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ARTICLE

Investigating Problem-Based Learning Tutorship in Medical and Engineering Programs in Malaysia

Virginie F. C. Servant (Erasmus University College) and Eleanor F. A. Dewar (The HEAD Foundation)

Although Malaysia was the first country in Asia to adopt problem-based learning (PBL), the impact that this has had on its tutors remains largely unexplored. This paper details a qualitative study of the changing perceptions of teaching roles in two groups of problem-based learning tutors in two institutional contexts—one in medicine located in Kuala Lumpur and one in engineering located in Johor Bahru. Using Interpretive Phenomenological Analysis, the authors attempt to describe the way in which the two groups have experienced their changing professional world, and the mental processes through which they rationalize the transformation of Malaysia's educational landscape. This paper discusses four themes of analysis: (1) Tutor perceptions are embedded in the context of Malaysian hierarchical social structures, (2) tutors recount a rewarding but challenging move to PBL, (3) tutors display widely different attitudes towards the role of expertise in PBL, and (4) tutors attempt to construct explanations and rationalize their emotional experiences with PBL.

Keywords: problem-based learning, tutoring, Malaysia, engineering, medicine, Interpretive Phenomenological Analysis

Introduction

In 1979, Universiti Sains Malaysia initiated Malaysia's first problem-based learning (PBL) program in medical education (Zabidi & Fuad, 2002). This was the country's third medical school, but rather than following a traditional pedagogical model, this experimental program implemented the educational method pioneered by McMaster University's medical school ten years earlier (Spaulding, 1991). Since then, almost every medical school in Malaysia has adopted some form of problem-based learning (Lim, 2008), including Malaysia's oldest medical school at the University of Malaya (Thong et al., 2012). The use of PBL in other fields of study is a markedly more recent phenomenon in Malaysia. Several institutions have recently been reporting pedagogical experiments in the field of engineering (Berhannudin, Ahmad, Asri, & Abdullah, 2009; Mohd-Yusof, Hassan, Jamaluddin, & Harun, 2011). However, the models of PBL used by these institutions vary—some take inspiration from the medical model, while others look to the Danish model of problem-oriented project-based learning (Kolmos, Fink & Krogh, 2004), which has been used extensively in engineering education and shall be explained more in detail further on.

Problem-based learning is a form of education characterized by a participant-centered small-group setting in which

learning is driven by realistic but ill-defined problems (De Graaff & Kolmos, 2003; Schmidt, 1983). During PBL, the teachers are not expected to give a lecture, but to accompany the learning process in a tutorial role in which they will help the students to structure their thinking around the problem (Barrows & Tamblyn, 1980; Schmidt, Arend, Moust, Kokx, & Boon, 1993). Since this necessitates a redefinition of the role of the teacher in the learning process, education researchers have attempted to understand what makes an effective PBL tutor. Chng, Yew, and Schmidt (2011) focused on three factors influencing tutors' performance: tutors' subject matter expertise, social congruence, and cognitive congruence. Rotgans and Schmidt (2011) also looked at tutors' power to generate interest and motivation in students, and Savery and Duffy (2001) analyzed tutors' role in scaffolding the learning process. Tutoring was aptly described as "collaborative knowledge building" by Hmelo-Silver and Barrows (2008, p.49), implying that the group collectively increases its total knowledge through social discourse, and thus building onto theories of peer-scaffolding.

A few early quantitative studies were carried out on tutor expectations and attitudes in general (Bernstein, Tipping, Bercovitz, & Skinner, 1995; Vernon, 1995), but these results have not been replicated in recent years. More recently, qualitative studies have emerged in the Asian context, in which PBL is a growing phenomenon: Lee, Lin, Tsou, Shiau, and

Lin (2009) reported a qualitative study in which they uncovered the circumstances that prompt PBL tutors to intervene in a Taiwanese institution. Saito, Hawe, Hadiprawiroc, and Empedhe (2008) published a study of a critical self-reflection exercise performed by Indonesian teachers in a student-centered learning environment. However, no extensive qualitative study has focused on the adaptation process of Asian teachers who, in their own education, were largely brought up in a teacher-driven environment, but must now act as guides for students in a problem-based setting.

This study aims to investigate the attitudes and feelings of tutors towards their role in a group of medical tutors in a major public university in Kuala Lumpur, and a group of engineering tutors in a major public and technology-oriented university in Johor Bahru. These two disciplines were selected because they display the greatest developments in PBL in Malaysia to date. There is a marked difference in the PBL history and form between these two disciplines: PBL in medicine originated at McMaster University in 1969 (Spaulding, 1991), and the practice of PBL in that field has largely evolved as variations on the McMaster theme. This means that problems generally comprise patient cases that are written or assembled by experts in the field and then submitted to students for study guided by a tutor in a process which is divided into three phases: discussion, self-study, and reporting (Moust, Bouhuijs, & Schmidt, 2007). One of the premises of medical PBL is the integration of the basic sciences with clinical sciences from the first year of study. This has been done with varying degrees of success and has implications for the role of the tutor since a basic scientist may not be comfortable tutoring a clinical problem and vice versa. The same philosophy of interdisciplinarity is applied to the different fields of medicine (such as physiology, pathology, anatomy, etc.), which are usually integrated in organ-system blocks of several weeks. Many medical programs use what has been dubbed a hybrid form of PBL (Kwan & Tam, 2009), which means that a blend of PBL and traditional lectures are used in the course. In engineering, by contrast, PBL has a more fragmented history. Woods (1991) adapted the PBL methods developed by McMaster's medical school to his engineering program within the same university, but his methods did not take off in engineering to the same extent that they did in medicine. Meanwhile, a different model of project-based problem-oriented learning was developed at Aalborg University in Denmark (Kjersdam & Enemark, 1994). In this model, students were required to define engineering problems from the real-life situations of the community of Northern Jutland as the starting point for semester-long projects. Kjersdam and Enemark (1994) note the progression from "know how" projects in the first two years of engineering education to "know why" projects,

which comprise a higher level of theoretical analysis. Recently, a new model of PBL was developed for engineering in a polytechnic institution in Singapore, in which problems are discussed, analyzed and reported on in one-day cycles. This model has been dubbed "one-day, one-problem" (O'Grady, Yew, Goh, & Schmidt, 2012). Although the practice of PBL in engineering seems quite remote from the practice of PBL in medicine, they share many features: both answer to the need of a complex professional education with a knowledge base that is continuously growing, both begin the learning process with the analysis of a problem that aims to trigger students' prior knowledge, and both award greater freedom to learn to students than traditional lecture-based learning. However, it must be noted that efforts at interdisciplinarity have been far more successful in PBL in medicine than in engineering—a large number of engineering programs using PBL do so in a monodisciplinary fashion, in one course or one field. This may be due to the broader gap between the different fields of study in engineering as compared with medicine.

