

20. RESEARCHING LECTURERS' PERSPECTIVES OF PROBLEM BASED LEARNING (PBL)

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INTRODUCTION

The focus of this chapter is to first explore lecturer's experience of PBL as PBL students on a postgraduate module entitled "Theories of Teaching and Learning". Secondly, it explores the extent to which lecturers would consider using PBL with their students including the possible challenges they may have in attempting to design, implement, evaluate and sustain the PBL mode of teaching and learning.

The context

Twenty-one lecturers from a variety of disciplines within University College Dublin (veterinary, medicine, computer science, engineering, arts, adult education, and geography) undertook a module entitled "Theories of Teaching and Learning" as part of a Higher Diploma in University Teaching and Learning. This module was undertaken using problem-based learning (PBL) and the well-established Maastricht 7-step model (outlined in chapter 2 of this handbook) was used in implementing the Problem-based Learning process. (The twenty-one lecturers were randomly divided into three PBL tutorial groups. The module consisted of six problems all of which addressed issues about contemporary educational theories. One of the problems used is illustrated as an exemplar.

Figure 1-Example of a PBL problem used in the module

Then Jesus took his disciples up the Mountain and gathered them around him

He taught them saying:

"Blessed are the poor in spirit for theirs is the kingdom of God

Blessed are the meek

Blessed are they that mourn

Blessed are you when you suffer, be glad and rejoice for your reward is great in heaven"

And James said, "Are we supposed to know this?"

And Simon and Peter said, "Will we have a test on this?"

And Philip said, "I don't have any paper"

And Bartholomew said, "Do we have to reference it?"

And Mark said, "Do we have to hand this in"

And John said, "The other disciples didn't have to learn this"

And Mathew said, "May I go to the toilet"

AND JESUS WEPT

Data Collection, Sampling and Ethnical Considerations

Data was collected using semi-structured interviews that were audiotaped. The interview format was adopted in order to facilitate freedom of expression (Parahoo, 1997) and participants were encouraged to talk freely about their experiences of PBL.

Each of the twenty-one students undertaking the Higher Diploma in University Teaching and Learning were invited to participate and were provided with an explanation of the proposed research by letter. Fifteen out of the twenty-one lecturers stated that they would be willing to participate. Out of the perspective fifteen a sample of eight participants were purposively sampled for data collection, to ensure that each of the PBL tutorial groups were fairly represented.

Ethical approval was sought and obtained from each participant and from the ethical committee of the institution. The ethical principles of autonomy, justice, beneficence and non-maleficence were adhered to. Further ethical considerations surrounding the interview process, such as, confidentiality, anonymity, and the ability of the participants to exercise their right to self-determine by deciding to participate, withdraw or abstain from the study, were implemented throughout the entire research process.

Data Analysis

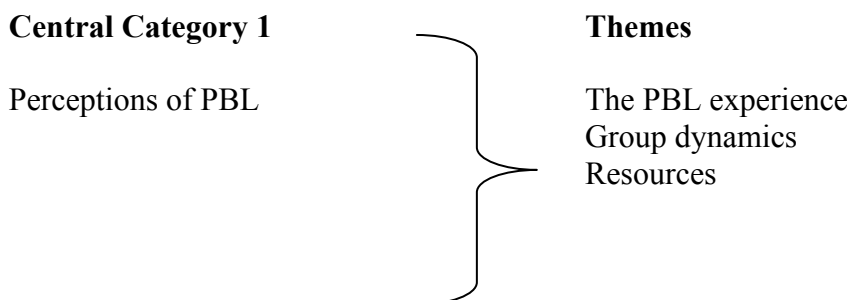
The analysis of data was undertaken using a framework of thematic content analysis. Thematic content analysis is a qualitative method of data analysis that is designed to extract consistent themes from a wide range of communication (Smith, 1992). The analysis process was performed using the software package *NVivo*. The process of applying content analysis to the data collected consisted of a modified multi-stage approach as described by Hickey and Kipping (1996). This process consists of the identification of preliminary categories, reaching consensus on categories, allocating category and detail codes, and then, merging and re-allocating details. The transcribed interview data was placed into categories to allow analysis of the content. Data was categorised according to similarities and differences that were noted from an analysis of the transcripts. This method allows for the development of 'conceptual clarity' in developing a perception and understanding of the data (Cavanagh, 1997).

