



## Problem-Based Learning in UNIMAS

# Contents

- 4** PBL in Faculty of Medicine and Health Sciences
- 6** My First Experience in Handling Problem-Based Learning
- 10** My Reflections on the First Time I Implemented Problem-Based Learning
- 12** Implementing In-Class Problem-Based Learning in Ecology Course
- 15** Problem-Based Learning: The Case of ARW
- 20** Problem-Based Learning for Marketing Seminar (EBP3043)
- 22** PBL Implementation: An Experience of the Faculty of Cognitive Sciences and Human Development

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### Dean's Message

I wish to welcome all readers to Volume 27, the second issue of INSIGHT for the year 2015. On behalf of CALM, I also wish to welcome all members of our academic community to the new 2015/2016 academic session. CALM is committed to providing the best teaching and learning support and academic professional development opportunities to enable our academic community to experience another significant and meaningful teaching and learning journey.

This volume of INSIGHT focuses on Problem-Based Learning (PBL) in UNIMAS. PBL is a student-centred pedagogy in which students gain knowledge and skills by engaging in challenging, open-ended problems. Students often work collaboratively to examine and discover meaningful solutions to the problems while instructors play the role as facilitators to guide the learning process and to encourage inquiries among students. PBL nurtures the development of critical and creative thinking, problem solving skills and the ability to apply knowledge and skills to different situations or contexts.

In this issue, we are delighted to share seven articles that reflect the theme. The medical programme is the first and only programme in UNIMAS that fully adopts this instructional method since two decades ago. Assoc Prof Dr Ashley, who is very much involved in imparting the knowledge of implementing PBL to UNIMAS academics through various academic professional development programmes organised by CALM, provides a detail description on how PBL is implemented in the Faculty of Medicine and Health Sciences in the first article. Today, PBL is adopted and adapted by many other courses across the different faculties of the university. Mohammad Azhari shares his experience and challenges in

employing this approach for a generic course. The subsequent two articles are contributed by two senior lecturers of the Faculty of Resource Science and Technology, Dr Rebicca and Dr Chong. The experience shared by them provides additional evidence on the feasibility of using this instructional method in Science subjects and their reflections provide a worthy input to those who are interested in embarking on this student-centred pedagogy. Dr Joseph writes about his PBL implementation in an English Language course and the last two articles are contributed by two PBL master trainers of UNIMAS who have received a series of training on PBL at AKEPT. Dr Norizan of the Faculty of Economics and Business shares her experience in implementing PBL in two courses on marketing and the write-up by Wan Norizan of the Faculty of Cognitive Sciences and Human Development offers a good insight into commitments and support that are crucial to ensure successful PBL practices.

Last but not least, I would like to thank all contributors to this issue. I hope that this INSIGHT issue will enable all readers, particularly lecturers, to gain a better understanding of this instructional method and to consider the possibilities of practising it in the near future to enrich our students' learning experience. The theme for the upcoming INSIGHT issue (Vol. 28) is Globalised Online Learning (GOL): What, Why and How. Articles may focus on, but not limited to, examples on the use of GOL; production of GOL materials; strategies and experiences of engaging students in GOL environments; methods of assessment for GOL; and findings of research studies related to GOL.

Thank you and happy reading!

# PBL

## in Faculty of Medicine and Health Sciences



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The shift towards learner-centered educational models is due to the rapid evolution in medical education. Problem-Based Learning (PBL) is one form of student-centered learning. Some five decades have passed since PBL was conceived at the Faculty of Engineering, McMaster University in Canada and implemented at the Faculty of Medicine, in the same university. The adoption and adaptation of the McMaster PBL model was to follow at the University of Maastricht in the Netherlands, the University of

PBL is an instructional methodology that has the ability to train students to become active, independent and lifelong learners.

Newcastle in Australia, and the University of New Mexico, USA. Together these four institutions contributed towards an important educational movement that has a profound influence in the many aspects of students' learning experiences worldwide. PBL has been adopted, adapted and improved at the Faculty of Medicine and Health Sciences (FMHS) in Universiti Malaysia Sarawak (UNIMAS) since the establishment of the faculty in 1995. Currently the Ministry of Higher Education of Malaysia is encouraging all faculties in institutions of higher learning to conduct some form of student centered learning approach.

PBL is implemented at FMHS, UNIMAS in three phases: introduction of trigger, gathering of information pertaining to the learning needs of the trigger and discussion of the newly gained knowledge pertaining to the learning needs of the trigger. The trigger introduction is usually done on Monday and the discussion, on Friday. It was noted that the students generally spend approximately 1-2 hours on Monday and 2-3 hours on Friday for the face-to-face component of PBL. Each PBL group session is facilitated by a trained PBL staff. The facilitator's duty is to be present during all group activities to monitor, assess and provide immediate feedback. This session takes place in a PBL room which is designated for PBL related activities. Each PBL group utilises a roundtable format discussion room. In addition, the faculty provides each PBL room with a standard mobile white board, a pull down screen, a LCD projector, a direct video projector, a locker cabinet and a desktop computer. The students are also able to use free wireless fidelity (Wi-Fi) and their own ICT devices such as laptop, iPad, Tablet PC and smart phone.



The PBL process begins with identifying difficult terminologies, followed by gathering of facts and generating ideas and lastly forming the learning needs to bridge the knowledge gap so that the problem is better understood. All these done under the guidance of a PBL facilitator. During the Friday PBL discussion sessions, the students would bring teaching and learning aids in the form of anatomical models, charts and other materials to facilitate their discussion. Typically a PBL group may consist of 9 or 10 students. The students are divided into groups based on several criteria. Such as gender, ethnicity, state of origin, Malaysian University English Test (MUET) band scores and medical programme entry level academic achievement as equally as possible.

Between Monday morning and Friday afternoon, the students are given sufficient self-directed learning (SDL) hours to gather information regarding the learning needs of the trigger. In the medical programme's weekly time table, a minimum of 8-10 hours are designated for SDL activities between Monday and Friday. The students will encounter a new trigger per week in the medical core course in Phase I of the medical programme in UNIMAS.

In between the PBL sessions, the students are also given pertinent lectures to supplement the PBL curriculum. The medical programme is based on organ-system curriculum. When the students first join the medical programme, they undergo a two-day PBL student workshop. During the workshop, the students are introduced to the concept of PBL, the roles and responsibility of students in PBL curricula, the roles and responsibility of the facilitators in PBL and the Faculty's expectations. The students are also exposed to a simulated PBL followed by a video presentation of the implementation of PBL in the faculty.

