



Some observations on a hybrid PBL curriculum in medical education at Universiti Sains Malaysia

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ABSTRACT

This paper presents observation made during a brief observation of the PBL programme at School of Medical Sciences (SMS), Universiti Sains Malaysia (USM). It provides a classification for the type of PBL offered at USM highlights the main aspects of the tutorial process there and reviews the experience of students and tutors engaged in PBL at this SMS. The paper proposes a series of recommendations with regards to the planned 2014 curricular reform.

KEYWORD

Problem-based Learning
Tutorial observation
Students
PBL tutors

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When the School of Medical Sciences, Universiti Sains Malaysia was set up in 1979, it was the first to offer problem-based learning (PBL) in Malaysia (1) and in Asia more generally. Having adopted PBL from the start, this learning method is, in a sense, imbedded in the DNA of the medical school.

On 4th July 2013, the author visited the SMS to observe a two hour PBL tutorial group wrapping up the third trigger of a problem in the “genito-urinary block”. During the tutorial, with the permission of the tutor and the students, she video-recorded elements of the problem-resolution process and took photographs. After the tutorial, she interviewed five students, two male and three female, about their experience with PBL. With the students’ consent, the interview was recorded on an MP3 recording device. Later, the author interviewed a group of five PBL tutors on their experience with PBL at USM, and also recorded the interview with their consent. She visited the skills laboratory section

of the medical school, and was able to collect materials such as academic timetables, guide books and assessment sheets. Further questions on the curriculum were answered by the head of the Department of Medical Education. Academic papers written about the curriculum were sent after the visit to support the data collected during the visit.

Classification of SMS USM PBL model

In 2009, Kwan & Tam proposed a classification of PBL curricula according to their structure (2). In it, they propose 4 types of PBL curricula:

Type	Description
Type 1	Primarily cosmetic with 2-3 problems per academic year, being decorative under the conventional curriculum driven by teaching via didactic lectures
Type 2	Uses PBL problems to enhance students’ understanding of the lecture content materials. In type II PBL tutorials, focus is placed on knowledge content or factual materials to

	complement lectures and content experts as tutors are preferred.
Type 3	Uses lectures to enhance PBL performance amongst students. Teachers in this type of hybrid PBL hold the belief that students need to be taught the “basics” prior to doing PBL.
Type 4	Use of PBL as the main learning platform and add some "unconventional lectures" for the purpose of enrichment and betterment of the students' motivation for self-directed learning.

In 2013, the author proposed to use this classification to map the state of PBL in Asia (3). This was written prior to the visit to USM, so at the time, based on information available in published materials, USM's curriculum was classified as a Type 4 programme. In the light of her visit to the Faculty, the author feels the need to review this classification to a Type 3 programme, potentially moving to a Type 4 when the reforms plans come into play in 2014. The author's recent paper on Type 4 curricula highlights the characteristics that build up a Type 4 programme (4).

At USM, PBL undeniably plays an important role in the curriculum. In Phase II of the curriculum (years 2 and 3), a typical student timetable contains 3 PBL tutorial sessions per week, each lasting between 2 and 2.5 hours. This is a heavy load of PBL tutorial, and by comparison with lectures, which take up 6-10 hours a week, it occupies a large proportion of the timetable. The rest of the time is taken up with practicals, clinical skills sessions, and self-study time. The curriculum in those two years is divided into organ-system blocks:

- Foundation Block
- Respiratory Block
- Cardiovascular Block
- Gastrointestinal Block
- Medical Ethics and Communication Block
- Communicable Disease Block
- Nervous System Block
- Psychological Medical Block
- Reproduction Block

The blocks are interspersed with CFCS (5), a community-based form of medical education lasting one to three weeks during which the students are sent out into the community. While the curriculum displays aspects of a comprehensive PBL programme, it still lacks purposeful integration between clinical skills laboratories, PBL triggers and lectures. The quantity of lectures, while not as high as in traditional medical schools, still does not reflect the belief that PBL can be used to absorb the content of medicine as well as the skills and attitudes required of future doctors. The SMS still relies on lectures as the primary mode of transmitting basic facts and information. Therefore, according to the definition cited earlier on, the author believes that the current medical curriculum at USM best qualifies as a Type 3 PBL programme.

Planned reform which would introduce more integration between the skills components, the lectures and the problem triggers would push it closer to a Type 4. Reduction of the number of lectures and reform of the assessment system to ensure that the majority of the content is delivered through PBL would definitely make it a Type 4.

Tutorial observation

The tutorial covered the third trigger of a patient-case in the genito-urinary block entitled “swelling of the scrotum and pain in the pelvic region”. There were 11 students (a fairly representative mix of genders and ethnic origins) and one tutor present. The tutorial lasted one hour and forty-five minutes in total – the language of instruction was English.

Student performance

On the whole, the students participated actively in the discussion. However, as is to be expected in such a large group, 3 students contributed almost nothing at all while 3 students contributed 40% of the student discussion between them. The tutor did not attempt to encourage those that were not talking to speak up. By the end of the two hour discussion, some students were starting to mess around on their mobile phones, but by

and large, the discussion remained on topic. The tutor encouraged them to stay focused when attention waned. Towards the last half hour, participation had dropped to about 4 or 5 students out of 11.

The students did not face any major difficulties during this tutorial. This may be because they were tackling the third trigger of the problem, and the tutor stated that this phase of the problem-solving process usually runs smoothly. The first phase is usually the most challenging. There did not appear to be a fixed scribe, 3 or 4 students took it in turns to write notes on the white board.