FINDINGS

A total of eight in-depth interviews were conducted with participants. The aim of these interviews was to elicit the views of lecturers on two fundamental aspects; firstly their perceptions of PBL and secondly whether they might consider using it with their own student cohort. The findings generated a rich data set, from which a number of categories, themes and sub themes emerged.

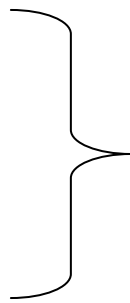
The data analysis process yielded a number of categories, themes and sub themes, as follows:

Figure 2: Categories and Themes Emerging from the Data



Central category 2:

Challenges of PBL



Themes

Benefits for students
Curriculum design and
Development

Central category 1: Perceptions of PBL

The first central category involves the participants' perceptions of PBL whilst undertaking a 12-week module entitled, 'Theories of Teaching and Learning'. Overall, the participants had a favourable attitude toward the PBL style of learning and teaching. All participants stated that they achieved more than just the prescribed learning and had gained much more on several different levels. They mentioned the development of interpersonal and communication skills, the ability to discuss issues in an academic scholarly environment, and the ability to challenge others in a constructive non-threatening way. Within this category three broad themes emerged; the experience of PBL, group dynamics, and resource issues.

Theme 1: The experience of PBL

This theme refers to the interviewees' views of PBL. Although some had mixed emotions at the time of commencing, particularly those participants who had never heard of or experienced PBL, by the end of the 12-week module all participants (n=8) enjoyed the experience.

I think my experience on the whole was very positive, I think it was, I mean, certainly I was engaged throughout the whole thing.

One participant remarked that initially she didn't like PBL at all and felt very uncomfortable, particularly in terms of the interactions with the other lecturers within the PBL group.

The very first day, I really didn't like it at all. I wasn't comfortable in the setting, particularly in terms of the interaction with the other lecturers.

However, by the end of the module she was much more comfortable and stated that she now had no problem talking in public or challenging others within the group on certain issues:

I can honestly say that by the end, I was enjoying it very much and was comfortable talking in public and had no problem in challenging the others on certain points

While the participants noted the enjoyment of the PBL process, some participants raised concerns over the nature of the problems that they had been given. Those participants (n=3) came from scientific backgrounds and were concerned about the nature of the ill-defined messy problems that failed to offer an immediate solution. Their concern was borne out of a belief that the problems initially needed to have commonsensical solutions within a logical framework of how they should be solved.

At the beginning it didn't make any sense because we couldn't even work out what the problem was, it was a bit frustrating, because there isn't, like an answer to the problem as there might be in science.

All participants stated that they gained numerous positive benefits from the experience. It was suggested that PBL has the ability to keep the learner actively engaged. It was stated that this type of learning was motivational and self-empowering:

PBL is really excellent in terms of getting you I suppose to engage with the material.

Overall the participants found this approach to learning a positive experience. There was a general consensus that it improves the ability to become reflective, critical and active learners. The majority of the participants concurred that PBL is profoundly different to subject-centred learning, particularly relating to how knowledge is valued. They suggested that knowledge in PBL is contextual rather than discipline specific.

Theme 2: Group dynamics

The majority of participants (n=7) remarked on the importance of group dynamics and how this played a huge role in their experience of PBL. Some participants suggested that their groups worked well together and that issues were discussed constructively without any one individual dominating the linguistic space.

I think the group that I was in or so it seemed to me to cohere quite nicely and we could sort of discuss things constructively without massively going off the point.

Other participants suggested that owing to the ‘colourful personalities’ within the group, some individuals tended to dominate the linguistic space inappropriately, whilst the more introverted members would simply not challenge them. This imbalance greatly affected the learning experiences and lead to a great deal of frustration and dissonance within the group. However participants within these groups suggested that owing to this, they gained better negotiation and assertiveness skills and were more able to challenge group members by the end.

There was a dominant character in my group, and I got a bit annoyed at the beginning, then in a sense it kind of challenged me to interact more, so it's great in that it teaches you negotiation and assertiveness skills

In summary, the participants within this theme noted the importance of group dynamics in the PBL process. It could be suggested that the most effective group was the one where the participation and leadership were equally distributed and where conflicts were managed in a mature constructive manner. However, even amongst those groups that lacked collegiality, other life skills were gained.

