

STEPS TOWARDS IMPLEMENTATION OF MODULAR HYBRID SYSTEM AT BAHRIA UNIVERSITY MEDICAL & DENTAL COLLEGE

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ABSTRACT

This survey was carried out from November 2008 till Dec 2011 to establish problem based learning (PBL) as part of hybrid modular curriculum at Bahria University Medical & Dental College (BUMDC) Karachi. It describes all steps undertaken to facilitate implementation of PBL system of education at BUMDC. During this period faculty was exposed to training workshops after which they were sequenced to prepare and present PBL in structured meetings and conduct them as facilitators. Faculty was exposed to 5 training workshops after which a total of 12, 27, 29 and 28 PBLs in 2008, 2009, 2010 and 2011 were prepared, presented and facilitated respectively. PBL system of education was implemented at BUMDC by stepwise measures which facilitated faculty members to prepare and apply this strategy for learning of medical students.

Key Words: Problem Based Learning (PBL), Medical education, Medical students, Structured meeting.

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INTRODUCTION

Problem based learning (PBL) is a strategy to enhance student centered, interactive learning through small group discussions revolving around a given problem¹. PBL is about active learning, with integration of basic and clinical sciences which enables students to explore practical applications of what they are studying. The problem can be a written clinical scenario, patient, simulated person or a short movie clip which triggers to stimulate the thinking process required for the understanding of the topic^{1,2}.

Medical students are overburdened with studies, which can be made interesting, inquisitive and pertinent to desired outcome with the help of introduction of PBL. It was introduced by Howard Barrows at McMaster University in 1969¹ after which many medical colleges have adapted this methodology either completely or partially³. This strategy not only caters to the knowledge domain but also polishes attitude and soft skills in an individual. In the process, students follow the 7-jump process to work around the given stimulus which includes Jump-1) reading the problem-if it's a written clinical scenario, identifying the difficult words and give

probable meaning of the identified words; Jump-2) the problem is defined as perceived by the students and the phenomena are listed; Jump-3) each phenomena is explained using prior knowledge; Jump-4) all the relevant information is arranged in a coherent manner e.g. flow chart; Jump-5) learning issues which have not been solved are formulated in the form of questions; Jump-6) self study to find answers to the learning issues using all available sources; Jump-7) final discussion of the problem⁴.

Research and literature shows a lot of variations but it has been shown that success of PBL depends on the quality of the PBL case, student's background, training of facilitators and most importantly the learning environment⁵. A well designed PBL with a vigilant facilitator can help to generate a fruitful discussion with active participation from all students and preservation of group dynamics. The facilitator although is not an active contributor to the discussion yet can intervene and interrupt when the group is deviating too much from the set objectives^{5, 6}.

It has been documented that partial implementation of PBL is more successful in medical schools with

hybrid-curriculum^{7,8}. The Bahria University Medical and Dental College (BUMDC) since its time of inception determined to follow a modular, hybrid system with incorporation of PBL along with large and small group interactive sessions, case based sessions, demonstrations, lab skills, seminars and model study. Majority of faculty members at the time of induction were not well versed with the philosophy and methodology of PBL. This could only be made possible by training of faculty members through workshops, presentations and discussions so as to facilitate learning by PBL sessions. The purpose of the exercise was thus to prepare faculty members to use PBL as effective teaching tool with the intention that it could be included in core curriculum at BUMDC.

METHODOLOGY

The survey report illustrates all steps taken during the process of execution of PBL with the help of flow chart. Figure 1 shows PBL Program at BUMDC.

Phases in implementation of PBL

Training on PBL at BUMDC was accomplished by the following steps:

1) Workshop on PBL process and writing.

In phase I, all faculty members were registered for series of workshops. All workshops were arranged and conducted by department of medical education (DME). They were based on the following objectives;

Perform the 7-jumps on a given non-medical scenario

Maintain group dynamics

Write a problem based scenario for undergraduate medical students

Once the faculty member had gone through two workshops, s/he was eligible to prepare and facilitate PBL sessions; however reinforcement workshops for trained faculty (remaining three) were carried according to schedule. The PBL system was implemented with the following sequence of events.

2). Presentation of PBLs in structured Meetings

Sequence of presentation of PBLs by respective departments was prepared by DME. Theme was based on integrated learning objectives, well defined in "Students Guide Book". The problems were presented on their schedule, fortnightly in structured Friday meetings (Table 1) where they were discussed and modified with respect to comments and suggestions contributed by all departments. The approved PBLs were sent to DME from where they were positioned in the weekly time table.

Appointment of PBL Co-ordinator:

S/he was appointed to arrange the pre PBL meeting, select facilitators, distribute PBLs and organize venue with all logistics.