Role of the tutor

The tutor for this tutorial was a basic scientist. In the beginning, she did not intervene very much, only when the discussion erred. In the first hour, her estimated participation was around 5 – 10% of the discussion. However, by the last half hour, this was up to about 30 – 40%. The last half hour of the tutorial resembled very much a Question & Answer session. The tutor asked questions like “and what happens when...” or “what do we call...” and the students answered, often in one or two word phrases. The tutor was sitting opposite the white board, in the middle of the U-shape of the classroom tables: effectively in the center of gravity of the group.

Physical environment

The design of a tutorial room is critical to providing appropriate conditions for open discussion. This particular room was too large for the group, and generated a terrible echo which made it very difficult to understand what was being said. In addition to this, the tables were very far apart, making it hard for the students to interact by exchanging notes, for instance, and much easier for some students to drift off unnoticed.

Student impressions on PBL at USM

During the recorded interviews, the students expressed positive feelings towards PBL. They highlighted two elements in particular which helped them to cope with PBL:

- They felt that they had been eased into PBL by going through Small Group Discussions (SGDs) in their first year of study, although they found PBL more interesting than these SGDs.
- They thought that having the opportunity to work together as a cohesive group for one or two years allowed them to feel more comfortable in each other's presence and overcome initial reservations about speaking up in a group setting. In an informal discussion after the interview, the students re-iterated that keeping the same work group throughout all activities for the entire year, including during the community service, was a huge advantage for their PBL experience.

Within the actual tutorial, the students felt comfortable with the tutor and the discussion process. They felt that their ability to deal with the problems had increased over time. In their eyes, PBL enabled them to memorize the content of medicine more vividly, prepared them for their future professions as doctors and also helped them to develop certain skills, in particular, communication skills. They could clearly see the merits of PBL in their learning process, and none of them expressed the desire to return to completely traditional forms of learning. However, they also appreciated having lecture hours and did not seem prepared to deal with a curriculum based on problem scenarios alone. This may be simply a reflection of the fear of the unknown.

Tutor impressions on PBL at USM

Four out of the five tutors interviewed were former USM students, and had therefore been exposed to PBL in their formative years. As such, their experience as PBL tutors was coloured by their memory of PBL as students. However, even the tutor who had been educated in a traditional system expressed positive feelings towards the PBL process. This being said, the interviews translated a lot of uncertainty amongst the tutors.

- It seems that some tutors were asked to start taking groups of students in a PBL setting without formal training. This seems to have

been quite difficult for them, and they appreciated receiving the training later on.

- Mentorship arrangements appear to be done on an *ad hoc* basis with no formal system in place. Where these arrangements did take place, however, they seemed to be quite helpful.
- During an informal discussion with the tutors after the interview, it appeared that most were not aware of the cognitive psychology literature in support of PBL: in other words, they did not know the rationale for applying PBL, or the real difference between PBL and other student-centred learning methods like Team-based learning or Case-based learning. Any reading on the subject was done entirely at the tutor's initiative.

This being said, the tutors felt motivated by PBL, and all of them believed that this was the right way to go about medical education.

Recommendation

Variations on a theme

There is a danger, especially when the students have to go through three tutorials per week (the average rate in medical schools is two per week), that they will experience a form of fatigue with the PBL system and be inclined to cut corners and not fully invest in the problems after the novelty of the method has worn off. Signs and symptoms of this "PBL fatigue" were described in Moust, Van Berkel and Schmidt (6). However, there are ways to parry this phenomenon; in particular, introducing variations on the PBL theme may prove to be beneficial to students:

- ***Variations in the problem triggers.*** Not all problems have to be clinical cases. At McMaster University, a variety of scenarios were used. Some were clinical cases, but others were short problems on specific biological phenomena. Others were cases based on extracts of famous literary books (these days, one could use films instead). The idea behind the problem trigger is to spark curiosity that will lead the student to the programme's learning outcomes. There is more than one path to that goal. Keeping

the nature of problems varied will keep the students interested.

- ***Variations in the output format.*** At the end of the problem, it seems that students are presently being asked for a presentation of their findings and a diagnosis. There are other ways to close a problem: for instance, students could be asked to make a video or a podcast explaining their findings, or they could be asked to produce a report. The more varied the triggers, the more varied the outcomes could be.
- ***Variation in the learning aids:*** Not all PBL self-study has to be done using Google. In the early days of McMaster University, even though they did not have Youtube or iPads, they used slide tape shows to replace lectures and books, simulated patients to act out the problem scenarios, and boxes filled with scenario cards to play out the medical decision making process. The best reference for these learning aids is the Barrows & Tamblyn (7) manuscript on Problem-based learning. Although the technology mentioned in the book is outdated by three decades, the ideas could be translated into modern medical schools.

Faculty buy-in

There does not appear to be a sense of disgruntlement against PBL among USM's faculty. However, there was a distinct sense of confusion sparked by the patchiness of formal PBL training among some tutors. Generating Faculty enthusiasm and buy-in is a *sine qua non* condition of a successful PBL programme. The following recommendations might help to alleviate the problem:

- Instigating a formal mentorship system whereby junior members of Faculty can observe the tutorial classes of a senior member before beginning their own tutorials. The senior member of Faculty will sit in the tutorial group of the junior member of Faculty and provide feedback.
- Acquiring some of the introductory literature to PBL which can be made available to tutors at their request. Short, explanatory books are probably the best given the constraints on tutors' time.

- Organizing occasional retreats with all PBL tutors during which all of the faculty can ask all of the questions weighing on their minds and feel like they are being included in the development of the programme. This will be critical if a reform is indeed to take place in 2014. The retreat system was long used at the University of Hong Kong and Fu Jen Catholic University for their PBL programmes.

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