The two institutions were chosen because they published reviews of their PBL programs in English (Mohd-Yusof et al., 2011; Thong et al., 2012), thus providing the researchers with ample material to prepare for this study. The PBL program in the medical institution had been running for almost fifteen years at the time of the study whereas the program in the engineering institution had been running for almost ten years. In the medical institution, PBL was implemented as a faculty-wide project using a model inspired by the University of New Mexico's PBL program (Kaufman, 1985), which, while retaining the basic format of the McMaster model, was the first to truly develop a community orientation, with long swathes of time spent on community fieldwork. In the engineering institution it was progressively implemented, first in a pilot course, then in more and more courses on the basis of voluntary participation of faculty in this transition. In this second institution, no existing model of PBL was straightforwardly applied, in favor of an aggregation of several methods including the medical PBL model but also active learning and cooperative learning (Felder & Brent, 2007). At the time of the interviews, both institutions used a hybrid model of PBL, meaning that regular lectures ran alongside PBL tutorials in the curriculum, with PBL taking up less than 50% of student contact hours. In both institutions, the PBL tutorials were conducted in English, which explains why we chose to conduct the interviews in English rather than using a translator. In the medical group, participation in formal training workshops organized by the faculty was a requirement prior to becoming a PBL tutor. Thus, all of our interviewees from the medical group reported to have been trained prior to commencing their work as tutors. In the engineering group, three training methods were used: support and personal

training from the leader responsible for developing PBL in the institution, workshops on Cooperative and Active Learning organized by the leader in question, and peer-mentoring. All of these were developed on an ad hoc basis rather than systematically. Some of the tutors in our interview group began using PBL with no formal training.

Given the multiplicity of variables in these two contexts, the authors have chosen not to systematically compare the two cases, but instead to explore the processes and the outcomes in each. This paper will expose a wide range of feelings and experiences in two different settings, and offer an interpretation of the resulting observations to the reader. Therefore, the purpose of this study is to explore two different viewpoints on adapting to PBL, centered on understanding the tutors' lived experience; one within a field of study in which PBL has been used in the country for over three decades and another in a field of study in which this is a relatively new and ill-structured phenomenon. Specifically, we will be exploring the following research questions:

1. How are these Malaysian tutors experiencing PBL professionally and personally?
2. Are these tutors constructing particular narratives surrounding PBL? If so, what sort of narratives, and how do these differ from one discipline to the other?
3. What do these tutors feel have been the greatest challenges and most rewarding aspects of working with PBL in their experience?
4. What can we learn for the future practice of PBL, particularly in Asia, from the specific experience of these tutors from different disciplines?

Method

Research Design

After considering several analytical tools, the authors deemed that using Interpretive Phenomenological Analysis (IPA) (Smith, 1996; Smith & Osborn, 2008) would provide the greatest insights into the data. IPA is a relatively new method of qualitative analysis, but one that has now been academically validated and is being used by an increasing number of researchers (Smith, 2004). Larkin, Watts, and Clifton (2006) described IPA as providing a "highly intensive and detailed analysis of the accounts produced by a comparatively small number of participants" (p. 103). IPA tries to make sense of the participants' world from their perspective. Although there is no definitive data collection method for IPA, it usually does so using semi-structured interviews in which the interviewer gently prompts the participants to elaborate on themes of interest. Given the exploratory nature of this research on Malaysian PBL tutors' perceptions of their role and

identity therein, the authors deemed that valuable insights could be gained by delving deep into the feelings expressed by small groups of tutors. The method of analysis was largely inspired by that used by Osborn and Smith in 1998. However, this paper proposes two twists on the IPA method as it has been used and reported to date: firstly, the participants' native language was not English (it was Malay, Tamil, Mandarin Chinese, or other) and the interviews were conducted in English without the assistance of a translator. This obstacle has already been considered by Smith, who wrote in 2004:

What about research with children and with adults for whom English is not their first language? There is increasing interest in conducting IPA with different groups. It is likely, however, that the guidelines for conducting semi-structured interviews provided in chapters on doing IPA (Smith et al., 1999; Smith & Osborn, 2003) will need to be adapted when researching other groups. As a general rule, it is likely that the largely noninterventionist stance of IPA interviewing/general open questions followed by gentle probing will need to become more interventionist with other groups. Thus children, people with learning disabilities, adults who have difficulty with English may need the researcher to take a stronger role in guiding them than is usual in IPA interviews. (p. 49)

Secondly, this study made use of focus group interviews rather than individual interviews. Smith (2004) also considered this challenge in the same paper, concluding that it was an area ripe for exploration. The authors' reason for choosing focus groups rather than individual interviews relates to the cultural difficulties of getting Malaysian participants to openly discuss issues of feelings and emotions. The interviewer was advised beforehand by several leading figures in both institutions that group interviews would put the tutors more at ease. This was particularly noticeable for male participants who struggled to express themselves when face to face with the (female) interviewer but gained confidence in the group setting.

Participants

With the basis that focus groups would be a more appropriate method of data collection, Rabiee (2004) suggests that the appropriate number of participants for a focus group interview is between six and ten, but given the difficulty in finding tutors to participate, the authors were able to secure five participants for each interview, two women and three men in each case. The tutors knew each other prior to the interview, but were not all from the same departments or course. There was a wide age and experience range in both groups, representing the program's tutor population fairly. For ethi-

Table 1. Participants in the qualitative study (by discipline)

Engineering Group		
Name (changed)	Ethnicity	Professional background
Nura (F1)	Malay	Chemical Engineering
Aisyah (F2)	Malay	Chemical Engineering
Osman (M1)	Malay	Chemical Engineering
Hassan (M2)	Malay	Chemical Engineering
Slamet (M3)	Malay	Chemical Engineering
Medicine Group		
Name (changed)	Ethnicity	Professional Background
Meera (F1)	Indian Malaysian	MBBS (Medical Degree)
Rani (F2)	Indian Malaysian	MBBS (Medical Degree)
Lee (M1)	Chinese Malaysian	MBBS (Medical Degree)
Chen (M2)	Chinese Malaysian	MBBS (Medical Degree)
Muhammad (M3)	Persian (Iranian)	PhD

cal reasons, the names of the participants have been changed. Thus, the participants are as depicted in Table 1.

