Original Articles

Faculty Perceptions of Problem-based Learning (PBL) at the International Medical University (IMU), Malaysia

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Problem-based learning (PBL) is a worldwide popular educational philosophy but in some institutions, it is considered a revolutionary teaching strategy to implement. The International Medical University (IMU) has utilised PBL as a key delivery tool of its' medical programme and to encourage life-long learning amongst it's students. The university has also carried out faculty development in PBL since its inception in 1992. This is in order to improve PBL sessions, make sure faculty understand what is expected of them during these sessions and ensure our students derive the full benefit of PBL. The aim of this study is to determine faculty perceptions of PBL at IMU. After a focus group interview, a questionnaire was designed and distributed to 75 faculty members. The response rate was 61%. Generally, most faculty members were satisfied with content that the students need to learn through PBL. However, some gave mixed responses towards the PBL process at IMU.

Key words: problem-based learning, revolutionary
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INTRODUCTION

Problem-based learning (PBL) has been described as one of the most significant developments in medical education. As there is no universal definition of PBL, the PBL concept is still a 'conceptual fog' with respect to its' philosophy and implementation [1,2]. PBL is generally understood to mean an instructional strategy in which students identify learning issues raised by specific clinical problems to help them develop an understanding about underlying concepts and principles and to facilitate the integration of medical sciences in the context of clinical medicine. PBL is based on the concept of small group learning where a facilitator is present to guide

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student learning. The focus of learning is usually a written clinical problem comprising a "phenomena that needs explanation" [3]. This method of learning follows a particular sequence such as the Maastricht "seven-jump" sequence for PBL [4]. These steps enable learners to identify their learning needs and to pursue their goals, usually independently in the first instance and finally to join forces to synthesise their findings [5,6].

The PBL process involves (i) encountering the problem; (ii) problem solving with clinical reasoning skills, (iii) identifying learning needs in an interactive group process, (iv) self-study; (v) applying newly gained knowledge to the problem, and (vi) summarising what has been learnt by group members. Several advantages and disadvantages of the PBL method have been identified. Some of the advantages of PBL include (i) promotion of deep learning as opposed to surface learning, (ii) enhances and retains self-directed learning skills, (iii) provides a more stimulating learning environment, (iv) promotes interaction among facilitators and students, (v) promotes integration between basic and clinical sciences, (vi) makes learning more enjoyable for both students and tutors, (vii) promotes retention of knowledge, and (viii) improves motivation [4,7]. The disadvantages identified include (i) higher costs for starting up and maintaining the program, (ii) excessive demands on faculty time, (iii) increased stress on the faculty members who act as PBL facilitators, (iv) increased stress on students, and (v) reduced acquired volume of knowledge of basic sciences [4].

PBL has been widely adopted in many institutions. However, many variations to the PBL approach employed by these institutions with regards to adherence to the original list of principles either partly or in its entirety [8]. The number of medical schools that have either revised or are in the process of revising their curricula to incorporate PBL as a mode of educational delivery or apply the PBL philosophy in reviewing their medical curriculum is growing rapidly. However, experience has shown that when these changes were first introduced, its effectiveness has often been questioned by a lack of faculty's understanding of the purpose and process of PBL [7,9].

One of the most important driving forces of the PBL is the involvement of the faculty as PBL facilitators. Barrows [10] had stressed that the task of the facilitator is to facilitate learning rather than to convey knowledge. In developing this educational approach, Barrows considered that PBL facilitators should allow the students to determine what they need to know and to seek this knowledge by using a variety of resources [5,10]. The degree of facilitator-directed tutorials and the amount of knowledge that they are expected to display is still a widely debated issue in the field of medical education [11,12].

The role of facilitator has attracted a great deal of interest and several studies have been conducted to study the role of a facilitator in PBL sessions. Some of the findings revealed that content expert facilitators tend to use their subject expertise more to direct discussion whereas the non-content experts tend to use their 'process facilitation expertise' to guide the learning of the group [13]. There are several reports in the literature on the negative attitudes of some faculty members towards PBL [14]. In studies conducted with IMU students, the majority felt that their facilitators should have a clinical qualification and some felt that facilitators should also be content experts [15].

Due to conflicting studies in the literature it is essential that faculty understand the philosophy of PBL, create an environment in which students can undertake PBL sessions effectively and understand how students learn. It is important to note that changing the curricula to embrace PBL will be pointless if faculty have negative perceptions and/or do not understand the process and philosophy of PBL.

In Malaysia PBL was first introduced in the late 1980s at the School of Medicine, Universiti Sains Malaysia, where PBL was used as a learning strategy for its second-year undergraduate medical program.

The International Medical University (IMU) has been using PBL in its medical program since its inauguration in 1992. This mode of learning has been part of the instructional strategies to promote lifelong learning amongst its students and to achieve a more student-centred approach to learning.