Theme 3: Resource issues

The participants suggested that PBL places emphasis on self-directed learning and this in turn requires a full range of resources to be made available for effective and efficient learning to occur. However, such resources were not always available to them, and frequently they relied solely on the internet as the only information source. Resource issues also related to the timescales that had been given between reporting sessions, it was argued that there wasn't enough time to seek out library resources and even if there was time, there was not always a guarantee that the particular book would be would available to borrow.

I thought the time scale between sessions was quite short, so unless you can find the stuff on the Internet you really can't do it, like if the book and things aren't to hand, you can't request them, or buy them necessarily in the time that you have available.

This theme highlighted the need for a variety of key learning resources to be made available to learners as there were perceived difficulties accessing appropriate material for the reporting sessions.

In summary, the category ‘perceptions of Problem-based Learning’ refers to the participants’ views on PBL. Overall the participants viewed PBL positively; they described it as enjoyable, interactive, engaging, and relevant. Group dynamics were seen to play a large role in the PBL experience; there was a consensus that positive ground rules need to be negotiated and clearly articulated for group goals to be achieved. The participants identified resources as a significant issue. It was suggested that key resources need to be made more available rather than relying solely on the internet.

Central Category 2: Challenges of PBL

This category discusses the challenges of PBL. The participants clearly highlighted the benefits for students within this type of learning paradigm, however, they also discussed some unique challenges that might potentially restrict them should they consider an educational change to incorporate the PBL philosophy.

Theme 1: Benefits for students

This refers to the views amongst the participants on the espoused benefits of PBL for students. The majority of participants suggested a number of potential benefits including the development of interpersonal skills, assertiveness and negotiation skills, information retrieval skills and the ability of students to recognise the value of learning.

I think certainly students would get a lot out of it, I think that there is a huge amount of actual skills and competencies that they could learn, including interpersonal skills and information literacy skills.

Within this theme the participants suggested that PBL was not always appropriate for the younger less mature students in their programmes. They believed that PBL should not be used until the students had a good grasp of the course content and developed sufficient foundational knowledge. At that stage they could use the knowledge they had gained didactically to inform the PBL sessions.

I think that it would probably have to be in the final year, probably not right for the ones coming in at the very beginning

The participants suggested that a purist model of PBL would not work in the vast majority of programmes, as it is essential that students receive a good foundational grasp of the core course content prior to commencing PBL. Participants within this theme suggested that despite the perceived benefits of PBL, there was hesitation in changing the entire course into this mode of learning, as it was felt that if students didn’t have an explicit understanding of the perceived core course fundamentals, the true value of PBL might not be realised.

No I definitely wouldn’t use it in first year. I would like to bring it into the final year as then they would be ready for it

Theme 2: Curriculum Design and Development

The participants highlighted a number of challenges surrounding curriculum design, development and implementation. It was suggested that that it might be possible to implement

PBL in one module within a curriculum, however a full-scale initiation of PBL would be very difficult to achieve particularly if the majority of academic staff were not open to such change:

I think some members of my department would be extremely hostile to it perhaps, I don't imagine it would go down equally well with everyone

Other challenges to implementation included; time constraints, lack of facilitators, student numbers, devising appropriate problems and the assessment process.

There was a suggestion that changing to PBL, even for one module, involved a large amount of personal energy and time. Because there was an uncertainty of how well it would be received by both students and staff, there was a reluctance to devote vast amount of energy to it. It was recognised that for PBL to be successful there would have to be commitment from other lecturers and this might be difficult to achieve. Another issue raised was the dynamic of student numbers with uncertainty about student intake. Anxiety relating to large student intake was also mooted as a reason for potential failing.

Devising appropriate and credible problems was seen as something that might be complicated to achieve. Problems that are realistic and challenge each student's existing knowledge might be difficult to get right from the start.

I think that I might have difficulty in what resources to use to help me devise the problems.

It was recognised that the assessment process might have to be altered. This brought up issues around what type of assessment processes would best suit PBL:

In regard to the assessment we haven't really changed that much, I think that what is expected of a student is still pretty much on factual knowledge and not on what they can actually do.

In summary, participants within this theme raised issues surrounding some of the difficulties that might exist when attempting to change to a PBL curriculum. There were several understandable reasons as to why the participants were anxious about embarking on this change process.