Procedure

The focus group interview was conducted with a semi-structured interview protocol. Based on the data generated in previous (unpublished) exploratory research done in the region by one of the authors, the interviewer prepared five broad themes for exploration, but let the tutors guide the direction of the discussion if they wanted to add elements that were not in the protocol. The interviewer used the following themes during the semi-structured focus group interviews in both cases:

1. Psychological attitude/coping with the switch to a new method
2. The impact of formal training, informal training and mentoring
3. The reactions of non-PBL colleagues and the academic community at large
4. Personal motivation for using PBL
5. Attitudes towards subject-matter expertise in their role as tutors

Questions were formulated in accordance with these themes, and then adapted according to the response of the participants. When the group went quiet, the interviewer would ask a prompting question from one of the themes, but as long as the group kept talking, the interviewer would only try to clarify what was being said. For example, the interviewer asked the following prompting questions:

1. “Did you start to read things about PBL or did you just go straight into the thick of it and have to adapt yourselves to it as you went along?” (Engineering)

2. “When you did the workshop, what was the format of the training and how did you work with that?” (Engineering)
3. “The first question I’d like to ask you is, when you were first told you were going to be using PBL, how—mentally—you coped with the idea that you were no longer going to be the sage on stage, but you were going to be the guide on the side?” (Medicine)

By contrast, these are examples of clarification questions, where the interviewer tried to make sure that she had understood the point made by the participant:

1. “So are you essentially saying you are happy to use PBL, provided that you can still feel like an expert in the subject?” (Engineering)
2. “You feel like an expert of the content?” (Engineering)
3. “But you are told during the workshop, it’s really emphasized, that you should not teach as a tutor?” (Medicine)

As per the recommendation of Smith (see above), the interviewer guided the participants more strongly than would have been necessary had their first language been English. In particular, the interviewer often rephrased what the participants said, and asked the participants whether this was their intended meaning, to ensure that the perceived meaning was not simply an error of expression.

Analysis

In accordance with the IPA methodology described in Shaw (2010), the interviews were transcribed, and then checked again against the audiotapes to ensure a verbatim transcrip-

Present: 2 female (f1 & f2) and 3 male members of staff (m, m2, m3)

Descriptive summary	Interview	Initial interpretation
<p>Tutors given PBL workshops, gradual change. F(1) followed seniors taking PBL</p>	<p>G> Ok, well, thank you very much for coming, as I mentioned to you, this is going to be about your impressions and how you coped with PBL. So the first question I'd like to ask you is, when you were first told you were going to be using PBL, how – mentally – you coped with the idea that you were no longer going to be the sage on stage, but you were going to be the guide on the side? Let's start with you.</p> <p>F> We had a PBL workshop, so we are told we have to change over gradually, and initially I did follow some of the seniors who were taking the PBL. I think that helped me in coping with the</p>	<p>Training important.</p> <p>Gradual shift to PBL.</p> <p>Following</p>

Figure 1. An extract from the initial interpretations written beside the interview transcript.

Reflective Diary

UTM

Note One:

The staff seem keen to conduct PBL but they feel the need for training even after they have been teaching using the PBL format.

Note Two:

M(1) suggest students do not enjoy PBL per say but the active and cooperative learning that goes alongside PBL.

Note Three:

M(3) started with little knowledge of PBL and is now considered able to mentor in the pedagogy and develop new staff to teach using the PBL method but he believes that he himself is still learning and developing. He states it is very difficult to switch from traditional to PBL.

Note Four:

During PBL workshops teachers become the student and experience the PBL method first hand as students.

Note Five:

From non PBL teachers their reaction to the implementation of PBL is mixed with one

Figure 2. An extract from one of the authors' reflective diary.

MALAYSIA UM INTERVIEW THEMES					
Theme	Citation	Speaker	Page	Notes	
<i>Importance of top-down hierarchical structures</i>	We had a PBL workshop, so we are told we have to change over gradually, and initially I did follow some of the seniors	F1		1 "we are told" - passive voice. Takes orders from above.	
	if the department say so, I have to comply with the request	M2		2	
	F2> We are very, very amenable to top down direction! You do it, so we do it! All> laughter. F2> 'You have to do it', so we do it!	F2		5	Reiterates her point twice. This must be something that she feels quite strongly about.
	G> So you think that there is a strong push from the top down to convince you to do PBL? It didn't really come from the bottom up? F2> No, it was from the top. F1> From the top. All> laughter. M2> Yeah.	G, F2, F1, M2.		5	There seems to be a consensus here: 3 of the participants answered the question stating that top-down direction drove their implementation of PBL.
					Maybe I'm over-interpreting here, but "we have" - seems to indicate that she does not participate in the writing of the clinical scenario, it is handed down

Figure 3. Clustering of interview themes.

tion. Once this was completed the transcripts were then read several times separately by each author. In order to develop themes the authors separately worked on descriptive summaries of the transcriptions. Alongside the descriptive summaries, the authors wrote down their initial interpretations of the text (this can be seen in Figure 1).

In addition to the descriptive summaries and initial interpretations, the authors keep reflective dairies. These diaries allowed the authors to make notes of interpretations, ideas and reflect on any personal conflict with the data (examples of this can be seen in Figure 2).

Once this initial analysis was completed each author produced a list of themes. The themes were developed by reviewing the initial interpretations and grouping them into clusters. As can be seen in Figure 3, the clusters contained varying numbers of initial interpretations. These clusters were then reviewed for each authors' final themes. At this point the authors brought together their separate analysis for comparison and their themes combined. This was done to ensure the coherence of the themes. After discussion, the two lists were combined to form the thematic schedule of this paper.

