International Journal of Academic Research in Business and Social Sciences
2017, Vol. 7, No. 4
ISSN: 2222-6990

Method Integrated Problem-Based Learning (PBL) with Students' Academic Achievement in Economics Education

Mohd Nazir Md Zabit
Senior Lecturer, Faculty of Education and Human Development
Sultan Idris Education University, 35900 Tanjong Malim
Perak, Malaysia

Tirzah Zubeidah Zachariah @ Omar
Senior Lecturer, Faculty of Education and Social Sciences
Universiti Selangor (UNISEL). 45600 Bestari Jaya
Selangor, Malaysia

Eleni Karagiannidou
Research Fellow, HASS School of Education
University of Strathclyde, Glasgow G1 1XQ, United Kingdom

DOI: 10.6007/IJARBSS/v7-i4/2922 URL: http://dx.doi.org/10.6007/IJARBSS/v7-i4/2922

ABSTRACT

Problem-Based Learning (PBL) aims, among other things, to increase students' active learning and decrease their experience of passive learning which occurs in lectures. The focus of this study is on PBL methodology and academic achievement; this is because academic achievement is a core learning process and it also involves a problem solving process. This study employed a quasi-experimental design, where 45 students undertaking a B. Ed (Economics) were randomly assigned to the experimental (n = 23) and control groups (n = 22). The former were instructed using the PBL method while the control group used the traditional learning method. The study focused on comparisons between the PBL and traditional learning groups in respect of their Academic Achievement Test (AAT), a series of one-way between groups analysis of covariance (ANCOVA) tests, where pre-AAT was used as a covariate when looking at differences between the PBL and TL groups in mid- and post-AAT. For the effects of PBL on students' academic achievement as measured by an instrument, the AAT showed at baseline no differences exist between two groups. At mid-intervention and post-intervention test the PBL method yielded significantly higher Achievement scores, therefore indicating better students' academic achievement. It concluded the finding of the study supported the positive effects of PBL toward

students' performance in Economics Education in Malaysia. The students and lecturer also have a positive preferences and perceptions toward the PBL implementation.

Keyword – Problem-Based Learning, problem solving process, academic achievement, Economics Education

Introduction

PBL is defined as the learning that results from the process of working towards the understanding or resolution of a problem (Barrows & Tamblyn, 1980). Conventionally, Economics education programs normally use the one tier teaching method – teacher-centred approaches such as lectures and tutorials. Instructors periodically give lectures to disseminate knowledge and by the end of a study session or semester, an assessment is made of student performance, mainly based on examination. This is regarded as an important step in which students recall what they already know about a topic (Barrows & Tamblyn. 1980) to give them a context for learning (Norman & Schmidt, 1992; Schmidt, 1983). The current Economics education system in Malaysia has occasionally seen some variations in modes of performance assessment, but these have usually been limited to case studies, report submissions and presentations which do not depart from a teacher-centred approach (Md. Zabit, 2013). Some possibilities for strengthening the process of teaching and learning in higher education could involve taking advantage of educational technologies and the promotion of more student-centered learning, as these could produce more functional graduates (Radin Omar, 2011). Relevant to this is the Ministry of Higher Education's (MOHE) target of increasing the percentage of graduates in relevant employment six months after graduating from 74.1% to 78%. For that, all universities would focus on strengthening student-centered learning approaches such as: Outcome Based Education (OBE), PBL, Modular Approach and Case Studies in order to transform the students to outstanding individuals. From our understanding, to remain competitive in these times of changing educational needs, Malaysia must generate high value-added capabilities of higher instituitional graduates. As such, education institutions, including higher education institutions must produce confident students who can act to solve a problem, and then make a good decision.

Teaching Economics education in Malaysia

The criticism over the quality of Malaysian higher education among the graduates of Economics education could be symbolized by the critical feedback given by a prominent historian and local academician, Emeritus Professor Dr. Khoo Kay Khim, who stated the current education system causes significant problems in assessing the quality of graduates. He argued that lecturers and educators should not inform the students or provide tips about what would appear in the examination or how to answer questions; students should have to analyze the problems for themselves (New Straits Times, 2008, June 23).