The medical faculty conducts PBL as an educational philosophy. It would be a daunting task to emulate this feat in the other faculties at this stage in UNIMAS. If at all a faculty intends to follow FMHS, it requires a massive revamp to its existing curricula to introduce PBL as a philosophical approach, improve teaching & learning infrastructures, streamline student intake, and invest on changing the mindset of staff towards PBL while providing them with intensive PBL training.



PBL is an instructional methodology that has the ability to train students to become active, independent and lifelong learners. Implementing PBL at higher level education has many benefits. The ability to retain knowledge, enhance problem solving skills, ability to integrate theoretical knowledge to applied knowledge and to promote independent plus lifelong learning skills are some of the positive attributes that are acquired by a student through PBL. In order to harness these positive attributes, the other faculties can adopt and adapt PBL into their existing curriculum. In this volume of Insight, we have selected views from practitioners of PBL in various other disciplines in UNIMAS. PBL can also be conducted in a large classroom, known as Classroom-PBL. Although there are many barriers to breakthrough, the adoption of PBL as an educational tool in UNIMAS is sprouting healthily.





**I** applied Problem-Based Learning (PBL) in Tamadun Islam dan Tamadun Asia course (TITAS). This course is a generic course (university course) and compulsory for all first year students. I coordinated the course in Semester 1 (2012/2013). My class consisted of 146 students from the Human Resource Development programme. The course introduced students to the study of Asian civilizations. It discusses academic approaches to civilization, historical interactions among various civilizations (Malay, Chinese and Indian), the role of Islam in Malay civilization and in contemporary Malaysia, issues in Islamic

## My First Experience in Handling Problem-Based Learning



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and Asian civilizations and nation-building. The approaches for this course included lectures, group discussions, self-directed learning and assessments (presentation, group assignment, log book, and written examination). I chose PBL approach for “Isu-isu Semasa dan Masa Depan” learning unit. It was a great experience and a tough situation as well due to the large number of students. The goal was to develop positive learning engagement among students through PBL, a new pedagogical approach in teaching and learning for TITAS course at my faculty. It is usually conducted in programmes with small enrollment, and requires adequate teaching and learning resources (lecturers, PBL rooms, PBL course manual, and positive PBL environment) such as the Medical Faculty in UNIMAS.

I came to know about PBL when I did my Postgraduate Diploma in Teaching and Learning (Cohort 9). One of the modules taught was Student-Centered Learning and PBL was one of the learning units taught in the module. It was a remarkable exposure and experience to develop a lesson plan for my TITAS course during the PBL workshop. Another reason for my confidence to embark on PBL approach is because I have good knowledge of the course.

Preparation for PBL engagement must be planned properly so that a good learning process can be developed for the students. The goal for my PBL engagement with the students was to generate and build an active, assimilated, integrated, and collective learning process. It has to be consistent in the bid to encourage students in understanding and applying knowledge in the cognitive domain and learn to appreciate and value the knowledge in the affective domain.

The main objectives of my PBL Session in TITAS were to enable students to discuss challenges of moral issues in Muslim society and Asian civilizations, relate challenges of civilization and human rights, and discuss current issues in the world. The learning outcomes include students’ ability to explain the types of challenges faced by Muslims and Asians, and discuss the relevance of acceptance and tolerance of different values among individuals and community.

As for the learning needs involved in my lesson, I referred to Islamic and Asian Civilization resources (evaluation based on religions, social and cultural perspectives), laws (shari'ah and civil), human rights (concepts and practices in Malaysia and internationally), and challenges in modern civilization. The trigger presented has to link with the objectives and outcomes of the lesson, learning units of the course as well as the course assessments.

An ill-structured trigger scenario was used to motivate students to engage in PBL. Figure 1 shows the trigger scenario which was taken from a news archive. Students were encouraged to utilise their prior knowledge as well as to clarify and search the meaning of the presented problem. They were encouraged to ask questions if they did not understand. Throughout this phase, students were able to gain new perspective as active discussions took place.

I decided to choose a trigger based on a current issue highlighted in printed media which revolved on lesbian, gay, bisexual and transgender (LGBT) issue. LGBT is a controversial issue discussed in the Muslim society and also the world.

www.sinarharian.com



## Kes poster anti-LGBT 21 Jun

KUALA LUMPUR 7 Mei - Mahkamah Magistret di sini menetapkan 21 Jun ini perbicaraan kes terhadap lima lelaki yang didakwa menampal poster antilesbian, gay, biseksual dan transgender (LGBT).

Tarikh itu ditetapkan oleh Magistret Sulkipi Abdullah ketika sebutan kes itu di hadapan beliau hari ini.

Timbalan Pendakwa Raya, Hadimah Siri sebelum itu memberitahu bahawa kesemua dokumen berkaitan kes tersebut telah lengkap dan akan diserahkan kepada pihak pembelaan.

Muhammad Nazam Ali, 24, Hamzah Mahmood, 30, Mohd. Norzain Che عثمان, 31, Shahir Saarani, 30, dan Mohd. Jamil Jamaluddin, 38, dibicarakan setelah mengaku tidak bersalah atas pertuduhan itu ketika pertama kali dihadapkan ke mahkamah pada 26 Mac lalu.

Figure 1: Trigger of the PBL

“...discuss the topic outside classes to develop their self-directed and inquiry learning skills”

To begin, I discussed the rules and procedures in PBL method with the students. I shared with them the essentials of teamwork, critical thinking, brainstorming and communication skills. This was done to create self-awareness among students so that the learning process would be more productive. The objectives and learning outcomes were clearly spelled out to the students.

Trigger questions were presented to my students as a way to develop their learning engagement. Among the questions were, ‘Why do they have to be penalised in court?’; ‘What was their fault?’; ‘Were they considered criminal?’; ‘How did Malaysians react to the LGBT issues in terms of acceptance?’; and ‘What are your perspectives on LGBT issue?’. In this context I offered a learning path to students, guided them and not to direct them.

The facts presented on the trigger were LGBT, magistrate court, 5 men were arrested and punished because of their action in putting up on anti-LGBT poster, and they were Muslims. Students



were required to generate ideas based on facts consisted in the problem, discuss the facts and idea based on the references, and relate the issues discussed with the learning outcomes of the unit studied. Students found the trigger interesting and they showed good responses to engage in learning. On top of that, they were able to construct hypotheses based on the problem, assembled different possibilities, and gained new direction and information which contributed to more in-depth understanding and knowledge on current issues in modern civilization.