Findings and Interpretation

In this section of the paper, we present the most relevant findings from our focus group interviews in both groups, organized into four superordinate themes that emerged from the analysis. These are: (1) tutors' perceptions of PBL are embedded in the context of hierarchical social structures, (2)

tutors recount a rewarding but challenging move to PBL, (3) tutors display widely different attitudes towards the role of expertise in PBL, and (4) tutors come to terms with and rationalize their emotional experiences with PBL. Although the data also generated interesting themes on perceptions of training and group dynamics, these were not included in the final write-up in the interest of conciseness and focus—the authors would however encourage further research thereon. In the transcript excerpts, (M) denotes an extract from the medical group, (E) an extract from the engineering group.

Perceptions of PBL Are Embedded in the Context of Malaysian Hierarchical Social Structures

It was clear from both group interviews that the tutors conceived of PBL as embedded within the hierarchical structure of the university. However, the groups had different attitudes towards this phenomenon.

The medical tutor group perceived top-down hierarchies in a bureaucratic way—identifying an anonymous “top” which provides instructions “downwards” without participation or involvement from those in the lower ranks of the hierarchy. One participant is so keenly aware of this tendency that she made a joke out of it, which was greeted by acquiescing laughter from her colleagues.

(M) Rani: We are very, very amenable to top down direction! “You do it”, so we do it!
All Participants: laughter.
Rani: “You have to do it”, so we do it!

The interviewer asked the participant to clarify her statement, and the general laughter that ensued seemed to imply agreement—echoed by explicit agreement from two participants.

(M) Interviewer: So you think that there is a strong push from the top down to convince you to do PBL? It didn't really come from the bottom up?

Rani: No, it was from the top.

Meera: From the top.

All Participants: laughter.

Chen: Yeah.

In addition to the explicit references to figures of authority, the tutors in the medical group referred to PBL as a very rule-bound method—with rigid rules and strict guidelines.

(M) Chen: And basis, and also, certain boundaries, important boundaries that we need to adhere to, when are running such a session.

(M) Rani: Erm, there are cases like neurology cases, which are quite tougher than the others. At that time, we resort to the principle of the PBL to not to open your mouth too much.

The references to these “boundaries” and “principles” seem to indicate that in the tutors' minds, PBL follows strict rules which are imposed from an authority on the matter—this does not leave much room for creativity and improvisation.

The engineering group, on the other hand, harbored very personal feelings towards their perceived PBL mentor (Dr. X). The hierarchy was less formal, more implicit.

(E) Aisyah: I've been to Dr. X's class, observe her, and I learned a lot from her. She really guided me and she is really amazing and inspirational.

The sense of respect, and even affection—“amazing and inspirational”, for the leader is particular to this engineering group.

(E) Nura: I think what Dr. X did, now I realize, *haha*, for these new lecturers who is using PBL for the first time, without formal training, the strategy was to shepherd them with not so experienced *lah*.

This participant is suggesting a nurturing relationship between the PBL program leader and the tutors, like a shepherd with his sheep. This feeling was particularly strong among the female participants. With the perception of such a strong leader, there was a sense that she was in charge and the tutors were mere implementers.

(E) Aisyah: So actually it was done by Dr. X, so we just implemented it!

In addition, one participant felt that the provision of incentives for PBL should come from the university structure rather than from the intrinsic rewards of student-centered learning:

(E) Nura: Because our institute does not give any incentive or additional reward to do so, implementing, as a motivation, you know?

In both the medical and the engineering interview, there was almost no sense of ownership or bottom-up empowerment of tutors with regards to PBL.

Tutors Recount a Rewarding but Challenging Move to PBL

In both interviews, the participants raised the challenge of encouraging and managing student participation, without prompting by the interviewer. In the early stages, tutors in both groups seem skeptical about their students' ability and motivation to adapt to PBL. This is evident in the medical transcript where one participant states:

(M) Meera: Because in the very beginning, I was questioning, inside. The students will go Google and come up with these topics. To me, I felt they don't read text books anymore. Because they can just Google everything under the sun. And they don't really know what is a good resource and what is a bad resource . . .

A participant in the engineering group mirrors this worry:

(E) Osman: Because PBL is not really at a stage, not really, it's not interesting for the student. Because you need people to work a lot, finding their own resources . . .

The requirement for students to research by themselves could be problematic, however, Meera states that:

(M) Meera: . . . So, initially, I had a mental block against it. Then later, I found that if I actually just direct them away from . . . sources which are not reliable, then they will do better. Now I am much happier with the way I see it.

This would then suggest that students, particularly in the early days of PBL study, need more guidance and support, not necessarily in what to learn but how to learn it. After a time being immersed in PBL, students develop an understanding of the correct sources to use.

The tutors at both institutions noted an improvement in their students' self-study skills over the years they have been using PBL. For instance, in the medical group:

(M) Muhammad: . . . If I want to compare it to two years back, I can tell you that they improved a lot . . . So,

compared to two years back, at that time I found that, for the first session, just maybe one or two of them just discuss. And then, when you reached the learning objectives, and you teach they should go and search about that, I found at that time, they sometime, they share those things between together. It means that ok, this is my job to do this, this is my job to do that. Then, at the end of the day, they come together and share it together. So, I mean, it was not good. Nowadays I found that each of them going through the references and Internet whatever. They found everything. It means that, nowadays they getting more eager compared to that time.

Here, he notes a shift in the way the groups work together between the time where they start PBL and after a period of acclimatization to PBL, when students are familiar with the method. He suggests that in the beginning, students would divide research tasks and then share information in the reporting phase. The implication here is that students would be less likely to cover all areas of a topic and thus be less able to discuss it fully when the group reconvened. However, once students adapted to PBL, they began to each research the whole topic and cover the themes more broadly in their reporting phase.

The engineering group also compared the student experience before and after the introduction of PBL. They seemed positive about the results:

(E) Hassan: when we teach conventional method, that we give lecture, is it difficult to make students involved in the discussion, during which, when we ask a student, do you have any question: no response.

All: No! Haha! No!

Hassan: So when we implement, not PBL, like, active or cooperative learning, so the response from students is . . . better. And I feel happy when students start to discuss, give response in the class, so my class not so boring!

(E) Slamet: Don't be surprised, you will have a difficulty to stop them!

Aisyah: Yes, yes! talking too much!

Slamet: That is a big problem!

(E) Nura: It is very irritating that sometimes, it's not that they do not have anything to ask, but they didn't even answer. Do you have any questions? Not even no! . . . Not even no, just keep quiet. Ooh.