According to Ng (2008), similar concerns have driven educational reforms in nations around the globe. For example, when our neighbour, Singapore prepared to overhaul its assessment system, their Education Minister, Tharman Shanmugaratnam, noted:

International Journal of Academic Research in Business and Social Sciences
2017, Vol. 7, No. 4
ISSN: 2222-6990

> *We need less dependence on rote learning, repetitive tests and a 'one size fits all' type of instruction, and more on engaged learning, discovery through experiences, differentiated teaching, the learning of life-long skills, and the building of character, so that students can... develop the attributes, mindsets, character and values for future success (Ng, 2008; p. 10).*

Generally, PBL is found to have positive values which are effective in the teaching and learning process, and become an alternative to the traditional methods of teaching and learning. The findings of previous studies have shown that through PBL, students are able to maintain information and ideas in the classroom for a longer time and without prejudiced issues of syllabus content or subject. In addition, these studies also reveal that performance on achievement tests is either similar, if not better than the achievement where non-PBL approaches were used. It proves that PBL is geared towards becoming one of the best alternatives to the traditional pedagogy.

PBL Learning and Academic Achievement

PBL existed as a methodology long before it was introduced as formal classroom concept (Boud & Feletti, 1991). The origin of PBL can be traced to the progressive movement, especially to Dewey's (1944) belief that teachers should teach by appealing to the students' natural instincts to investigate and create. This learning approach had spread to medical schools in North America, Europe, and Australia by the early 1980's and has since been adopted by schools of engineering, architecture, social work, law, and nursing among others (Boud & Feletti, 1997).

According to the McMaster model (Barrows & Tamblyn, 1980), the PBL method involves three phases: revealing problem scenarios; finding information; and discussing and applying new knowledge to the problems. Many studies have supported the effectiveness of the PBL approach on students' academic achievement (Tan & Ng, 2008; Yuan et. al., 2008; Major & Palmer, 2012; Chin & Chia, 2000; Neo & Neo, 2001; Ward & Lee, 2002; Kivela & Kivela, 2005; Yuan, et al, 2008; Masek & Yamin, 2012), but these studies are mainly in the field of science and technology, especially in the fields of medicine, nursing, the sciences, hospitality and engineering. The present study seeks to occupy a research space by applying PBL to critical thinking in Economics education. Tan and Ng (2006) stated that PBL premises on its emphasis of active learning through solving *'real-world'* problems as well as its multi-solution approach is likely to have an advantage if positioned as a pedagogical strategy for entrepreneurship education. Yuan *et al.* (2008) provided an explanation that PBL approach, in the context of nursing education actually increased students CT skill more than the lecture approach. They also examined the effect of PBL on nursing students' CT skills. They concluded that PBL students' CT skills did not appear to show significant great development in relation to the deduction, inference and evaluation subscale scores. This argument does not stand up as for many students, the types of active learning like PBL require an unusual experience. One method for assisting students in their learning understanding of the PBL process is to ask them

International Journal of Academic Research in Business and Social Sciences
2017, Vol. 7, No. 4
ISSN: 2222-6990

to reflect on the experience of PBL at key points in the process (Major & Palmer, 2001). This method allows students to analyze and find the solution to a problem rather than simply applying methods that are already known. Learning begins with a problem to be solved, and the problem is posed is such a way that students need to gain new knowledge before they can solve the problem.

PBL helped to promote deep approaches of learning instead of surface approach (Dochy *et al*., 2003; Biggs, 2003). According to Kivela and Kivela (2005) and Du (2006), after exposure to PBL methods, students demonstrated that they were able to take a more pro-active role in their learning, they more readily developed self-management skills in term of their own learning (Maddocks, 2004) and were more self-directed in their learning activities. Similarly the students talked about learning in PBL as being both fun and hard at the same time (Salleh *et al*, 2007; Barret, 2009). For example, group activities rated the highest out of the classroom activities that the students participated in. Qualitative feedback from the students also showed that they valued communicative and interactive learning activities more than the traditional lecture-led method of learning (Kivela & Kivela, 2005).

Additionally, Savin-Baden (2003) believed that PBL helped to develop criticality of learners and the students may be better able to integrate basic science knowledge into the solutions. A recent development in tertiary education involves the application of PBL as a curricular vehicle to develop student talent. According to Brownell and Jameson (2004), PBL has been used for a decade in one graduate management program. PBL capitalizes on synergies among cognitive, affective and behavioural learning. Although Management Education usually privileges cognitive learning, affective learning is equally important. Perhaps it is true that by focusing on real-world problems, PBL helps students appreciate multiple perspectives, recognize non-rational elements of decision making, and confront ethical quandaries. This does indicate that PBL is an effective method to encourage students to analyze and think critically. And it is hoped that by thinking critically, the students would not simply imitate existing Economics education methods, but would create and pioneer new approaches.
From this PBL review discussion, the types of problems and how these problems should be solved can influence students' thinking and how they gain knowledge. Specifically, problem and problem solving process are the main characteristics in PBL. Therefore, it can be used to explain both issues. Boud and Feletti (1994, p. 17) stated that the advantage of PBL is to help Economics education students to develop the ability for self-directed learning (SDL) in order to cope with the ever changing and increasing body of knowledge they will need to succeed as professionals

The Present Study

Aims

This research focuses on the implementation of PBL methods among lecturers to improve students' academic achievement using PBL methodology.