This category 'challenges of PBL' represented the views of the participant's potential commitment to developing PBL within their own professional programmes. Although the majority agreed that PBL offered several advantages to their students, it was suggested that PBL would be more beneficial with the more mature students who had already received sufficient foundational knowledge. Several constraints to its potential development and implementation were also mooted as reasons of hesitation in using PBL.

DISCUSSION

This section discusses my study in relation to the literature. Two broad categories were identified, perceptions of PBL and changing to PBL.

Perceptions of PBL

The findings within this category related to three interlinked themes, which described the participant's perceptions of PBL:

- The PBL experience
- Group dynamics
- Resources

The majority enjoyed the PBL experience, although some did suggest that they were uncomfortable with it initially. Some links can be made between this and the literature. A body of research has explored students and staff experiences and perceptions of PBL. The conclusions that can be drawn from this literature bear out the findings of my research i.e. students generally favour this approach to learning (Clarke et al 1984; Davis 1994; Kaufann & Mann, 1997). Studies generally fall into three broad themes, the accumulation of knowledge, decision-making ability and self-directed learning and lifelong learning skills (Vernon and Blake 1993; Albanese and Mitchell 1993; Berkson, 1993; Distlehorst and Robbs, 1998).

The participants raised the importance of group dynamics and suggested that positive group dynamics had the potential to augment the experience of PBL. It has been well documented in the literature that the PBL group is integral to the PBL approach and needs to be used consciously and conscientiously in order to achieve positive learning outcomes (Benson et al, 2001; Evensen and Hmelo, 2000). Johnson et al (1991) suggested that for the PBL group to be effective there needs to be equal participation and leadership and that discussions cannot be dominated by any one individual.

Participants also suggested that the availability of resources was an issue. It has been suggested that the very nature of PBL, with its emphasis on self directed learning, necessitates a full range of resources be available for effective and efficient learning to occur (Fitzgerald et al, 1999).

Challenges of PBL

The findings in this category highlight the participant's viewpoints on some of the issues surrounding the development and implementation of a PBL curriculum. The participants focused initially on the perceived benefits that PBL would give to their students. Studies undertaken with academic staff also corroborated similar positive findings (Maxwell & Wilkerson, 1990; Vernon, 1995; Bernstein et al, 1995).

The participants highlighted a number of challenges surrounding curriculum design, development and implementation. It was suggested that successful change to a PBL curriculum should involve all key stakeholders (institution, academic staff and students) However it was argued that the majority of their other colleagues might not have the interest or the predilection to become involved. The literature would suggest that while it is important to have champions of the change process it is essential from the beginning that support and involvement comes from all stakeholders (Bevis & Watson, 1989).

Other challenges included time constraints, lack of facilitators, student numbers and devising appropriate problems and assessment. It was assumed that a large amount of time and energy might have to go into devising a PBL curriculum. If staff members were unconvinced of the need to change, this energy might be difficult to sustain. Bernstein et al (1995) suggest that the success of PBL can only be realised if the majority of staff are convinced of the need and have a desire to change.

The issue surrounding what might count as a problem and the complexity of designing problems raised a significant challenge for the participants. Problem design is a complex and multifaceted task. Due to the nature of knowledge and the ways in which each profession utilises knowledge differently, it is difficult to create a template for devising appropriate problems (Savin-Baden et al 2004). It is suggested that devising problems should be carried out

as a collaborative approach with all key stakeholders involved. There needs to be an explicit awareness of the stage the students are at. It is necessary to ensure that problems are neither too far reaching for the student nor so simplified that the student is not sufficiently challenged.

Devising appropriate assessments also raised challenges. The assessment process must be; congruent with the PBL philosophy, reliable, valid and continuously challenging the learner (Barrows et al, 1980; Neufeld & Sibley, 1989; Nendaz et al, 1999).

Recommendations

It is recommended that lecturers considering using PBL with their students should learn about PBL through the PBL process. It is also recommended that a support structure be created to help lecturers design a curriculum based on the philosophical and educational principles of PBL. More research is required into why some institutions around the world have been successful in implementing PBL and some have clearly failed.