The medical curriculum at the IMU is a twinning program with 26 partner medical schools (PMS) in the United Kingdom, Republic of Ireland, United States of America, Canada, Australia, New Zealand, and Malaysia. The IMU medical program consists of two phases: (1) Phase 1: the first two and a half years comprising five semesters for pre-clinical education, and (2) Phase 2: 2-3years of clinical training in one of the PMS. In Phase 1, students learn basic medical sciences to apply the knowledge to clinical medicine mainly through PBL and clinical skills sessions. In addition, the students also learn communication skills, history-taking and basic physical examination in clinical skills unit, and experiences of hospital visits and general practitioner posting. Thus, the IMU students have early clinical exposure where they have direct contact with simulated and real patients from the first year. The medium of instruction at the IMU is English. This may appear a little daunting for some students who come from backgrounds where exposure to the English language has been minimal. PBL offers these students a learning opportunity to express themselves and listen in English.

The PBL at the IMU is conducted in two sessions in groups of 10-12 students. In the first session (PBL1), students are provided with a simulated paper-based clinical case problem, which is discussed and brainstormed by the students after which suitable learning issues will be identified by the students. The students then go away and research the learning issues, which are discussed in the second PBL session (PBL 2) a few days later. Each PBL session lasts 90 minutes. The facilitator throughout both PBL sessions usually facilitates student learning in an unobtrusive manner, but sometimes nudges the students in the right direction when necessary.

To improve the function of PBL facilitators at IMU, the Medical Education and Research Unit (MERU) had conducted several PBL facilitator-training workshops (see Table-1). These workshops consisted of plenary sessions after which the participants were placed in PBL groups. The process of PBL was explained to the participants and then they were expected to simulate a PBL session. Verbal feedback was gathered from the individuals as to how they felt about the sessions. These workshops were not compulsory for faculty but were financially supported by IMU. However, there has been no survey to date to investigate their effectiveness.

The objectives of this study are to investigate faculty perceptions of PBL sessions, the desired characteristics of a good PBL facilitator, and their thoughts and reflections on the PBL sessions that they have conducted at the IMU. This study will be useful for those who consider plans for faculty development towards a more student-centred curriculum using PBL as a component.

Table 1. PBL facilitator training workshops

Date	Title	Number of participants
10 Apr 2002	Role of TBL + PBL in the medical curriculum	22
18 May 2002	Constructing PBL triggers for phase 1	17
27 Sept 2002	PBL discussion	14
6 Jan 2003	PBL facilitator training	24

METHODS

To construct the questionnaire used in this study, five faculty members were involved in a focus group session in April 2003. Later, the questionnaire was constructed by using a four-point Likert scale items (strongly agree, agree, disagree or strongly disagree) rated by the faculty members. Faculty also responded to three open-ended questions, (i) the reasons why they felt PBL sessions have or have not benefited the IMU medical students, (ii) characteristics of a good PBL facilitator, and (iii) the strengths and weaknesses of the IMU PBL sessions.

In May 2003, 75 IMU faculty members who were involved in the IMU medical program were invited to anonymously participate in this study. Distribution and collection were done through the internal mail. Descriptive statistical analysis was performed after combining "strongly agree" and "agree" into "agree," and "disagree" and "strongly disagree" into "disagree."

RESULTS

From the 75 questionnaires administered 46 responses were collected, hence, the response rate: 61%. Some respondents did not specify demographic data to make the response totally anonymous. Male and female respondents were 59% and 33% respectively. The average (standard deviation) of respondents' age was 42.9 (SD ± 10.7). The proportion of the respondents who have a medically qualified degree was 52%. Only 39% had previous exposure to PBL prior to joining IMU. Two thirds of faculty have had only five years or less experience in IMU (see Table-2), but 43% of faculty have been in an academic position for more than 10 years (see Table-3).

Table 2. Number of years teaching at the IMU

Years at IMU	N	%
Less than 2 years	17	37%
2-5 years	14	30%
More than 5 years	10	22%
No answer	5	11%
Total	46	100%

Table 3. Number of years holding academic position

Years in Academic Position	N	%
Less than 2 years	6	13%
2-5 years	8	17%
5-10 years	7	15%
More than 10 years	20	43%
No answer	5	11%
Total	46	100%

PBL and learning outcomes

About two thirds of faculty responded positively to the benefit of PBL sessions. In the question about stimulation of further study, 80% responded positively (see Table-4). In the questions if PBL helps to promote critical thinking abilities and application of basic science knowledge to clinical situations, 67% and 70% agreed. As for skills of problem solving, communication, presentation, and teamwork, 76%, 94%, 89%, and 94% of respondents answered positively. In the question as to whether PBL developed reflective learners, 30% of respondents disagreed. One fourth of respondents disagreed that PBL could help students retain what they had learnt for a longer period of time. Almost a half of the respondents disagreed with the statement on equal contribution by every student and good facilitation of PBL sessions.