International Journal of Academic Research in Business and Social Sciences
2017, Vol. 7, No. 4
ISSN: 2222-6990

Research Questions

i. Does PBL influence students' academic achievement on Economics education?
ii. What are Economics education students' perceptions about the PBL implementation?

Setting and Participants

The intervention in this study was administered at the Faculty of Business and Economics, Sultan Idris Education University, Malaysia. The convenience sample comprised a group of final semester students undertaking the B. Ed (Economics). Students were randomly assigned into two different groups: PBL, the experimental group (n=23) and TL, the control group (n=22).

Data Collection, Instruments and Procedures

The instrument used to measure the students' performance in PEA3063 – Population Economics and Policy before and after the end of the experimental period [(week 7) – mid-semester examination and one week after end of intervention (week 15) - final semester examination] based on the knowledge which they have gained during the experiment. The questions for the pre-test were multiple choice and they contained 40 questions covering the Fundamental of Economic (Microeconomics and Macroeconomics) that was undertaken by the respondents in the previous semesters. The Fundamental of Economics test was developed by the subject lecturer specifically for this work. The main purpose of administering this pre-test was to investigate students' prior knowledge in basic of Economics for both groups before intervention.

The questions for the mid-intervention test are in the form of a short essay and structured questions such as; list, ranking, scale etc. Generally this questions form part of the mid-semester examination which included five topics of the subject syllabus (half of the syllabus – starting from week 2 until week 6).

The questions for the final semester test were designed by the subject lecturer with the help for the validity of the test content also from the expert on Population Economics and Policy**.** The mean scores were used to compare the performance of the PBL group and the TL group. This Achievement Test was developed with the help of subject lecturer. The test was in the form of criteria reference test based on the Bloom's Taxonomy (low cognitive or high cognitive). While designing this final test, the subject lecturer had referred to various sources like the PEA 3063 – Population Economics and Policy syllabus, main book reference, additional book reference, Internet and previous semester test. The test specifications table had been constructed based on 40% on knowledge level and comprehension, while another 60% was based on the application, analysis and synthesis of thinking skills. The instrument contained 40 multiple choice items, 10 structure questions and 3 essay questions.

In order to explore students' perceptions, the *"PBL Self-Assessment Questionnaire"* was administered to the students in the experimental group. For the closed-questions a five-point

Likert Scale was used, from Strongly Agree, to Strongly Disagree. Items were coded as relating to overall preferences and perception of PBL, benefits of PBL, motivation, effects of PBL on problem solving and thinking skills, and students' response toward thinking skills on PBL method. Students were also asked to respond to the open-ended question, *"please give your opinion as to how to improve the PBL method that you have already experienced".*

The *Lecturer Questionnaire* contained open-ended questions regarding the suitability of using PBL in teaching. Responses were coded according to themes that emerged during the analysis.

Data Analysis

To answer the Research Question 1; Does PBL *influence students' academic achievement on Economics education?,* an independent-sample *t* test was conducted to compare the two groups' academic achievement at pre-test, mid-intervention test and post-test. To support the results from an independent-sample *t* test, further analysis was conducted. It was decided that the researcher would conduct a series of one-way between groups analysis of covariance (ANCOVA) tests, where pre-AAT was used as a covariate when looking at differences between the PBL and TL groups in mid- and post-AAT. To test this, SPSS treated the scores on the prior-test as a covariate to control for pre-existing differences between the groups. Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances, and reliable measurement of the covariate.

The Student Questionnaire was analysed using descriptive statistics such as frequencies, percentage and mean (standard deviation). In analysing the responses to the open-ended question, the researcher made some changes and amendments regarding the terminology and translated into English the Malay language used by participants in the final report.