In the beginning, students do not engage with the learning, unwilling to ask any questions or participate in the lecture. But in the eyes of Hassan, now that he uses PBL, his classes are more interesting. Indeed, the students have transitioned from "sleeping at the back" (Nura) to discussing in class to the point where tutors find it difficult to stop them.

With this new dynamic, the way in which teachers interact with their students is dramatically changed. In the medical group, one participant talks about his tutorials as conversations around a table, a chance to unwind and have fun with the topic at hand:

(M) Chen: Haha, I am not, haha, a very serious lecturer! Haha, I take it more as an unwinding or relaxing session in between me and the students more, on a casual environment. Session for casual interactions. . . . These sort of sessions for us are well, 'there's some topic on the table, so let's have fun about it'. So that's what I normally do with the students. They gather information and a lot of time, those informations, right when they start to present the information, in a discussion, a lot of time, haha, it end up, haha, into storytelling, maybe some cases they have seen in the hospitals, when they go for walk rounds, some of the stories I think are from my friends, or some urban legend related to all the topic of discussion.

His sessions went from discussing information that the students have researched to storytelling of real life situations the group has been involved in. This was a major move away from the traditional teacher-student interaction but this participant suggested that it is a better method of learning. Other participants in the medical group echoed his enthusiasm.

But as the group interaction is governed by the students and not the tutor, sometimes, the "magic" of PBL doesn't happen, as pointed out by Muhammad:

(M) Muhammad: But, still the main important problem for me is the cooperation of the students. Still, I don't know how I can, I mean, force them that all of them join the discussion. Maybe still is the main problem for me . . .

Without student participation the structure of the session risks falling apart. If Chen's students did not participate in the storytelling then the group dynamic might break down.

Tutors Display Widely Different Attitudes Toward the Role of Expertise in PBL

The effect of perceived content expertise on tutor experiences of PBL became apparent in both interviews. Firstly, the tutors in both groups admitted that they were not content experts on all of the problems. Therewith comes a potential difficulty for the tutors; if they are no longer content experts then they run the risk of not knowing something. The doctors and the engineers dealt with this very differently. The medical group were relaxed about it.

(M) Meera: It is also all right to say I don't know also to the students. I find because just being honest about it, and the next week we will come back and discuss about it.

(M) Interviewer: How do you feel about saying "I don't know"?

Rani: Well in the beginning . . . oh, now, I don't mind at all. . . . But sometimes, you think it sounds a bit iffy if you ask them "are you sure" and they are insisting and you know it's wrong and perhaps: "you should go and look up in that book."

Neither participant has any difficulties admitting that they did not know to their students.

The medical tutors seem comfortable with displaying lack of knowledge to students, and they also appear not to worry about the students' reaction to this:

(M) Muhammad: Because I didn't face to, I mean, a lot of such kind of things. So students, ok there is not, I mean they didn't react to it in a bad way or something like that, I came and I said I don't know. And then, I can go and see and next week you can come back with something and its ok, there is no problem.

However he does mention "And then, I can go and see and next week you can come back with something and its ok, there is no problem," which could suggest that in order to feel comfortable he needs the option of checking up on his knowledge after class. However, the reactions of the engineering tutors were markedly different.

(E) Nura: I proposed it to the department to create a new class from my research doctoral area. So I was so excited, and I think everything is so easy, let's make it PBL. Because we know inside out about it, each student asks something out of the moon I think I can answer (laughter). But like he said, if I get something, a new subject that I'm not an expert, I don't dare. I . . . to be honest, I don't dare to use PBL. Because the students will become very smart, very critical, and they like to ask something out of the blue, and I cannot really cope with it. I mean, I cannot . . . I am not prepared to deal with that. I'm not good with that.

This passage suggests that for these tutors, subject expertise is interlinked with the confidence to undertake PBL. Nura is confident and actively encourages the move to PBL in her area of research, yet she would not dare to use it in another unfamiliar area. This sentiment is shared by two of her colleagues.

(E) Aisyah: So what I'm saying there, if I am an expert in oleo-chemical and also PBL, then I will do it. I will do it.

(E) Slamet: Even though I will be teaching subject for quite long, for six years, but I'm still not confident to implement the PBL. Maybe I need somebody who are expert.

Both participants view subject expertise as a necessity for the implementing PBL.

It is important to note that there is one dissenting voice within the medical group. While four of the participants did not have difficulty admitting lack of expertise, Muhammad dissented from his colleagues and his own previous statements, and explained his viewpoint:

(M) Muhammad: For me, this is the problem. Because I'm a PhD holder. I don't have any background in the MBBS. And some cases are totally different from my field. So, I mean, when I receive all the tutor guides and everything, for example, two weeks ahead, I try to prepare myself for that. But definitely, I cannot feed myself totally to that. So sometimes you have some questions that you cannot answer. And, the things that we had in my previous place, all the tutors and facilitators for the MBBS program, they must have the MBBS degree, at least. Then, yes, they will be able to join as a PBL facilitator. Otherwise, I think the PhD holders, no. They were not able to join us. But here, I found that everyone should join and you know, go there as facilitator. But I think, is all right, there is not a big problem, but there still is a problem. Especially for PhD holders.

He finds that as a PhD holder, he does not have the same skillset as the MBBS holders (the MBBS is the Malaysian equivalent of the American MD degree), putting him at a perceived disadvantage. He finds it problematic that he needs to tutor in areas that are completely different from his field of expertise. He suggests that the institution's decision to allow PhD holders to become tutors puts them at a disadvantage—to tutor properly he must become a student himself, which adds extra work as compared with his colleagues. He voices this dissenting opinion quite prominently throughout the transcript. The difference could be explained by the fact that most medical problems have a strong clinical bias, which would be difficult to tutor for a basic scientist without a clinical degree. This raises questions as to the suitability of basic scientists for tutorship, and what might be done to help bridge the gap with their MBBS colleagues.

Tutors Come to Terms With and Rationalize Their Emotional Experiences With PBL

In both the medical and the engineering group, acceptance of PBL was set against the backdrop of strong negative feelings towards the traditional ways of teaching. Both groups made

use of strong vocabulary, charged with connotations, such as “irritating,” “regurgitate,” and “gospel” as well as superlatives like: not saying anything, “not even no,” repeating information “over and over again,” students “don’t bother to read at all”—all signaling a strong rejection of traditional teaching methods. This does not mean, however, that the transition to PBL was easy. Here, the medical group differs from the engineers—the former were much more comfortable with the journey than the latter.