I instructed the students to discuss the topic outside class time to develop their self-directed and inquiry learning skills. I played the role of a facilitator and an observer and did not give direct solutions or provide answers to the problem presented. They searched for information from many resources such as electronic and printed media (websites, magazines, newspapers, blogs), acts and statutes, laws books (shari'ah and civil), academic articles, research on human rights, religious perspectives and civilizations, and interviews with experts in the related areas.

Based on my experience, I would like to share some of the challenging situations while conducting PBL. This method was new to me and this was my first attempt to implement it in my course. I believe trying it has further convinced me of the PBL approach.

Assessment is the heart of the PBL process. I requested my students to do self-evaluations and record them in their log books. At the same time, they also did team and peer evaluations. The quality of their PBL engagement was discerned through the dynamics of the team as a whole as well as the contributions of each teammate. Table 1 summarises some of my ways to handle various situations during my PBL session.

PBL approach is an effective method for a small group of students. If there are several facilitators delivering the same course, they should have mutual consensus as a team as well as having the same schedule. In my case, PBL can be applied but not entirely. It was a matter to attempt and to stimulate students understanding to make problem solving as a way for knowledge acquisition and developing cognitive abilities in terms of reasoning, critical thinking, problem solving and decision making. With my experience in handling PBL, I would recommend the practice of PBL among academics. Overtime, practitioners will develop competency and strategies for continuous improvements in creating an excellent student-centered learning environment.



Situations	Ways to handle
Some students showed less interest in PBL activities	Tried to explain the advantages of PBL  Told the students that the discussions done during PBL would be covered in their examination as a way to make them feel more interested.
Lack of preparation by students	Asked students to show their log books and records of their progress on PBL discussions.  Introduced a Reward and Merit system to motivate them.
Discussions were not relevant to the problem	Provided a comprehensive guidelines to the facilitator  Tried to redirect the discussion to the right track.
There were students who dominated the whole discussion	Facilitator tried to intervene at the appropriate time.  Invited other students who did not give feedbacks and opinions.
Clashes of opinions which brought to disagreement	Facilitator intervened and asked them to justify opinions to encourage positive discussion.
Class size	Put them in small groups (ten per group) and appointed a leader in a group to assist me in reporting the progress. It was not really practical because I did not have other facilitators to assist me at that moment.
Class structure	The nature and structure of the class did not allow me to stay in one group and observe them intensively. Ideally, every group has to be in one PBL room, and supervised by one facilitator. However, the class structure and facilities did not allow me to do so. Therefore, I allocated only few minutes to every group in order to listen to their feedbacks.  Asked the groups to send any additional queries via email.
No other facilitator	Adopted and adapted PBL to suit the situation.
Time limits	Focused on certain topics and not for the entire course.

Table 1: Ways to handle various situations



I came to know the problem-based learning (PBL) approach while taking up the UNIMAS Postgraduate Diploma in Teaching and Learning back in 2012. Armed with the information and knowledge of PBL, I thought it would be great to implement it into my teaching. Little did I know the hurdles to design the problem, understand students metacognitive skills and my readiness for this approach.

The course that I had chosen to apply PBL approach is Plant Physiology course. The Plant Physiology course is intended for first-year students. It is the study of how the plant functions. The course introduces the basic functions of plant cell, interaction of hereditary and environmental factors and the various physiological processes occurring in the plant. Therefore, my first challenge in the implementation of PBL was to design a good PBL problem or the trigger. I came to realise that the initial PBL problem that I have designed did not trigger the students' interest as it was not a real-world problem. The problem was quite straightforward and it did not stimulate the students' critical thinking as expected.

In the class of 50 students, the PBL problem was designed from a book and it was implemented for two weeks. I placed students in groups of 5 and each group was given a similar PBL trigger. For all groups, I would briefly explain the problem and provide them the related reading materials such as online journal articles and Internet links. Every group had to present to the class the possible responses to the problem. There were intra-group discussions and peer reviews based on the presentations and I would sum up the discussions at the end. The session usually took about two hours per week. While students were working in their respective group, I often offer assistance to groups that seemed to be struggling with the problem.

I noticed that students who had not yet been taught certain topics which were needed and related to solve the problem, struggled to reflect on certain issues. One major disadvantage that I observed was that some weak students did not contribute actively to the group discussions and had chosen to remain quiet. Students are required to have some metacognitive skills to solve any given PBL problem. Some of the skills are on how to analyse the problem, strategy to come up with the solution and reflecting the current approach. Most of the students who were taught via the 'teacher-centred' way in secondary schools showed lack of these skills on attending tertiary education. When this group of students are not equipped with metacognitive skills, it is difficult for them to follow the PBL approach. I also observed that it was difficult to get students to speak up in a group, especially when they are not sure.



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## My Reflections on the First Time I Implemented Problem-Based Learning



*A group of students while presenting their possible solutions to their trigger.*

While reflecting on my readiness for the PBL approach, I often asked myself what do I do when I facilitate? I know for sure as a facilitator, I must have a good communication and social skills and also have a sincere interest in my students' learning. One of the most challenging and difficult aspects in the implementation of PBL is to understand and practise my role and function as a facilitator, in order to support students in their learning. In the class of 50 students, I walked around the class during group discussions to provide assistance. But I did not know how to encourage students to share and build on the information that they have gathered. I would only direct them to the predetermined 'answer'. I also did not know how to encourage team ownership and collaboration especially for groups which were quiet. I merely asked them to focus and distribute work among themselves. All this while, I was exposed to various instructional strategies and techniques for teaching, but not on facilitating a learning activity. Hence, I felt the need to re-train myself on how to facilitate and support students' learning.

In my opinion, PBL can bring benefits to students' life-long learning in the long run. Students can be prepared for challenges in the future as well. As a facilitator, I need to well-equipped myself with the facilitating techniques and getting more training and support through workshops and seminars.

**“as a facilitator, I must have a good communication and social skills and also have a sincere interest in my students' learning.”**

## Implementing In-Class Problem-Based Learning in Ecology Course

**P**roblem-based learning (PBL) is an educational approach to provide students with the opportunities to learn problem-solving skills and develop critical thinking skills via self-directed learning approach. During PBL, students engage in active in-class and off-class discussions, practise higher order thinking and communication, as well as promote team building and collaboration. The lecturer's role is shifted to become a facilitator to ensure that students work in small groups to achieve their learning goals and have the ability to manage and present the knowledge gained throughout the PBL process.