Results and Discussion

The Effectiveness of PBL Toward Students' Academic Achievement

As shown in Table 1, there was no significant difference between the PBL and the TL groups regarding the students' AAT at pre-test. On the other hand, significant differences in academic achievement were found between two groups at mid-intervention test and post-test. The PBL students' scored significantly higher in the mid-intervention test (M=74.30, SD=4.17) compared to TL group (M=68.50, SD=3.34). Similarly, in the post-test to (M=78.97, SD=5.80) compared to (M=71.05, SD=3.11), [t = 5.66, df=43, p=0.001 (two-tailed)]. These results conclude that, while at baseline (before intervention), no difference existed between the two groups, at mid-intervention and final intervention the PBL method was associated with significantly higher achievement scores, therefore, better students' academic achievement.

Table 1: *Students' academic achievement (mean and SD) at pre-test, mid-intervention test and post-test*

AAT*	PBL (*n* = 23) *Mean (SD)*	TL (*n* = 22) *Mean (SD)*	Mean difference	t-value (*df*)	Sig. (2 tailed)	Significance
Pre-test	74.65 (2.17)	74.40 (5.94)	0.243	0.184 (43)	0.855	n.s
Mid-Intervention	74.30 (4.17)	68.50 (3.34)	5.804	5.133 (43)	**0.001**	**Sig.**
Post-test	78.97 (5.80)	71.05 (3.11)	7.91	5.66 (43)	**0.001**	**Sig.**

Note:Each type of AAT was different in term of contents, difficulties index, weighted average and therefore scores on the tests conducted at the different time points were not directly comparable.

A one-way between groups analysis of covariance (ANCOVA) was conducted to compare the effectiveness of two different groups of interventions on their academic achievement at mid-intervention test and post-test. The scores in the pre-test were treated as a covariate. The use of well-chosen pre-test covariates could help the researcher reduce the confounding influence of group differences. The independent variable was the type of intervention or intervention group (PBL and TL). The dependent variable consisted of scores on the mid- and post-intervention tests on AAT, with the respective AAT pre-test used as the covariate in this analysis.

Before the analysis was conducted, preliminary checks were completed to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances,, and reliable measurement of the covariate. Analysis from Levene's test showed a Sig. value of .21, which was much larger than the cut-off value of .05. After adjusting for prior-test scores, there were significant differences between the two groups (PBL and TL) on mid-intervention AAT test ($F_{(1, 43)}$=30.93, p=.001, partial eta square=.424.). Looking at the means and SD for mid ATT from this analysis, PBL (74.3, SD=4.17) scored slightly higher than the TL group (M= 68.5, SD=3.35), even after controlling for pre-AAT.

Similarly, after adjusting for prior-test AAT scores, there were significant differences in AAT between the PBL and TL groups) on post-test scores ($F_{(1, 43)}$ = 43.73, p =.001, partial eta square =.51). Looking at the means and SD for post-ATT from this analysis, PBL (79, SD=5.8) scored slightly higher than the TL group (M=71.1, SD=3.1), even after controlling for pre-AAT. These

results showed that even after controlling for any potential differences in academic achievement before the intervention, there were still differences at mid-and post-tests between the two groups, PBL versus TL.

As already shown in the analysis of data, the students in PBL group showed higher achievement compared to the TL group in the AAT. It appears that the students in PBL group were able to make use of the subject contents learned and the information search activity also increased their understanding of the concepts learned. This is in line with the findings of previous studies whereby it was found that the PBL method was able to produce positive results for the courses including the Business subjects (Gabr & Mohamed, 2011; Kimberly et al, 2006; Martin et al., 2008; Sahin, 2010). On the other hand, the students in the TL group showed the opposite performance. At the pre-test stage, the achievement of two groups was almost similar. While there was an improvement in achievement in the PBL group, the TL group did not show an overall improvement. It is possible that students in the TL group, still bound by the rote-learning were less likely to apply teaching and learning, were more involved in high-level thinking such as analysis, problem solving and descriptive, especially for the end of the study subjects such as PEA3063 – Population Economics and Policy course. The increase in PBL students' performance in this study supports the research assumptions;

a. To solve the population economics and policy problem, the students must use declarative knowledge of the subject with analytically and creatively. Thereby, it will increase the students understanding toward the learning topics or subject.

b. The students were actively involved in problem solving process, where the knowledge was always applied to new situations. Therefore, the more involved the students were in the problem solving process, the more often students had to think about the topics or subject. It is anticipated that this process also increases students' understanding of the topics or subject.

Evidence gathered from the survey of students' views indicated that the success of PBL was partly due to the emphasis on problem solving strategies and processes in the subject of population economics and policy learning. The students had a chance to monitor the processes and discussions, generate hypotheses, analyze, predict, summarize and record the outcomes and think further about the solutions. This is in line with findings from Smith (2005) that support that such problem solving processed are relevant and should be used in teaching and learning in business subjects in particular.