Some of the doctors viewed PBL as a familiar object—implying that it was already embedded in their comfort zone as they proceeded through the transition:

(M) Chen: And the rest, to me, it’s sort of like, I associate it with the past experience in—personally when I was a postgraduate I was involved in helping and supervising students.

Rani: Everyone’s eager to do PBL. I think it’s part of our accreditation for these, so everyone is interested in doing it, so . . .

We have seen one participant’s account of coming to grips with her anxiety and developing an acceptance of PBL:

(M) Meera: So, initially, I had a mental block against it. Then later, I found that if I actually just direct them away from . . . sources which are not reliable, then they will do better. Now I am much happier with the way I see it.

She moved from a situation of mental block to one in which she could be happier with the way PBL was run. By contrast, the engineers explicitly stated the difficulty of the transition process:

(E) Aisyah: OK, largely, last semester was my first experience conducting PBL, and I think this was very difficult, because PBL is totally new to me.

(E) Slamet: It’s very difficult for me to switch from traditional to PBL style, so I’m learning, in the process of learning.

(E) Osman: All right, so in my opinion, the PBL process is very difficult to implement.

Although the journey was not so easy, the tutors from both institutions ultimately felt positively about their experience in both institutions, as exemplified by these statements from the engineering group:

(E) Hassan: And I feel happy when students start to discuss, give response in the class, so my class not so boring!

(E) Nura: But I do believe it is the solution to everything: to a boring class, to a student who are not par-

ticipating in the class, sleeping at the back, this is the solution to everything.

Nura feels so strongly about this that she uses the hyperbole “solution to everything” in her remark, as if PBL were an all-encompassing key to all educational problems. These positive sentiments were echoed by the medical group:

Chen: When it turns into stories, and experience sharing, it may improve their mind better, so I do enjoy the sessions in that sense. So that’s why for me, I don’t mind running those sessions.

(M) Meera: If they are enthusiastic about the topic, then it makes me happier. I look forward to the next one. But if a group is not so enthusiastic, huh, it puts me down.

Here, though, we see a nuance, as Meera clearly relates her own mood to that of the students.

The engineers employed a discourse of reassurance to help them cope with the difficulties enunciated previously. In this dialogue, the tutors are trying to convince each other that the difficulties they face are a normal part of the transition process:

(E) Osman: But that’s normal.

Nura: But that’s normal.

Osman: I think not just in Asia, everywhere in the world.

Nura: Everywhere, yeah it’s everywhere. Yeah.

By the end of this exchange, one gets the feeling that both participants feel reassured that they are not alone in facing these challenges. The comfort provided by knowing that they are not alone was echoed by some of the medical tutors:

(M) Rani: But it was quite attractive, the fact that they said that a lot of medical schools were following this model, so we will see how it goes.

It seems that the feeling of being part of something bigger helped the tutors in both groups come to terms with the transition to PBL.

Discussion

Having considered the data from the interview transcripts, this section discusses the findings and interpretations of the data in an attempt to extend this paper’s relevance to the PBL community. The discussion will follow the same four themes that were uncovered in the previous section.

Malaysia and the Context of Hierarchical Structures

It will be obvious to anyone who has been to Malaysia that this is a country where hierarchy is of the uttermost impor-

tance. For those not familiar with the Malaysian context, look at the most recent iteration of the Hofstede's five-dimensional cross-cultural comparison model (Hofstede, 1984; Lonner, Berry, & Hofstede, 1980), in which Malaysia scored 104 on the "Power Distance Index" (PDI) dimension (The Hofstede Centre, 2013). This makes it one of the countries with the highest power-distance in the world. According to this model, people in societies with a high PDI are more likely to accept inequality in power relationships as given and less likely to try to shift the balance of power. Not everybody agrees with the Hofstede classification (for a review of criticism see Jones, 2007), but it does serve as a useful observation to set the scene. In the light of this description, it is hardly surprising that the decision to take up PBL in Malaysian Universities would come from the top down rather than the bottom up. Indeed, hierarchy is such an integral part of the Malaysian social fabric that top-down directives would not be seen in a negative light solely on that basis.

However, it would be unfair to conclude that PBL is merely another manifestation of power-distance in Malaysian higher education. Indeed, we firstly note that the medical faculty tutors are keenly aware of the state of affairs: all of the participants agree that PBL was an imposition "from the top." Unexpectedly, the tutors deride the situation: "We are very, very amenable to top down direction! 'You do it,' so we do it!" Self-awareness, the ability to see things in a humorous light, and to openly deride the situation in the presence of a foreign interviewer indicates to the authors that change may be afoot. While the statements of the medical participants do not read like open criticism, the authors feel that the gap between blind acceptance and open questioning has been bridged—just how wide that bridge is and whether the tutors choose to cross it remains to be seen.

The case of the engineering tutors is interesting indeed. While admitting that the decision to implement PBL was not theirs, they display a reverential respect for their perceived PBL leader, "Dr. X." From the vocabulary used by the participants—words such as "shepherd," "amazing," and "inspirational"—the authors do not get the impression that this authority is based on formally imposed subordination. There may be social forces at play here, with particular reference to social class, nobility, and respectability, which could only be understood with a culturally sensitive sociological approach, but that is outside the remit of this paper. It may also be the case that her impressive academic achievements increase her perceived leadership qualities. It should be noted that in the engineering case, the decision to implement PBL did not come from the institution, but from the leader in question, whose journey to converting the faculty to PBL is far more reminiscent of the actions of a grassroots movement than a bureaucracy (Mohd-Yusof et al., 2011). It is somewhat ironic

while the traditional structures of hierarchy seem to be called into question by the engineering tutors with regards to their institution, the same cannot be said of their relationship with their students. Indeed, we have seen that the engineering tutors fear displaying vulnerability to their students and "dare not" use PBL in situations where they might find themselves without an answer to a student question. It is possible that this has to do with a context in which PBL is not implemented facultywide. Thus, teachers who choose to convert their courses to PBL at greater risk of finding themselves outside of their comfort zone than their colleagues who stick to lecture-based teaching. This risk-taking is especially acute if student expectations are already shaped by their experience with classic courses. The tutors may perceive their authority to be undermined compared with their lecturing colleagues, hence their expressed fear of venturing outside of their field of expertise. This might not be such a problem in an institution where PBL is implemented facultywide, as in the case of our medical group, since student expectations are the same for all courses.