The concept of PBL approach and how it could be conducted in a classroom setting was introduced during the Student-Centred Learning Module, while I was attending the UNIMAS Postgraduate Diploma in Teaching and Learning. In addition, knowledge sharing with colleagues, who have enormous experience in conducting PBL in several other taught courses under Animal Resource Science and Management programme, gave me an eye-opening experience on the benefits of this teaching approach.

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The first classroom-based PBL was initiated in a class of 51 first-year students taking Introduction to Ecology course. This is the first PBL session created as a part of the innovative teaching-learning approach for this course. Apart from PBL, there are other approaches previously incorporated in this course. These include project-based field study at different ecological sites, group presentations on selected topics, a variety of class activities that include newspaper cutting, think-pair-share, mind-mapping, etc.

In conducting PBL for this course, several steps were involved during the process: briefing on PBL implementation by facilitator, group-setting, PBL trigger session (terminology, facts/problems finding, idea generation, and learning-needs identification), action plan via self-directed learning, PBL discussion session, assessment and reflection.

Devising a good PBL trigger is not easy. A good trigger should be relevant and realistic to the subject matter, and importantly, interesting. PBL triggers can be in the form of real-life examples or scenarios obtained from newspapers, journal articles, etc. Students may have some prior knowledge to guide them through the problems or scenarios and should be informed that no single right answer exists for the problems. In addition, the nature of the triggers should stimulate the students to generate meaningful learning ideas, identify learning needs, and stimulate their creativity. This will guide them to do literature review and assure self-directed learning is achieved. One PBL session was constructed to accomplish one of the learning units (i.e. Environmental Conservation and Management) in this course. In this session, a recently published journal article on logging issues and forest clearance in Borneo was chosen as reading material for the PBL trigger. At the end of the PBL session, students are



expected to achieve four learning outcomes (i.e. be able to describe the status of intact and logged forests in Borneo; to identify the major factors for forest loss in Borneo; to explain the forest conservation strategy, and lastly to identify the long-term natural forest management and its benefits).

The briefing of the PBL trigger (problems/scenarios) was done within 30 minutes. Since the students were in the first year and most of them have never been exposed to PBL, a brief introduction on the basic concept and the importance of PBL, as well as its implementation was done. Students were also informed on the assessment strategies. The biggest challenge to conduct PBL in this course is the class size. A total of nine to eleven students formed a group with a chairperson and a scribe. The role of chairperson was explained during the briefing to ensure that he/she can create a harmonious environment during PBL trigger and discussion sessions. He/she should ensure that all members in the group have the opportunities to provide idea and discuss on the problem. The seating arrangement was made in which group members face each other (Figure 1A). During the PBL trigger session, students were encouraged to make notes, to identify difficult terminology or phrases that they do not understand and discuss these new vocabularies. Students were then asked to list at least four learning facts (or issues) that they think are important. This will trigger them to create learning ideas and identify learning needs. The students were also required to obtain the learning resources and reading materials. The major drawback for the PBL trigger session in this case is only one facilitator is available. The facilitator had to walk around the room in case some students may have questions or need some clarification. The overall time taken for PBL trigger session was completed within 1 hour and 30 minutes. At the end of the trigger session, each group had to produce a table that include detailed information on four criteria; Facts, Ideas, Learning Needs, and Action plan. This table was assessed and counted as 20% of the total score of the PBL evaluation.

The PBL discussion session was then conducted in the following week. In this session, discussion was done separately for each group at different time slots.

One rectangular table was placed in the middle of the tutorial room with chairs around it (Figure 1B; Figure 2). Since there was only one facilitator available, each group was only given 25 to 30 minutes for discussion. All students prepared their own name-tags, either in hanging-style or being placed on the table to allow the facilitator to recognise them. This session was particularly interactive and energetic. The chairperson initiated the discussion and all members could freely engage in the conversation. Students explained what information they had gathered from the previous week, solving the problems and facts that they had identified previously, and even initiating new ideas that were unexpected. Information technology gadgets were used during the discussion session in which students brought their laptops, tablets, smartphones, printed materials (bar charts, pictures) and created mind-maps. The PBL session ended with a closing remark by the chairperson. Video shooting was also done during the PBL discussion session with the facilities and support from the Centre for Applied Learning and Multimedia (CALM) and Faculty of Resource Science and Technology (FRST). This recording particularly useful and important as students indeed enjoyed being video-captured, and it allow students to review their performance after the session and to learn from other groups.

After the end of PBL discussion sessions, peer-assessment was done among students in the same group. Using the rating scale of 1 to 4, students rated each of their own group members based on four attributes (participation, contribution, innovation and punctuality). The students were pre-informed on the importance of giving a fair assessment to their peers and only the facilitator would know the identity of the assessors. Peer-assessment was counted as 20% of the total score. It was surprising that consistent scores were given by different members from the same group to the same students, which ranged from 10.6 to 15.9 (mean  $14.0 \pm SD 0.858$ ) from a total score of 20%. On the other hand, the facilitator did assessment on their five major skills (5% on attendance, 15% for clarity of communication, 25% for participation or collaboration, 10% on application of self-directed learning, as well as 5% for attitude). The facilitator's assessment contributed to 60% of the total score of the PBL evaluation.

It was encouraging to observe the students' accomplishments through just a single PBL session in this course. From the students' perception, the role of the facilitator is important to guide the students by probing and questioning, verifying the concepts, and to ensure all group members focus on the topic while interacting in a friendly and positive manner. It is recommended that more facilitators should be involved in conducting the PBL session in the future, perhaps include some teaching assistants or postgraduate students in the facilitator teams. This is because it is difficult for one facilitator to follow the discussion of the students during the PBL trigger session. In addition, the students could be given more time to interact during the PBL discussion session. This PBL session has been an enjoyable and fruitful experience for both facilitator and students. It is recommended such teaching approach could be used in the same course or other relevant courses in the future.



Figure 2: Students were engaged during PBL discussion session.