The learning processes were quite different in the TL group. These students were taught mainly through lectures and tutorials and, therefore, might be described as rather passive learners. They were still being taught with the culture of individual learning, without making use of group discussions. It is anticipated that this results in fewer opportunities to develop CT skills among the students. As Kember (1996) and Frost (1996) support, the use of lectures or conventional

learning methods does not enable a change in the students' early perceptions about where knowledge is coming from (the tutor through a lecture or tutorial versus their engagement with discussions or debate with other learners). On the other hand, the learning and teaching approaches used in the PBL group require the students to understand in depth and utilize the contents of the main topics of the subjects. This then becomes the basis of problem-solving skills enabling the students in this group to become more skilled in utilizing and understanding the contents of Population Economics and Policy compared to students in traditional group.

The PBL method is consistent with the constructivist approach where students actively build their own knowledge through group discussions, interactions and the search for information. On the other hand, traditional students have less chance to explore and built their own knowledge, as knowledge is *"transmitted"* by the tutors, which produces different levels understanding of subject content (not as deep). This difference is also caused by rote learning in TL and higher order thinking implementation in PBL method. This might explain some of the significant difference in achievement between the PBL and the traditional group. This finding is consistent with other studies done by (Folashade & Akinbobola, 2009; Mokhtar et al., 2010; Selcuk, 2010; Yaman & Yalcin, 2005), all pointing in the direction of how the use of problem solving strategies can improve student achievement especially in higher order thinking question and problems (based on Bloom's Taxanomy). This finding is also in line with the Hierarchy of Learning identified by Gagné (1965) which classified the problem solving activity as a higher level of learning.

Based on the study by Schmidt (1984), problem analysis processes take place in small group discussions and stimulate the existing knowledge and, therefore, it becomes easier for students to assimilate, understand and memorize new information. According to Gijselaers and Schmidt (1990), the frequency of cognitive processes causes the knowledge to become reinforced in the long-term memory and this leads to in-depth learning. This in-depth learning is also reinforced when the idea or information is presented in a more meaningful context. The situational cognitive process which occurred in the PBL group discussions students had in this study created a more meaningful learning context and provided encouragement to acquire and look for new ideas and information which may be needed to solve the existing problem.

Gijselaers and Schmidt (1990) also agree that learning can also occur when the student faces a cognitive conflict based on previous learning experiences or the current learning situation. This conflict leads the student to apply self-directed learning or work with their friends in the group to solve the problem using information searching, discussion and brainstorming to get the best results.

At the beginning of the intervention, as some students reported, they did not appear to be used to the implementation and solving of case studies using PBL. However, after they had been given time and a briefing on how to use PBL, this seemed to help them to identify and solve the problem. When the learning of PEA3063 – Economics Population and Policy was related to

everyday situation and current issues, the students in the group were motivated to learn (Gabr & Mohamed, 2011; Naznin et al, 2008). The guidelines and explanation given to the students in the early intervention had helped them to apply and to organize the steps on how to solve the problem effectively. This in turn helped the students to think continuously, systematically and critically. The lecturer or facilitator also played a part in assisting and providing stimulation to the students especially in understanding the questioning concept in PBL. As such, the students were able to acquire new concepts and knowledge via the solving of problems. They were able to apply existing knowledge and current knowledge in finding the answers and solving the problems given.

For a PBL group to work effectively, every member should be involved in the problem solving process. Even though some members' contribution might be small, it can still be very useful to them in the discussion session whereby they have to explain and justify the suitability of the ideas. According to Moust et al (1986), the students have to explain covertly although they may seem passive at first and this is supported by Geerlings (1995), who stated that if the students learned in a problem-based environment, they would need to participate actively to process ideas or information based on the problem itself.

As stated by Schmidt and Moust (2000), students in a PBL environment would adapt their existing knowledge to the problem presented and then try to solve and provide a logical explanation. According to De Grave et al (1996) a change of concept (theory building, and to a lesser extent, data exploration and meta-reasoning) also occurs in PBL due to the suggestions and opinions given by the members in the discussion group. Due to this, PBL has been identified as being able to maintain knowledge for a longer period compared to TL. Even though the effects on their learning might not be as evident at the beginning, PBL effects on student learning become more evident when they are able to process the information and ideas more effectively and in detail.