Table 4. The IMU faculty's response on the strengths and weaknesses of PBL Ssessions at the IMU

	Strongly Disagree		Disagree		Agree		Strongly Agree		No comments	
	N	(%)	N	(%)	N.	(%)	N	(%)	N	(%)
PBL stimulated students to find out more	0	(0)	4	(8.7)	35	(76.1)	2	(4.3)	5	(10.8)
PBL developed critical thinking	0	(0)	12	(26.1)	29	(63.0)	2	(4.3)	3	(6.5)
PBL taught students how to apply basic sciences in clinical situations	0	(0)	9	(19.6)	31	(67.4)	1	(2.2)	5	(10.8)
PBL enhanced students problem solving skills	0	(0)	9	(19.6)	32	(69.6)	3	(6.5)	2	(4.3)
PBL improved students' communication skills	0	(0)	1	(2.2)	36	(78.3)	7	(15.2)	2	(4.3)
PBL improved presentation skills	0	(0)	2	(4.3)	34	(73.9)	7	(15.2)	3	(6.5)
PBL taught students to work as a team	0	(0)	0	(0)	36	(78.3)	7	(15.2)	3	(6.5)
PBL helped students retain what they had learnt longer	3	(6.5)	9	(19.6)	29	(63.0)	1	(2.2)	4	(8.7)
Every student in the PBL group contributed equally to the discussions	1	(2.2)	22	(47.8)	19	(41.3)	1	(2.2)	3	(6.5)
PBL is well facilitated	6	(3.0)	18	(39.1)	15	(32.6)	1	(2.2)	6	(13.0)
PBL develops reflective students	0	(0)	14	(30.4)	29	(3.0)	0	(0)	3	(6.5)
Enough time is given for PBL sessions	2	(4.3)	8	(17.4)	31	(67.4)	2	(4.3)	3	(6.5)
Fair distribution of geriatric versus paediatric cases in Phase 1	4	(8.7)	15	(32.6)	11	(23.9)	0	(0)	16	(34.8)
Fair distribution of acute, remedial cases versus chronic irremediable cases	2	(4.3)	8	(17.4)	19	(41.3)	1	(2.2)	16	(34.8)

Characteristics of a good facilitator

As to the characteristics of a good PBL facilitator (see Table-5), faculty members agreed that a good facilitator should know how to facilitate the PBL discussions (100%); should be well prepared (85%); and be able to give constructive feedback (98%). About 89% of the respondents felt that there should be no teaching during PBL sessions. There was a mixture of positive and negative responses to the facilitator being a content expert (positive: 52%) and having a medically qualified degree (positive 57%).

Open comments

When asked to make open -ended comments as to whether faculty felt that the PBL sessions at IMU benefited their students, mixed responses were received. Some faculty members felt that the content

delivered during the lectures overlapped with the learning issues that the students need to cover through their PBL sessions. This was more acutely seen in PBL sessions where the corresponding lectures preceded the PBL session and the students merely read off the lecture notes provided by their lecturers. Other comments made included the failure of some students to transfer their skills to Phase 2 of the medical programme and that the quality of the PBL depended on the facilitation process and the maturity of the students.

A summary of the open comments on what faculty members think would make a good facilitator is given in the Table-6.

Table 5. The desired characteristics of a good PBL facilitator according to the IMU faculty

Characteristics of a good facilitator	Yes		No	
	N	(%)	N	(%)
Knows how to facilitate PBL discussions	46	(100)	0	(0)
Is a content expert	22	(47.8)	24	(52.2)
Should have a clinical qualification	20	(43.5)	25	(54.3)
Is well-prepared	39	(84.8)	7	15.2
Gives constructive feedback	45	(97.8)	1	(2.2)
Teaches during a PBL session	5	(10.9)	41	(89.1)

Table 6. Summary of the IMU faculty's comments of the characteristics of a good facilitator

1. Trigger knowledge
2. Stimulate students to brainstorm
3. Create right attitudes to PBL amongst students
4. Role model for students
5. Good thinkers
6. Trained facilitators
7. Good communicators
8. Allow students to voice their concerns and give their opinions

DISCUSSION

On the whole, the faculty's perception of the PBL was positive. This is encouraging as there have been negative staff attitudes towards PBL reported in the literature14. Our results indicate that the majority of the faculty seem to be in agreement that PBL sessions (i) helped students improve their presentation and communication skills, (ii) taught students how to work in a team and the importance of teamwork, (iii) stimulated students to find out more about their clinical triggers, (iv) taught students how to apply their medical sciences knowledge to clinical situations, (v) helped students retain what they learnt for longer, (vi) taught students to think critically in order to enhance their problem solving skills. Most of the positive features of the IMU PBL that we identified through this study were found to be in agreement with some of other reported studies on PBL (4).

We received several responses to our open-ended questions on what were the qualities of a good PBL facilitator. About 54.3% of the respondents felt that a PBL facilitator does not necessarily have to have a clinical qualification. This is in contrast to what the IMU students felt regarding their PBL facilitators where the majority of students felt that their facilitators should have a clinical qualification before they can facilitate a PBL session [15]. Some of the students in the study by Nadarajah et. al. [15], study also felt that PBL facilitators should be content experts. Again this is in contrast to what the IMU faculty felt as only 47.8% perceived a good facilitator to be a content expert.

These findings have raised some interesting issues that need to be addressed in continuing studies. Some of the questions raised would be the frequency in which such studies should be carried out and whether people's perceptions change over a period of time. This is and important to find out the needs of faculty in organising any future faculty devel-

opment workshops to further improve the delivery of the IMU medical programme.

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