REFERENCES

- Albanese, M., & Mitchell, S. (1993) "Problem-based Learning: A Review of the Literature on Its Outcomes and Implementation Issues." *Academic Medicine*. 68, 1, 52-81.
- Barrows, H.S. and Tamblyn, R. M. (1980) *Problem-based Learning: An Approach to Medical Education*. New York: Springer.
- Benson G., Noesgaard C. & Drummond-Young M. (2001) "Facilitating Small Group Learning," in E. Rideout (ed.) *Transforming Nursing Education Through Problem-based Learning*. Sudbury Mass.:Jones and Bartlett.
- Berkson, L. (1993) "Problem-based Learning; Have the Expectations Been Met?" *Academic Medicine*. 68, 79-88.
- Bernstein, P., Tipping., Bercovitz, K., Skinner, H.A. (1995) "Shifting Students and Faculty to a PBL Curriculum: Attitudes Changed and Lessons Learnt." *Academic Medicine*, 70,3, 245-247.
- Bevis, E.O., & Watson, J. (1989) *Toward A Caring Curriculum: A New Pedagogy For Nursing*. (Publication No. 15-2278). New York: National League for Nursing.
- Boud, D. and Feletti, G. (1997) *The Challenge of Problem-based Learning*. New York: St Martin's Press.
- Cavanagh S. (1997) "Content Analysis: Concepts, Methods and Applications." *Nurse Researcher* 4, 5-16.
- Clarke, R.M., Feletti G.I., and Engle, C.E. (1984) "Students Perceptions of the Learning Environment in a New Medical School." *Medical Education*, 18, 321-325.
- Davis, S. (1994) *Problem-based Learning in Medical Education; A Qualitative Study of Curriculum Design and Students Experiences in an Experimental Programme*, Unpublished doctoral dissertation, Ohio State University.

- Distlehorst, L. H. and Robbs, R.S. (1998) "A Comparison of Problem Based Learning and Standard Curriculum Students: Three Years of Retrospective Data." *Teaching and Learning in Medicine*. 10, 3, 131-137.
- Dolmans, D. and Schmidt, H. (1996) "Advantages of Problem Based Curricula," *Postgraduate Medical Journal*, 72, 535-538.
- Evensen, D.H. and Hmelo, Cindy E. (2000) "Problem-based Learning: A Research Perspective on Learning Interactions." New Jersey: Lawrence Erlbaum.
- Fitzgerald, D., Flemming, T., and Baley, I. (1999) "Problem-based Learning and Libraries; The McMaster Experience," in J. Rankin (ed.) *Handbook on Problem based learning*. New York: Forbes for Medical Library Association.
- Hickey G. and Kipping C. (1996) "A Multi-Stage Approach to the Coding of Data from Open-Ended Questions." *Nurse Researcher* 4, 81–91.
- .Johnson, D. W., Johnson, R. T. and Smith, K. A. (1991) "Cooperative Learning: Increasing College Faculty Instructional Activity." ERIC-ASHE Higher Education Report No. 4 (George Washington University).
- Kaufman, D. M. and Mann, K. V. (1997) "Basic Science in Problem-based Learning and Conventional Curricula: Students Attitudes." *Medical Education*, 31, 177-180.
- Maxwell, J.A and Wilkerson, L. (1990) "A Study of Non-Volunteer Faculty in a Problem-based Learning Curriculum." *Academic Medicine*, 65(9), 513-514.
- Neufeld V, Sibley J. (1989) "Evaluation of Health Sciences Education Programs. Program and (Student) Assessment at McMaster University," in H. Schmidt, M. Lipkin, M. De Vries and J. Greep (eds.), *New Directions for Medical Education*. New York: Springer-Verlag:
- Nendaz, M. R., & Tekian, A. (1999) "Assessment in Problem-based Learning Medical Schools: A Literature Review." *Teaching and Learning in Medicine*, 11, 4, 232-243.
- Parahoo, K. (1997) *Nursing Research: Principles, Process and Issues*. Basingstoke: MacMillan.
- Savin-Baden, M. Howell Major, C. (2004) *Foundations of Problem-based Learning* Buckingham: Open University Press.
- Sandelowski, M. (1986) "The Problem of Rigor in Qualitative Research." *Advances in Nursing Science*. 8, 3, 27-37.
- Smith, C. P. (Ed.). (1992) *Motivation and Personality: Handbook of Thematic Content Analysis*. New York: Cambridge University Press.
- Vernon, D.T. & Blake, R.L. (1993) "Does Problem-based Learning Work? A Meta-Analysis of Evaluative Research." *Academic Medicine*, 68, 7, 550-563.
- Vernon, D.T (1995) "Attitudes and Opinions of Faculty Tutors about Problem-based Learning." *Academic Medicine*, 70, 3, 216-223.