Another effect of the PBL implementation is related to the fact that the students were able to identify any gaps in their knowledge and they tried to fill them in by using information search and ideas from many sources. According to Du (2006) and (Silen, 2009), active learning in PBL leads to self-directed learning. The need for problem solving leads the students to integrate their existing knowledge with new knowledge acquired through information or ideas searched. Using this method, the students not only learn using facts but they are also involved in looking for relevant information and ideas for solving the problems. Indirectly, deep-learning is stimulated to develop the students' ability to draft and organize declarative knowledge in the subject that they are studying.

Qualitative Data: Perceptions of the Students

The findings from the student questionnaire showed that students reported that learning through PBL was easier than learning by the conventional methods; students also reported that they enjoyed this learning method. Additionally, when they were introduced to a new

International Journal of Academic Research in Business and Social Sciences
2017, Vol. 7, No. 4
ISSN: 2222-6990

challenging environment and methodology of learning like PBL, they felt uneasy and a bit overwhelmed, but learning through PBL was reported to be more fun.

The lecturer agreed that;

> *"PBL is a good method because this method encourages the students to use thinking skills in the learning process"*. He also *indicated that:*
>
> *"PBL is more focused on students' diligence and attention to solve and handle the given problems" and that "PBL helps to make the students less bored. They need to become always aware, and it is more effective to study either individually or in groups".*

This point is also supported by comments from one of the students:

> *Through PBL we can present our ideas without any constraints and obstructions. We are free to voice out our opinions. Not afraid of mistakes or criticism from lecturers. Furthermore this method is more fun. (Student A)*

Statements suggested that in the early stages, adjusting to PBL created some problems for some students, but that overall they eventually came to enjoy doing the activities and working in discussion groups.

> *Not sure what to do at first stage. But the lecturer was nice and knew how to get us interested. It became quite fun...in the normal class we just listened to what the lecturers said while copying the notes. But with this method we had to do on our own. We had to search for something ourselves. We had to discuss in the group. In this way, we know what to do and what to answer. This was a challenge to us! (Student C)*

In general, students who were involved in the PBL method felt that they were encouraged to think and they believed that their thinking skills had improved after experiencing this method of instruction.

The students also experienced meaningful interactions with their group members on how to solve problems, to discuss, to explain their ideas and present them to other group members. This was because they managed to use their critical thinking to generate related ideas in solving their course problems; this finding aligns with that of Suleiman (2011). Additionally, some of the Economics education students said that these learning activities helped them to think in terms of cause and effect for every problem they considered, a point also made by Sulaiman (2011). Thus, it seems that PBL appeared both useful and enjoyable to the students, even though it was a new approach and difficult at the early stages, and that PBL was able to foster and attract students to become active learners.

In this study, the PBL tasks were implemented only within the specific groups. The following statements indicate not only that the students were enthusiastic but also that they felt it would be useful to extend the activities among groups to facilitate transference of knowledge.

> *...if we have been given an opportunity to discuss not only among members of the group, but with other people. With this new approach, we did not get bored...(Student B).*

> *I hope the activity is not 100 percent with friends in this group. If possible, let us do the activities with friends in the other groups...then we can get many ideas, many approaches to solve the problem of how the lecturers want to...furthermore, we have a fun time when we present the results (Student C).*

One student even suggested that the approach could be extended beyond the specific subject:

> *I think this method has to be applied widely. Not only in this subject. Maybe for all courses even though it may be hard in the beginning, even better if we can do it across the faculty or stream. Not only in certain subjects. The university has to think about this.(Student D)*

The opportunities and use of PBL as a teaching and learning methodology are wide and it could prove to be a time-saving method to combine a number of topics or issues in one PBL problem. For example, a case study involving issues related to birth and population rate could be combined with population mortality, potentially leading to greater awareness not only of both issues, but of how they relate to another.

Other suggestions made by students to improve the process also indicate their engagement with the process. For example:

> *Maybe it would be possible if the assignments are given much earlier. Not during class time...even better if they are uploaded in MyGuru (UPSI e-learning portal). A week or maybe two weeks ahead! So that when we enter the class we have an idea of what to do and we can give better commitment and finish our tasks better. (Student C)*

> *...although the lecturer sometimes had explained in detail what we had to do, it was not enough. This was the first time we had been exposed to the PBL approach in detail, before this we only heard what PBL was? If possible we need enough time to do the report...because we also need to do for other subjects as well! (Student F)*

Clearly, this shows that students need more time to adapt the required procedures of PBL. The lecturer involved in this study clearly realized this:

The students need quite a lot of time to solve the activities given. It's a pity for them because they complained that they have a lot of tasks for other subjects…but they said that they are interested and happy with the method. Only they didn't have much time. That's what they said…

Qualitative Data: Perceptions of the Lecturer

The lecturer involved in conducting the PBL sessions also had the same opinions with students in relation to time constraints:

... easier if the topic of the syllabus was consolidated in the case studies during given to the students. They will be able to learn and resolve the issues in a single task only. But, I had a problem, maybe how to get the ideas to create and repair the case studies. I also faced time constraints while preparing this case study.

