGHER ORDER THINKING SKILLS

Problem-based learning (PBL) is a potential teaching approach in improving students' HOTS. This approach employs real-world experiences with complex [14] and unstructured convulsion [15], which has infinite solutions to a specified problem [16]. It is believed that this approach encourages critical thinking and problem solving skills [17]. In a direct contrast, the conventional teaching is geared to rote-memorization and comprehension rather than prompting the discussed problem at the beginning of the lesson (as in PBL) [18]. In PBL context, the discussed problem will lead to a conflict in students' mind and thus encourages inquiry among students.

In addition, PBL necessitates students to actively participate in collaborative and self-directed learning [19] in seeking relevant information, and making responsible justification based on their findings throughout the teaching and learning process. Through the completion of the task, students will be exposed to creative and critical thinking skills, which will later benefit their academic performance.

In contrast, a number of research has discovered that the implementation of PBL was not ideal in cultivating HOTS among students [20] [21]. The main contributing factor is the difficulties in implementing collaborative and self-directed learning. As the result, students' academic performances will be affected and thus, HOTS will not be supremely achieved.

4.0   BLENDED PROBLEM BASED LEARNING

Realizing the fact that PBL has a number of glitches in its implementation, the integration of technology, which is blended PBL, is potentially effective [22]. In this manner, the blended PBL and hybrid learning interchangeably support each other, as both approaches integrate face-to-face communication and online learning as the medium to cultivate HOTS [23]. Most researchers similarly defined blended PBL as teaching approach that integrates face-to-face and online learning platform [24]. In short, blended PBM is an enriched version of traditional PBL (face-to-face) with integration of online learning [25].

5.0   CHALLENGES AND OPPORTUNITIES IN BLENDED PBL IMPLEMENTATION

The advantages of blended PBL to enhance HOTS emerged from two learning strategies: collaborative and self-directed learning.

5.1   Collaborative Learning

Typically, the mastery level or learning pace of students is one of the major challenges in collaborative learning settings, and thus directly influences the development of HOTS. In a group discussion, the tension arises between each member might occur when the advanced students are more inclined to dominate the discussion of the assigned tasks completion. On the other note, the weak students are more passive and tend to be the 'passengers' of the activity. This condition opposes the active learning concept [28] proposed in PBL, and therefore hinders the acquisition of HOTS.

In addition, uneven contribution is another major drawbacks of collaborative learning in PBL [26]. This issue arises when the assigned tasks were not fully completed, limited contributions obtained during group discussion, and the difficulties to reach a consensus of the discussion. The relative contribution to the aforementioned problems is the large classroom size and facilitation of the lessons is limited or insufficient [29]. As the result, the experiential learning is not experienced by all students [16] because there might be several important learning steps skipped due to poor contribution of the group members. Therefore, the students will not achieve HOTS, which is emphasized in PBL.

Moreover, poor interpersonal skills might interfere the lessons in PBL classroom [26]. The interpersonal skills are crucial to help students to actively participate in learning, and to achieve meaningful learning. Ineffective interpersonal skills are caused by the lack of trust among group members, poor motivation to work as a team and individualism among members of the group, as highlighted in Hung's study [26].

As an alternative, the implementation of blended PBL is ideal to cater all the problems above. The online learning in blended PBL, allows ample 'space' and 'freedom' to participate in the learning process. As the result, the development of HOTS is achievable as Vijayaratnam [30] supported that the active participation of students in learning encourages the mastery of multiple cognitive skills, especially reflective thinking in learning.

Besides, the blended PBL is practical to facilitate and monitor students' participations and contributions with the utilization of log book application [31]. The log book allows structured facilitation and monitoring via online and reduce the tendency of uneven contributions. The task can be assigned beforehand and continuous monitoring can be performed from time to time. An overall and active participation is achievable, and thus, experiential learning can be implemented successfully.

On the other hand, the asynchronous online discussion platform in blended PBL allows every member to actively participate regardless of their interpersonal skills proficiency [32]. Thus, the process of developing HOTS will be more efficient as the online learning helps to overcome the differences in students' interpersonal skills.

5.2   Self-Directed Learning

In self-directed learning, it is found that adaptation phase is challenging for students as they have been exposed to conventional teaching for years. With the above condition, the PBL approach is thus ineffective to improve students' achievement [26], [33] because the students were struggling to adapt to student-centred and active learning in PBL approach. In addition, students in conventional classroom expressed that their confidence level was very low as the learning process was unclear and new to them [26].

In resolving the above problem, the blended PBL inculcates scaffolding concept in improving students' attainment in learning. In the lesson, the teacher will guide students by providing clearer learning expectations and continuous assistance in completing learning tasks [34]. Carlson [35] explicated that the effectiveness of PBL with the integration of online learning is directly correlated with students' attainment in self-directed learning. For instance, in blended PBL approach, the expectations of the task can be uploaded as constant reminder and reference on the learning platform. In addition, to support learning, relevant documents and web links can be linked on the learning platform to ensure students attain relevant information in completing the task.

6.0   BLENDED PROBLEM BASED LEARNING MODEL

In previous sections, it is established that blended PBL (BPBL) is potentially effective to overcome learning problems in both collaborative and self-directed learning settings. Thus, a specified model is designed (Figure 1) to represent learning process in BPBL. Figure 1 illustrates the integration of technology in collaborative learning (CL) and self-directed learning (SDL) through blended PBL in developing HOTS. CL is conducted through online learning platform and face-to-face learning (f-2-f) as discussed earlier. Besides, SDL is directed via online learning platform with a major emphasis on scaffolding in establishing a clearer learning expectations, focus and content of the learning.
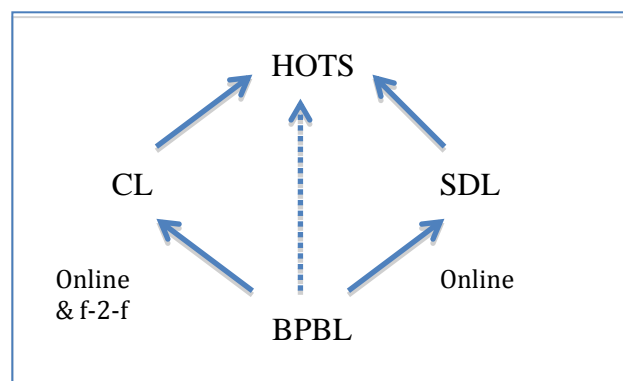

Figure 1: Blended PBL Model

7.0   CONCLUSION

In conclusion, the blended PBL is evidently effective in dealing with drawbacks and challenges of collaborative and self-directed learning settings. The integration of online learning platform and face-to-face learning offers an ideal alternative to achieve deep learning and thus, improves the mastery of HOTS. It is hoped that the implementation of blended PBL helps to prepare and shape the current teaching and learning settings to cater the needs of 21st century learning.

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