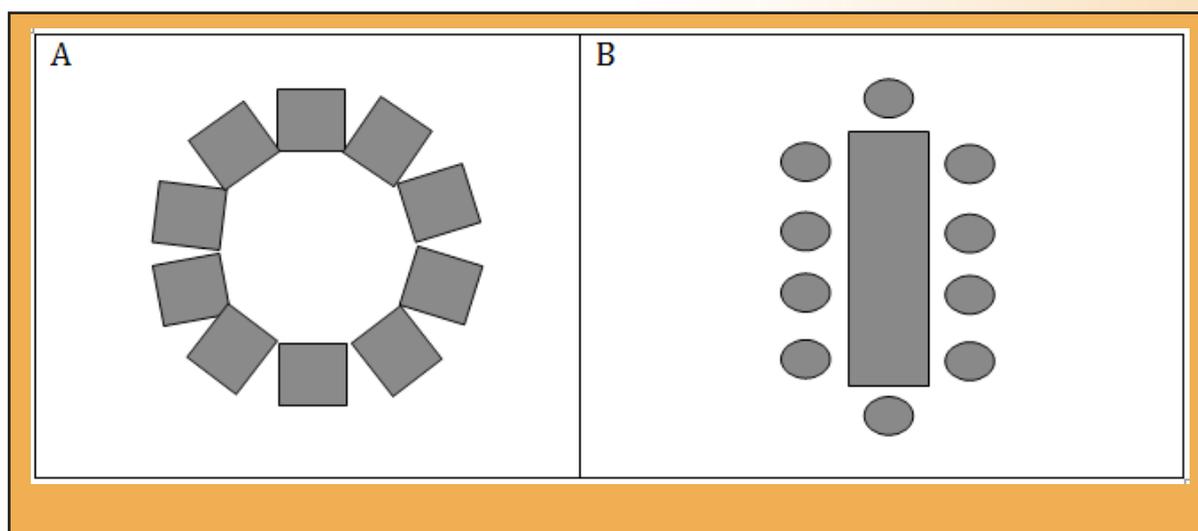


Figure 1: Classroom setting during A) PBL trigger and B) PBL discussion sessions.

## The background

Problem-Based Learning (PBL) has been used largely in the field of medical education (Neville, 2009; Normala Othman & Mohamed Ismail, 2013; Simpson, 2011). In the field of second language education PBL has been used since the 1970s (Hedge, 1993). Various definitions for PBL in the context of language learning have been suggested and these include a description of it as a systematic instructional method (Ribe & Vidal, 1993), an instructional approach (Moss & Van Duzer, 1998; Normala Othman & Mohamed Ismail, 2013), a means to an end (Fried-Booth, 2002), and an in-depth learning strategy (Simpson, 2011). While these descriptions seem diverse there is a common thread in that PBL concerns a student-centred pedagogy that resonates with the principles of the constructivist and socio-constructivist learning philosophies (Savery, 2006). Thus, PBL can be considered a language pedagogy which in a general sense relates to the philosophy, practices, and methods of teaching to activate and empower learning.

## PBL in English language teaching

In the field of English language teaching (ELT), PBL offers much potential to support and enhance the learning of the language. A recent review of PBL in the ELT classroom suggested its potential in supporting English language learners (ELL) to think critically, experience real world situations, and encourage collaboration and interaction in the classroom (Lavitt & Boothe, 2015). The reading and writing competencies of a group of ELL were also enhanced through the use of PBL as it was found to have contributed to higher assessment scores on both skills when compared to students who were not exposed to the pedagogy (Dharma, Marhaeni, & Budasi, 2014). The use of PBL was also reported to improve the language performance of ELL in terms of the quality of content in essays as compared to the essays written by students who were not exposed to PBL (Normala Othman & Mohamed Ismail, 2013). Further, findings from a doctoral study investigating the use of PBL in the English for Tourism programme at a tertiary institution reported that the ELLs who were at various levels of proficiency (high, medium, low) in an English language programme showed statistically significant development in the four language skills (listening, speaking, reading, writing) (Simpson, 2011). In that study, the use of PBL was also found to have improved their teamwork, higher-order thinking, and presentation skills which had enhanced their self-confidence and overall proficiency (Simpson, 2011). Thus, there is potential in using PBL in the ELT classroom particularly as it could support the language teacher in creating conditions that can facilitate language learning through classroom instructional practices. By using PBL, teachers could provide learners with extensive and rich personalised language input, sufficient opportunities to produce output (particularly through interaction), and feedback on the learner's comprehension (Ellis, 2005; Franken & Rau, 2009; Nunn, 2006).

## The context

Despite the arguments in the literature for the potential of PBL in supporting ELT, the use of this pedagogy is almost non-existent in the delivery of English Language courses at the Centre for Language Studies, UNIMAS. There appears to be a lack of published empirical work on it within this context. At the onset, there was a lack of interest for this pedagogy as it was deemed relevant to the teaching and learning of content based disciplines such as Medicine, Business, and Economics. In particular, PBL is widely known to be practised as a philosophy at the Faculty of Medicine and Health Sciences, UNIMAS. As ELT concerns the development of language skills and proficiency it was assumed that PBL was not relevant.

# Problem-based Learning: The case of ARW



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However, interest in this pedagogy was roused during a professional development workshop on PBL which was organised by CALM. This workshop was unique as the participants were drawn from almost all disciplines at UNIMAS who were curious to know what PBL is and how this pedagogy could be relevant to their courses. This workshop exposed participants not only to the philosophy, principles, and concepts of PBL but also to the working realities of the pedagogy in terms of what works, what remains a challenge, and what is possible. Participants at this workshop were also exposed to the concept and construction of a “Trigger” which consisted of a scenario, and the Facts, Ideas, Learning issues, and Action (FILA) table that was fundamental in supporting learners to think through the problem situation. The workshop facilitators played an important role particularly as they too were from various disciplinary backgrounds. The issues discussed and debated during this workshop and the post workshop search for the related literature proved to be the catalyst for further exploration of PBL in one Generic English programme offered at UNIMAS.

PBL was used in PBI1032 Academic Reading and Writing (ARW). ARW which uses English as the medium of instruction is offered to all undergraduates across the eight faculties at the university with the aim of developing their ability in reading and writing for academic purposes. The students are exposed to the appropriate skills and strategies to facilitate the reading of academic texts and are guided through the

skills required in producing a variety of short texts in their relevant fields of study. The course focuses on language functions in the academic genres covered and the students are required to complete two course assignments and a final exam as part of course assessments. The academic style emphasised in this programme is the American Psychological Association (APA) style of academic writing that is most commonly used in most academic programmes at this tertiary institution.

The programme consists of 5 major units, where unit 1 is subdivided into types of references, referencing & citation, paraphrasing and citation focus. The rest of the units are reading, information report genre, explanation genre and discussion genre.