In fact, if studied in depth, PBL can be used to coordinate various subjects, which can be combined and taught or presented simultaneously. Through this approach, students continued to apply content knowledge and skills in advance without depending on the lecturer to present and explain content and skills. For example, the syllabus content of the topic or subject can be combined with problem-solving skills or thinking skills.

The lecturer had a good impression towards the PBL implementation. The lecturer felt that students in the PBL group became more responsible and actively involved in the learning process, and reported that students used their mental and physical abilities in the PBL activities and gained intra-personal and inter-personal skills. However, the intervention still used the detailed and compact syllabus of the original Population Economics and Policy course and was more focused towards an assessment based on examination. The effect could be that the lecturer/facilitator was forced to finish their syllabus. In addition, the implementation of the study was only during the semester (14 weeks) and this could be considered both quite short and a considerable time constraint.

The lecturer also shared the suggestion that they needed more training regarding the PBL implementation and process to make sure this approach could be implemented properly and effectively. This implies that the lecturer should also be given enough time to design or create the case studies to be used by the students. This would also enable the lecturer/facilitator to more fully appreciate the implementation of the PBL method.

According to the lecturer, the students need to have early preparation and basic background knowledge before the implementation of PBL. The students share a common perception and experience of rote learning via the conventional approach. Therefore, in the early stage of PBL

implementation, students take time to become accustomed to this learning method. If this barrier can be avoided, perhaps a better result could be achieved.

Overall, with suitable and sufficient training for the lecturer and students, it seems that PBL methods can be used to stimulate students' CT skills and actively involve them in the learning process.

Conclusion

The researchers believe this was the first study in a Malaysian context to explore the effectiveness of integrating PBL in an Economics education program. The findings suggest that the students took the opportunity through a PBL approach to improve their academic achievement, develop inter-personal and intra-personal communication skills, and learn how to deliver their own opinions and judgments effectively. These are important characteristics for life in the modern world. Based on these indications, the research and the results of this study may act as a point of reference and guideline for the implementation and the effectiveness of the PBL approach in related studies on student academic achievement in Economics education programs. Doing so would contribute to the Malaysian government's plans to produce a highly skilled workforce with excellent academic achievement and performance. It concluded that the study findings supported the positive effects of PBL toward performance in academic on Economics education in Malaysia. The students and lecturer also had a positive preferences and perceptions toward the PBL implementation.

Corresponding Author

Mohd Nazir Md Zabit
Senior Lecturer
Faculty of Education and Human Development
Sultan Idris Education University
35900 Tanjong Malim
Perak, Malaysia
Email: mohd.nazir@fppm.upsi.edu.my

References

Ali, B., & Abdul Kader, Sharifah Zubaidah (2005). PBL: Impact on communication skills for law students. *International Conference on Problem-Based Learning: PBL in Context – Bridging Work and Education*, 9-11 June 2005. Lahti, Finland. Tampere: Tampere University.

Barrows, H. S., & Tamblyn, R. M. (1980). *Problem-based learning: An approach to medical education*. New York: Springer.

Berkson, L. (1993). Problem-based learning: Have the expectations been met? *Academic Medicine*, *68*, S79-S88.

Bernstein, P., Tipping, J., Bercovitz , K. & Skinner, H. A. (1995). Shifting students and faculty to a PBL curriculum: Attitudes changes and lessons learned. *Academic Medicine, 70*(3), 245-247.

Beyer, B. K. (1991). *Teaching thinking skills: A handbook for secondary school teachers*. Boston, MA: Allyn and Bacon.

Bonwell, C. C., & Eison, J. A. (1991). Active learning: Creating excitement in the classroom. Washington, DC: *ASHE-ERIC Higher Education Report No. 1*.

Boud, D., & Feletti, G. I. (1991). *The challenge of problem-based learning*. London: Kogan Page.

Boud, D., & Feletti, G. I. (Eds.). (1997). *The challenge of problem-based learning* (2nd ed.). London: Kogan Page.