Tutors Recount a Challenging but Rewarding Move to PBL

According to the findings of this study, the switch to PBL was not easy and both tutors and students stumbled along the way. Indeed, the tutors reported their doubts as to the quality of the sources uncovered by the students in an age where the latter can "Google everything under the sun." In this situation, tutors cannot be certain that students will reach the learning outcomes of the course, since not only is the reliability of information found on Google variable, but they may also be pulled in far more directions than if they were using a textbook to structure their learning. Faced with such uncertainty, tutors had to either spend more time updating their own knowledge, or learning how to facilitate groups towards a higher quality self-study and reporting phase. Either way, this was more time consuming, as duly noted by one of the medical tutors. If tutors lacked both the ability to facilitate (through lack of training, self-confidence, or experience) and content expertise, this resulted in a pronounced reluctance to implement PBL, as demonstrated by the engineering group. But the challenges of implementing PBL were apparent in students' attitudes: the tutors reported that students still look to their tutors for forms of guidance such as answering questions or suggesting appropriate learning resources. Harland's (2002) study of PBL in a zoology module may suggest a reason for this: he found that students set limits to their own learning with preconceived ideas of the role and responsibilities of the tutor. He argues this is because the students in his study had not experienced PBL before, and thus had pre-conceived notions of the respective roles of student and tutor. The tutors interviewed for this research believe their

students capable of developing learning routines and confidence in their own abilities, however, student beliefs about educational roles may explain certain behaviors that are more compatible with a teacher-centric environment. These barriers may break down as more and more tutors emerge who were themselves products of the PBL system—like our interviewee doctor, Lee.

The new learning dynamic provided by PBL impacts the relationship between our tutors and their students, as a result of the growing self-directedness of students. At one end of the scale, Chen in the medical group talks of the tutorial as “an unwinding or relaxing session” with his students. At the other end of the scale, the engineering tutors state: “because the students will become very smart, very critical, and they like to ask something out of the blue, and I cannot really cope with it. I mean, I cannot.” Indeed, as with any dialogue, PBL implies the possibility of a situation whereby a student knows more than the teacher about a topic. Whereas some of the tutors experienced this as an opportunity to establish a close rapport with their students, for others this was seen as a potential loss of position, status, and “face.”

It is somewhat paradoxical that within the medical group, which accepts and internalizes the fact that PBL was a top-down imposition, hierarchy breaks down between tutors and students, whereas in the engineering group, whose adoption of PBL was much less formal and structured, hierarchy and power distance still lingers between the students and tutors. A possible explanation for this observation follows on from our comments on the difference between faculty-wide adoption of PBL and selective adoption of PBL. In a system-wide implementation, tutors are comforted by the fact that their colleagues are likely to be facing the same challenges as they are. If things go drastically wrong, tutors need not feel responsible as the whole PBL enterprise is directed from the top, thus solutions must also be proposed from the hierarchy. On the other hand, in such a loose structure as the one found in the engineering group, the entire PBL experience rests on the trust that the group places in their leader. It is possible that their reluctance to expose themselves to their students stems both from the fear of disappointing their leader and the perceived burden of being pioneers in hostile territory.

In spite of these challenges, the tutors in both groups related improvements in student attitudes, self-endeavor, group behavior, and motivation, with the latter mentioned most prominently. The tutors talk about the differences between their old classes in which students would sit in silence and not ask questions, sometimes sleeping at the back, and their current PBL groups, in which students can no longer be silenced. These findings are in line with the literature suggesting that students in a student-centered learning environment are more motivated, engaged, and enthused by the learning

process (Lea, Stephenson, & Troy, 2003; Tam, Heng, & Jiang, 2009). These findings also support research specifically done on tutorial groups showing that PBL improves students' intrinsic motivation to learn as compared with extrinsic motivation (Dolmans & Schmidt, 2006; Wijnia, Loyens, & Derous, 2011).

The Role of Expertise in Perceptions of PBL

The role of subject-matter expertise plays an important part in the tutors' perceptions of PBL. It affects both their ability to cope with adopting the role of a knowledge facilitator, and their confidence to transition to a PBL model.

It was clear from the medical groups' comments that in a PBL setting, the students no longer see what the tutors say “as gospel”. The tutors lose their position as subject experts, which could imply a sense of loss of status. This in turn can have negative emotional effects and cause stress (Kessler, 1979). As such it is necessary for the tutors to adjust to their new role and to rationalize their perceived change of status. The tutors mention two methods of coping with unknown topics; the first is to take responsibility for finding the information upon themselves, thus elevating their status in the group as the figure that is solely responsible for the unknown, something which is reminiscent of the “gospel” position of teacher. The second method is to avoid contact with the area in which there is a perceived lack of subject expertise, by handing over the responsibility of finding information to the students. Poor quality of information would therefore be perceived as the responsibility of the student rather than as a failure on behalf of the tutor, thus removing potential sources of stresses and loss of status. The latter strategy is predominant in the medical group transcript, where both female participants admit to saying “I don't know” to students. The first strategy dominates in the engineering group.

The potential lack of expertise has another effect on the participants: it affects their perceived ability to conduct classes using PBL. Gilkison's (2003) study found that subject expertise leads to different tutoring styles, with expert tutors leading the questioning process in the class while non-experts expect students to question each other. However there does not appear to be any research that indicates how expertise affects tutors' emotional ability to adapt to PBL. The evidence from this research would suggest that the more they perceived themselves to be subject experts the more tutors feel confident in transitioning to PBL. This theory is supported by statements from the engineering group like: “if I am an expert in oleo-chemical and also PBL, then I will do it. I will do it”. Here, the engineering tutor does not want to risk making the transition and putting himself in a position of not knowing. He therefore resists the move until he perceives himself as a subject expert capable of maintaining

his status as head of the class. Our research suggests that in environments where PBL is relatively new and unstructured, until tutors reach this level of expertise, the risk of potentially negative emotional impact is too high to risk the transition. But given that IPA is not designed to produce generalizable outcomes, we encourage further research on this topic with different methods of analysis.