Each learning unit consists of a set of notes which were developed by the instructors and constantly revised every semester. These notes were uploaded a week before a lesson on Moodle which is a Moodle Learning Management System. Classroom lessons were conducted once a week and each lesson lasted for a total of two hours. Each class consisted of approximately 40 students. While there was no prescribed approach in presenting the learning units in this course, a common strategy was the lecture method followed by a class discussion on the information presented and the completion of set exercises in the notes. Support in the form of small group tutorials was also provided during classroom

lessons and this mode was organised for two lessons leading up to the submission of the course assignments. Students were required to complete two assignments and sit for a final exam.

### The basis for PBL use

There were two main reasons for adopting PBL in ARW. The first reason was that, the pedagogy had never been used in this course. Secondly, the end-of-course student feedback indicated that while the students perceived a value in taking ARW, many of them found ARW to be uninteresting, rigid, overwhelming, and uninvolved. Such feedback prompted the instructor to explore various strategies to enhance delivery in the classroom based on a personal philosophy that learning can occur through the social construction of knowledge and the need to create conditions that can facilitate language learning through sound classroom instructional practices.

One major challenge in teaching ARW is to encourage the students to read the notes provided before attending weekly lessons. This approach proved to be daunting as not all students came in prepared for the lessons. Many admitted to not being able to read through the notes due to the constraints of time and workload, as well as their perceived lack of proficiency in the English language. As such, much of the lesson time was spent on

explaining the content and language aspects instead of empowering the students to apply them in the context of academic reading and writing.

### Implementing PBL in the ARW lesson

The PBL pedagogy was implemented in three ARW classes taught by the instructor. Each class consisted of 40 students. The lesson began with the instructor eliciting information from the class. This process involved probing their existing knowledge on citation from their experience of writing their academic course assignments and from the reading of the course notes (Learning Unit 1d). Their random responses were listed on the board and students were asked to classify these responses into facts and non-facts, and provide a justification for their classifications which were further discussed. The discussion was further narrowed into the criteria for facts and non-facts.

Next, the instructor displayed the sample trigger consisting of a scenario and the FILA table without the contents on the board, as shown in Figure 1.

Study the situation below.

Your friend Ahmad was selected to attend a workshop on Leadership organised by the university. In the workshop he was exposed to many topics such as theories of leadership, leading and following, strategies to lead and manage a team, and being an effective leader. At the end of this workshop each participant needs to deliver a talk according to particular topic given randomly to them. The topic given to Ahmad was "Students leadership at university". As his friend work with him to think through this situation by identifying the facts, making the inferences, and considering the learning issues to enable him to take the necessary actions to prepare him to present this talk.

Facts	Inferences	Learning issues	Actions

Figure 1. Sample scenario-based trigger and FILA table

This approach was intended as an induction to PBL. A general discussion ensued to clarify words and expressions that the students might not understand. For each column, the instructor elicited one possible response to provide an example. It was observed that the students were not able to identify the "Facts" although this required them to extract information directly out of the scenario. This challenge prompted the instructor to provide one example which surprised most of the students as they did not anticipate that it was an easy task. Many students reported that they did not expect the identification of

the "Facts" to be straightforward. The students were also unclear about the meaning of the word "Inference" and this was explained. An example was also provided. Most students found it a challenge to make an inference as it restricted them to making guesses based on the scenario. It was also observed that the students found it difficult to form the anticipated questions although they were familiar with the 'Wh' questions type. Generating the content for the "Action" was however, not considered difficult.

They were then asked to form small groups to discuss the scenario by completing the FILA table. The students were advised to think through the scenario and the requirements instead of working towards getting the correct answers as there were none. The observations and discussions with individual groups indicated that the students were engaged with the scenario as they were active discussions taking place with students offering and refuting suggestions, and seeking clarifications from one another. The induction activity was for the duration of approximately 30 minutes including the follow-up whole class discussion. As the discussion indicated that the students' responses were close to the suggested content, the sample answers in the FILA table were not shown to the students. The students also shared their experience of the induction activity. Many students reported finding the experience stimulating to their thinking process and several students reported that the experience provided them with an understanding of the process that occurs when expected to think.

Following this induction activity, the PBL for the lesson consisting of the scenario as a trigger and the FILA table without contents (Figure 2) was displayed on the screen.

Study the situation below.

Johan, who is your course mate, needs to write an essay in English as an assignment for his course using the APA style. Johan has done all the required reading and gathered the relevant information. Some of the information he has obtained includes scientific facts, facts that are focused on the research area of several authors, general statements, studies closely related to the topic, findings that are facts, findings that are restricted to a specific study, and suggestions or proposals. He is required to present and organise the information by citing according to the author and information prominent approaches using the correct verbs and tenses. As his friend, work with him to think through this situation by identifying the facts, making the inferences, and considering the learning issues to support him to take the necessary actions to prepare him to write this essay.

Facts	Inferences	Learning issues	Actions

Figure 2. Scenario-based trigger and FILA table used in the lesson



Students were encouraged to ask any questions or make comments on any information in the scenario-based trigger which needed clarification. Following this session, the students formed small groups of not more than four members. A print copy of the scenario-based trigger and the FILA table without contents was distributed to each student.

The students were observed to be referring to the notes of the learning unit as well as referring one another to the sections in the notes that could provide clues to help them form the 'Wh' questions to complete the "Learning Issues" column in the FILA table. Some students were also observed to be unable to generate the appropriate "Inferences" given the situation and in such instances the instructor offered to assist by providing a relevant example. While almost all students were able to generate the 'Wh' questions in the "Learning Issues" column in the FILA table, these questions did not reflect a simple to complex question flow as expected. It was anticipated that the questions raised in this column would begin with the most basic i.e. "What is author prominent citation?" and "What is information prominent citation?". However, most students proceeded to query – "What are the differences between author prominent and information prominent?" and "How to use author prominent and information prominent when presenting information in the writing?". With regards to the "Action" column, the students experienced almost no difficulty in generating the strategies required to address the questions in the previous column. This entire activity lasted for the duration of 60 minutes including the follow-up whole class discussion. During the discussion, the students shared their experience as well and most of them commented that the PBL activity exposed them to the mechanics of thinking. In particular, a number of students remarked that the questions generated in the "Learning Issues" column were valuable as it functioned as a guide to the areas they needed to read in the notes.