Case, R. (2005, Spring). *Education Canada*, *45*(2), 45-49.

Chin, C. & Chia L.G. (2000). Implementing PBL in biology. Problem-based learning: Educational innovation across disciplines. *The 2nd Asia Pacific Conference on PBL*, Temasek Polytechnic, Singapore.

De Grave, W. S., Dolmans, D. H. J. M., & van der Vleuten, C. P. M. (2001). Student perceptions about the occurrence of critical incidents in tutorial groups. *Medical Teacher 23*(1), 49-54.

Dewey, J. (1944). *Democracy and Education: An Introduction to the Philosophy of Education*. New York: The Free Press.

Duch, B.J., Groh, S.E. and Allen, D.E. (2001). *The Power of Problem-based Learning*. Virginia: Stylus.

Hendry, G. D., Ryan, G., & Harris, J. (2003). Group problems in problem-based learning. *Medical Teacher, 25*(6), 609-616.

Hitchcock, M. A., & Anderson, A. S. (1997). Dealing with dysfunctional tutorial groups. *Teaching and Learning in Medicine, 9*(1), 19-24.

Hmelo-Silver, C. E. (2004). Problem-Based Learning: what and how do students learn? *Educational Psychology Review*, *16*(3), 235-266.

Kinnunen, P., & Malmi, L. (2005). Problems in problem-based learning - experiences, analysis and lessons learned on an introductory programming course. *Informatics in Education*, *4*(2), 193-214.

Kivela, J., & Kivela, R. J., (2005). Student perceptions of an embedded problem-based learning instructional approach in a hospitality undergraduate programme. *International Journal of Hospitality Management*, *24*(3), 437-464.

Masek, A. & Yamin, S. (2012). The Impact of Instructional Methods on Critical Thinking: A comparison of problem-based learning and conventional approach in engineering education. *ISRN Education, (vol. 2012).*

Md. Zabit, Mohd. Nazir. (2013). *The Implementation and Impact of Problem-Based Learning on Students' Critical Thinking Skills in Teaching Business Education in Malaysia.* Published EdD Dissertation, HASS School of Education, University of Strathclyde, UK.

Mohd Majid, K, Khatijah, Y & Sidek, A. A. (2008). Human capital development: Soft skill initiatives at Universiti Putra Malaysia. *Journal of the World Universities Forum*, *1*(4), 89-98.

Neo, K. & Neo, M. (2001). A constructivist learning experience: Reconstructing a web site using web based multimedia authoring tools. *Australasian Journal of Educational Technology, 17*(3), 330-350.

New Straits Times. (2008, June 23). *Education system to blame, says professor*.

Ng, P. T. (2008). Educational reform in Singapore: From quantity to quality. *Education Research on Policy and Practice*, *7*, 5-15.

Norman, G. R., & Schmidt, H. G. (1992). The psychological basis of Problem-Based Learning: A Review of the Evidence. *Academic Medicine, 67* (9), 557-565.

Radin Omar, R. S. (2011, speech). *Universiti Putra Malaysia Vice Cancellor speech at 2010 Putra Academic Grand Ceremony [Naib Canselor Universiti Putra Malaysia pada Majlis Gemilang Akademia Putra 2010 (MGAP10)],* UPM Serdang.

Schmidt, H. G. (1983). Problem-based learning: Rationale and description. *Medical Education, 17*, 11-16.

Siegfried, J. J., Bartlett, R. L., Hansen, W. L., Kelley, A. C., McCloskey, D. N., & Tietenberg, T. H. (1991). The status and prospects of the economics major. *Journal of Economic Education 22,* 197-224.

Sulaiman, F. (2011). *The effectiveness of problem-based learning (PBL) online on students' creative and critical thinking in Physics at tertiary level in Malaysia.* PhD dissertation, Centre for Science and Technology Education Research, University of Waikato Hamilton, New Zealand.

Torp, L., & Sage, S. (2002). *Problem as possibilities: Problem-based learning for K-16 education* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Utusan Malaysia (2011, February 28). *UM: Inggeris diutamakan (UM: Where English is given priority)*. Utusan Online.

Ward, J. D., & Lee, C. L. (2002). A review of problem-based learning. *Journal of Family and Consumer Sciences Education, 20*(1), 16-26.

Yuan, H. B., Kunaviktikul, W., Klunklin, A., & Williams, B. A. (2008). Improvement of nursing students' critical thinking skills through problem-based learning in the People's Republic of China: A quasi-experiment study. *Nursing and Health Sciences, 10*, 70-76.