Tutors Attempt to Construct Explanations and Rationalize Their Emotional Experiences With PBL

The Malaysian tutors taking part in this study did not have the advantage of the tutors who participated in the early PBL programs of McMaster University and the Maastricht University—namely, both of the universities in which they perform their teaching duties were traditional, teacher-centered institutions before moving to PBL, and thus the tutors would have undergone a transition process rather than adopting the mind-set of PBL from the outset. Nias (1996) found evidence that high school teachers involved in educative reforms were suffering emotionally as their roles changed. They experienced feelings of anxiety, guilt, confusion, and anger. With the notable exception of anger, the two groups interviewed for this research also displayed these emotions.

The medical tutors had a distinct twofold advantage over the engineering tutors: on the one hand, PBL has been present in Malaysian medical education since 1979 and its use is widespread throughout the country (Lim, 2008), and on the other hand, PBL has been around long enough in some medical establishments that we are beginning to see tutors that were themselves educated using PBL, as was the case with one of the participants in our medical group. This significantly increased the medical tutors' ability to cope with PBL, as evidenced by their attitude: "and the rest, to me, it's sort of like, I associate it with the past experience." Far from its controversial beginnings at USM in the 1980s (Zabidi & Fuad, 2002), PBL has become an established practice in Malaysian medical education, supported by accreditation mechanisms that promote it. As a case in point, the only participant from the medical group which expressed reservations about the use of PBL was not originally from Malaysia. As we have seen, the other participants expressed very little anxiety, and mostly relayed positive emotions with regards to their PBL experience.

For the engineering tutors, however, the situation was substantially different. We have seen that they experienced more anxiety, more sense of difficulty and more apprehension than the medical tutors. There are two factors at play here which may serve to explain the emotional response of these tutors: firstly, PBL in Engineering has not been as well defined as it has been in medicine. Around the world, different models of PBL in engineering compete for the same name—the project-organized model of PBL has been at the forefront of

developmental efforts and academic research (Du, Graaff, & Kolmos, 2009), but almost as soon as the medical program was started in Hamilton 1969, some faculty members of the engineering departments took interest in adapting the medical PBL model for their classes in chemical engineering (Woods, 1994). In Malaysia, neither model has fully taken hold. As such, the program at the university in which the interview was conducted is a home-grown product rather than directly imported from any school in particular. It takes inspiration from the medical world, in particular the PBL experiments in Singapore, Australia and other Asian schools, but it is adapted to the circumstances and resources of the institution in question. While this may make for a more resilient program in the future, it does generate a lot of anxiety for the pioneers who do not have a well-trodden path to follow. Secondly, while PBL has been almost completely adopted by medical schools in Malaysia, this is far from being the case in engineering schools—and while PBL was adopted in medicine at USM in 1979, it was not until the late 1990s and early 2000s that Malaysian engineering schools began to take interest in it. It is hardly surprising in this context that the participants expressed such a strong sense of challenge and difficulty with regards to their task as tutor.

The engineering tutors constructed a dialogue amongst themselves to account for and translate their difficulties. Three main strategies were expressed for coping with the emotional journey to PBL. For some, bringing PBL within the sphere of their expertise made it "easy, so easy"—this was done by shifting the new method into the pre-existing comfort zone of subject-matter expertise. For others, the knowledge that they were not alone, that not only Asian tutors but tutors all over the world struggled with the same difficulties, seemed to reassure them. Finally, one participant offered a rational deconstruction of the challenges of PBL implementation at her faculty. The strategy employed did not seem tied to any particular professional characteristics of the tutors, and the authors surmise that they were tied to personality traits instead.

Conclusions

Despite the phenomenal uptake of PBL in Malaysia, the impact of transitioning from traditional teaching methods to student-centered learning on Malaysian teachers has been to this day largely unexplored. Given the lay of the land, the authors of this paper chose to approach the topic from an exploratory, phenomenological perspective, which has generated an in depth analysis of four themes of research. The authors intended to demonstrate the research potential of the topic rather than provide an authoritative overview of the subject.

The findings presented nonetheless have interesting implications for practice. To begin with, when implementing a PBL program, attention should be paid to whether the implementation is done facultywide or one course at a time, with a preference for the former. In the cases studied here, implementation in only one course seemed to generate much more anxiety among tutors than implementation facultywide. While facultywide implementation seems to be preferable from the standpoint of tutors' experience, it is not always possible. This means that a much greater emphasis must be placed on tutor training than is currently being done in most Asian institutions. Training should not only address the specifics of PBL, but also put any given PBL program in its broader context and history. This would help to reduce the "us against them" anxiety witnessed in our engineering group and increase the comfort level of knowing that there is a large body of practice to borrow from and build into. This form of training would be greatly enhanced if it were supported by extensive reflective practices among faculty, and engaging in a systematic dialogue on PBL experiences, both among faculty and with students. In addition, content expertise is important for tutors' willingness to adapt to PBL, and must not be discounted by educational managers who want to implement PBL: putting a novice tutor in a group with a problem that is outside his or her field of expertise is likely to generate substantial anxiety. Finally, Asian educators could consider including students in the PBL training process, with particular regard to expectation management. Indeed, given the student comments reported by tutors in this study, students must be helped to understand that the role of the tutor is not to provide answers.

Within the data collected for this study, there is still more that could be extracted, such as the role of training, the nature of interpersonal relationships in tutorial groups and the social construction of tutor identity in Malaysia. A mirror study could focus on the same topic from a Malaysian student's perspective. And while phenomenological approaches have the merit of proposing an in depth understanding of a particular situation, they do fall short on generalizability. Because of this, we were not able to engage in truly comparative analyses as would have been possible with a Comparative Case Studies method. It would therefore be useful to engage in qualitative research on the subject of Asian tutoring practices that has more generalizable implications, for instance, by using Grounded Theory. Another interesting avenue for research would be to blend qualitative research with quantitative data on Asian tutoring, for instance, by looking at the relationship between student achievement and the tutor experience of PBL. The unexplored nature of this combination of geographical area and field of study is both its strong point and its weakness in that it provides am-

ple opportunity for research, but there is little to go by when starting out on the research design. Yet the authors believe the development of Malaysian PBL to be one of the most interesting happenings in education in Asia, and welcome the opening of new lines of inquiry, both quantitative and qualitative, on the subject.

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