### Reflections

As a post activity, the students were invited to post their reflections of the PBL activity in the online forum on Morpheus. A number of students from each group voluntarily posted their reflections online. In general, most students commented that they were familiar with the scenario which functioned as the trigger. The familiarity with the scenario prompted them to realise the



need to think through to plan and to read when preparing for their assignments. As one student explained,

*Johan's situation is something familiar for me. I have gained many new information from Johan's case. Facts, inferences, learning issues and actions are the steps which important in thinking process in collect and gather informations for our assignments. Hope this would help me drive through all the assignment and also Final Year Project on next semester*

For another student, the PBL pedagogy exposed her to the idea of critical thinking and to focus less on examination. She remarked,

*Johan's situation is not something new to us. From Johan's case, I realized that we are becoming more and more like robots, thinking rigidly and not trying to think out of the box. Life is not rigid, let go of our life as "exam machines" and start to think critically!*

As for the instructor, the use of the PBL pedagogy highlighted two issues. One issue relates to the notion of thinking. It is often assumed that when students are required to think before providing responses in the classroom, they know what is expected. However, the experience of using PBL in this lesson suggests otherwise. The feedback from the students and the instructor's observations of the students working in groups, suggest that many learners are not aware of the important aspects involved when thinking about an issue. The use of the FILA table offers a guideline to expose students to these related aspects.

Secondly, the PBL pedagogy is valuable in supporting students to pose the relevant questions to support their own learning. Raising the relevant questions as part of learning is no easy task. It cannot be assumed that students know how to create relevant questions although they may be aware of the various 'Wh' question types. The challenges that students experience in posing the questions could be attributed to the one-size-fits-all schooling system that treats students more



as receptacles rather than creators of knowledge. The use of the PBL pedagogy can support students to be creators of knowledge by enabling students to learn to take responsibility for their own learning by posing the questions they need to ask themselves. These questions could help them connect with their reading material and in the context of this experience with the ARW programme, to guide them to read and identify important information from the reading of the course notes. Thus PBL empowers and enriches these students' learning experiences.

### Conclusion

PBL as a pedagogy clearly complements the student centred methodology. It holds much potential in enhancing the students' language learning experience. The pedagogy empowers students to operationalise the thinking process and provides them with the opportunity to direct their own learning. As for the instructor, PBL creates conditions that can enable language learning to develop through classroom instructional practices as it "represents an important model of engaged and transformative pedagogy" (Lavitt & Boothe, 2015, p. 47).

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# Problem Based Learning for Marketing Seminar (EBP3043)



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**P**roblem-based learning (PBL) approach attracts many educational practitioners of various fields. Though it was first introduced in the engineering, it becomes widely known after Howard Barrows employed this approach to assist the application of pre-clinical knowledge to practice situations among medical students. I have been formally introduced to this approach after attending a one-week workshop at AKEPT in 2013. Like many other lecturers who attended the workshop, I was quite reluctant to use this approach for my classes as the course outline and class environment are not suited for the PBL approach. I admit the workshop did convince me on the need to shift from just merely relying on teacher-oriented approach to student-oriented approach in delivering my courses.

In FEB, lecturers are not implementing PBL. Some of the lecturers are aware about PBL after attending the UNIMAS Postgraduate Diploma in Teaching and Learning, but are not implementing it as they believe other student-centered learning (SCL) approaches are more suitable for their classes. Most lecturers are using other learning activities such as project based, case studies or group projects.

I incorporated PBL approach into my two courses: Strategic Marketing (EBP3134) and Marketing Seminar (EBP3043). The implementation for the Strategic Marketing class did not go well as the class was too big which I saw myself losing control as the facilitator. However, my PBL approach for Marketing Seminar (EBP3043) gave me a good experience. This is one of the core courses for the Bachelor of Business Administration (Marketing) programme. According to the course outline, the course involves

discussion on topics related to current issues in marketing. Topics include relationship marketing, integrated marketing and ethics. The students were assessed based on case studies, examination and participation. The number of students registering for the class was 80. The subject was chosen for my trial on PBL approach following its open structure (mainly on discussions), and the medium size number of students registered for the course.

As an approach, I provided the students with an ill-structured triggers of real problems in the form of problem statements, videos and pictures. The students were given two weeks to work on the triggers, which ended with presentations of their learning activities. The purpose of the learning activities and the presentation was to promote active learning. During the first class, the students were briefed on the approach of PBL, assessment procedures, and the conduct of their classes. The students were divided into small group of 7 to 8 persons per group to allow student-to-student interaction in small groups. Every group member was subjected to role change to ensure all members had the opportunity to become the group leader and the presenter. The purpose of the discussion and presentation was to foster team working and enhance the students' communication skills. Evaluations were done at the level of member to group, group to group, and facilitator to group.

Unlike the pure PBL approach employed at the Faculty of Medical and Health Sciences in UNIMAS, my approach is moving towards the newly termed "hybrid" PBL which I believe to suit the field of business or more specifically to suit my class. I admit that I am not a "pure" PBL practitioner as I have been modifying the original PBL approach to suit the large number of students and the classroom environment.

Implementing this approach was challenging as the students had to sit on the floor with their laptops. Yet, they were all involved in the learning activities and knowledge sharing. I will continue the current approach as I believe that this method can promote active learning among my students.





# PBL Implementation: An Experience of the Faculty of Cognitive Sciences and Human Development

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**P**roblem-based learning (PBL) has been implemented in various disciplines of higher education: medical, business, education, engineering, dentistry, law, and so on. PBL improves teaching and learning process because it focuses more on developing students as self-directed learners compared to traditional lectures that encourage students to be spoon-fed by lecturers. Many studies have shown the effectiveness of PBL in enhancing students' performance in learning. Yet, the transition from the conventional teaching method is a challenging process in most disciplines, as PBL itself will challenge the students' learning behaviour.

The workplace of the 21<sup>st</sup> century requires professionals who not only have an extensive store of knowledge, but also know how to keep that knowledge up-to-date, apply it to solve problems, and function as part of a team. To realise such experiences, I adapt constructivist pedagogical designs that are based on the assumption that learning is a product of both cognitive and social interactions in problem-centred environments.

The main idea of this article is to share my experience in the preliminary implementation of PBL. Since, PBL has always been regarded as an effective learning method in promoting students' competency, an initiative has been taken to implement PBL in one of the Cognitive Science courses at the Faculty of Cognitive Sciences and Human Development. I underwent 3 levels of PBL training organised by Higher Education Leadership Academy (AKEPT). We were held responsible to disseminate and share our knowledge to other colleagues at the university level as well as to implement PBL at the faculty level.

The course chosen for PBL implementation was Cognitive Ergonomics which is a required course for second year Cognitive Science undergraduate students. It is a three credit-hour course, which means that there

are three hours of classes per week for 14 weeks. The course deals with the environmental and anthropometrical aspects in ergonomics. Students need to understand and visualise an ergonomic process in a work system and relate theories to the physical reality.

Students also need to have a strong background in cognitive psychology and other cognitive science concepts, learned earlier, to fully appreciate the class materials. In a typical lecture-based Cognitive Ergonomics course, students seemed to understand the materials, but most failed to perform well in quizzes and tests. Queries for questions were normally met with a silence. Asking questions only made students uneasy and they avoided eye-contact. It was also normal to see students nodding off to sleep, especially when the lectures were packed with theories and concepts.

The implementation strategy that was formulated took into account factors such as the total number of students (undergraduates), number of facilitators and the number of lecture theatres, classrooms and tutorial rooms.

The first challenge is the large student number that could cause difficulties in facilitation and assessment. With a total of 120 students, without any facilitator to assist as well as the limited availability of tutorial rooms, I have to be selective in choosing learning units that can use PBL. Based on these constraints, the strategy is to use PBL in the subject, which has a large number of groups. In this case, the class will have about 21 to 22 groups with 6 to 7 members per group. The learning units chosen were Unit 3 (Human Visual), Unit 4 (Human Auditory and Tactile), Unit 5 (Cognition) and Unit 6 (Decision

Making). So there were only two PBL sessions conducted for that particular semester.

The second challenge is my inexperience in implementing PBL. This was the first attempt to use PBL as an instructional approach for both learners and instructor. However, I have been selected to attend a series of PBL workshops where the theoretical exposure to PBL was given. The workshop introduced me to the historical background and growth of PBL, the advantages of the PBL pedagogy, the PBL learning cycle, how to conduct PBL tutorials and equally important, how to write PBL cases. The workshop also included hands-on sessions and PBL tutorials.

Perhaps the most serious concern with regards to PBL implementation is the quality of the PBL triggers. The success of a PBL session depends very much on the quality of the PBL trigger used. If the trigger is written inadequately or incorrectly, students will not be able to meet the learning objectives. My problems are compounded because in the field of Ergonomics or Human Factors, there are not many references that indicate how a PBL trigger in this field looks like, unlike in the field of Medicine, Nursing and Dentistry. I wrote my PBL triggers based on the exercises done during the PBL workshops at AKEPT.

There are several strategies that can be utilised to implement PBL in the curriculum. Figure 1



Figure 1: Classroom Based PBL Approach

illustrates a PBL approach used in my class. A Fact, Idea, Learning Objective and Action (FILA) form had also been used in this PBL implementation. A trigger was given to a group and the group was given a week to prepare for an assessment. Students had to complete the FILA form during the PBL session by having a meeting among members. Parallel presentation and quiz in group were among the assessment techniques used for this PBL session. Students were required to fill in a self reflection form to reflect their PBL activities for this subject.

After analysing the students' self reflection, I found there were positive and negative responses about the PBL implementation. Those students who liked PBL commented that PBL made the subject more interesting, generating a happy and conducive environment for learning. They enjoyed cracking their heads to meet the challenge of solving the problem and actually appreciated the knowledge gained. Some believed that PBL

stopped the spoon-feeding culture. Many of them noted that they learned more systematically and were better prepared for class. These students also obviously benefitted from their groups. They found group discussions to be helpful, and were able to gain a better level of understanding from explaining to, and arguing with, their group members. Some students felt that the quest for information to fill in knowledge gaps to solve the problem provided the motivation for them to think and learn, not just for the sake of examinations.

Most students felt that PBL increased their problem-solving abilities, self-directed learning and motivation for learning, interaction and teamwork skills, as well as level of self-confidence. Some students, who tend to be more reserved, claimed that they had become vocal and able to defend their opinions in group discussions. They were not afraid to offer their viewpoints, even if their ideas might be wrong. Consequently, they did not feel shy to speak up in class anymore. Students also noted that they were able to learn how to tolerate and accept differences, communicate with different people, and had made good new friends, even among different races. Many reported that they felt motivated to learn because they felt responsible towards their group to help solve the problem and contribute in discussions. Those who did not like PBL had stated similar reasons: there was too much work involved in the PBL approach, which depleted their time for

other courses. They also disliked free-riders.

In promoting PBL at the micro level, I found it easier to convince the younger lecturers at the faculty. However, there had been senior lecturers or even junior who were initially doubtful, but they somehow turned around and at least agreed with the idea of the need for active learning in the classrooms. Educating the faculty management, the faculty academic staff and the students on PBL will be a major focus to promote the use of PBL in the faculty. I suggest that roadshows have to be conducted to create awareness on the need for change in teaching and learning techniques at the faculty level. Evidence of implementations and outcomes in the form of the students' performances and responses can also be shared during the roadshows. Other than roadshows, technical papers and articles are another way to disseminate information on the techniques and implementation of PBL.

A series of training should be given and PBL committee can be formed at the faculty level in order to mentor and monitor the lecturers who want to implement PBL in their classes. Crucial support from the faculty management's needed to allows lecturers who implement PBL to choose a suitable subject, time slot and classroom. In order to reduce the burden of the lecturers in terms of the increased workload, especially at the initial stage of implementation, student tutors or teaching assistants should be assigned to them. Furthermore, a proper classroom setting is also important because classrooms or lecture theatres with fixed chairs cannot be used for team discussions in PBL. There is also a need to prepare students for PBL session. An introductory of PBL and also student-centred learning (SCL) concepts should be given to a student before implementing PBL. Students have to be prepared for the skills required in PBL as PBL learning environment is designed to develop skills in team working, problem-solving, communication, interpersonal, reflective thinking, self-directed learning and peer teaching.

A series of training should be given and PBL committee can be formed at the faculty level in order to mentor and monitor the beginners.

Overall, the move towards encouraging both lecturers and students to adopt PBL in teaching and learning, seems to be rather slow at my faculty. This is because time is needed for those initiating the change to be trained, implementing as well as gaining experience on the techniques. Time is also needed for others to be convinced and to prescribe the change. Most importantly, those promoting the technique must be able to show evidence that PBL is one of the effective ways of active learning especially in the field of Cognitive Science.

The faculty and the university should be aware of the efforts, determination and resilience required to successfully promote UNIMAS-wide implementation of PBL. With clear intention, goals and plan of actions, coupled with support from the top management of UNIMAS, I am optimistic that a well-coordinated UNIMAS-wide implementation of PBL can be realised in the future.





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