Organization of Pre-PBL Meeting

They were notified and arranged by PBL co-ordinator before each PBL session and were chaired by the PBL designer. During this session all the designated facilitators were instituted to take active involvement in healthy discussion so as to solve the problem with the help of seven jumps.

PBL session

Observation of the PBL sessions:

All facilitators for first three PBLs were observed by PBL supervisors appointed by DME in session 1 and 3, since session 2 self studies; need not to be observed. On completion of this process, a written report of the facilitator's session was submitted to the DME.

Trained Facilitators: PBL facilitators were recruited from the approved list given by PBL supervisors. The role of the PBL facilitator was to take care of discussion to be on the right path and intervened only if discussion deviated too much from its course objectives. The facilitator however never took active part in the discussion and listened to the group discussion who via the 7-jump process tried to solve the problem. During the process, the facilitator assigned marks to each student, for session 1 the marks were awarded for maintaining group dynamics, and for session 3 marks were allotted for group dynamics and knowledge acquired to derive and solve all the learning issues identified in session 1. Once the marks had been written on the assessment form, they were submitted to the PBL coordinator who after compilation submitted it to the examination department for internal evaluation.

Since induction of new faculty is an ongoing process at BUMDC, observation phase of newly appointed faculty members was continued by already trained faculty members for at least three sessions after which, the trainee was appointed to facilitate PBL sessions (Figure 1).

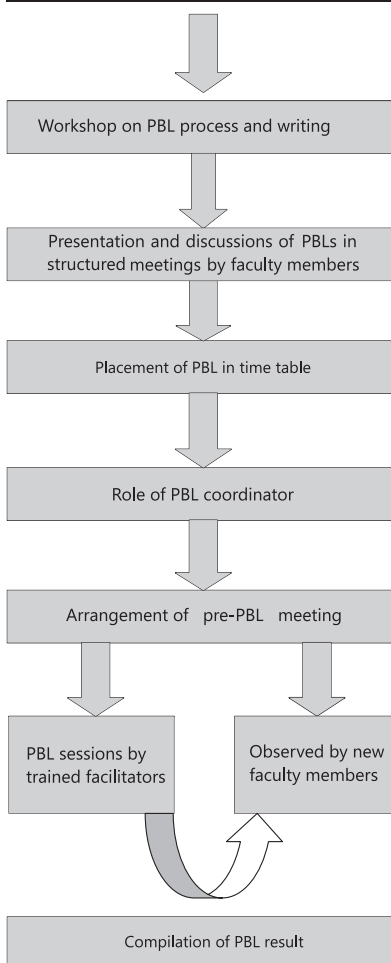
RESULTS

During the research period, five whole day PBL training workshops were conducted. They were attended by 51 participants, out of whom 36 were lecturers, 12 were assistant and associate professors and 3 were professors. The PBL exercise of preparation and presentation of PBLs (Table 1) started after the initial two workshops; three others were carried in due course of time. All the departments prepared a total of 12, 27, 29 and 28 PBLs in 2008, 2009, 2010 and 2011 respectively which were then included in core curriculum of BUMDC.

Table 1: PBL record from 2008-2011 presented in structured meeting & conducted at student level

	2008		2009		2010		2011	
Basic Sciences	Presented	Conducted	Presented	Conducted	Presented	Conducted	Presented	Conducted
Anatomy	04	04	04	04	05	05	05	05
Physiology	04	04	05	05	05	05	05	05
Biochemistry	04	04	05	05	04	04	05	05
Pharmacology			05	05	04	04	04	04
Pathology			02	02	05	05	03	03
Community Medicine			03	03	04	04	04	04
Forensic Medicine			03	03	02	02	02	02

Figure 1: PBL Program at BUMDC



DISCUSSION

Changing paradigms of medical education have led to a shift from teacher to student centered approach with introduction of several innovations in curricular design, implementation, and assessment procedures. The

transition from teacher to facilitator requires faculty to develop interpersonal skills in PBL facilitation through workshops, reinforcement by creation and improvement of PBL scenarios with command of group activity to solve given tasks⁹.

Content experts who have difficulty in switching from a conveyor of information to a facilitator of student learning should understand and accept the philosophy of PBL pedagogy. The learning starts with acceptance, dedication, belief in benefits of constructive learning, surrender of teaching control and change in attitude from dictation to facilitation. This educational viewpoint is likely to be faced with confrontation by those who love traditional didactic curriculum and are resistant to accept the change^{2,4}. To accept a change, the design of PBL workshops is very important¹⁰ hence workshops on orientation, methodology and facilitation of PBL were planned and conducted by well known, knowledgeable, conversant and experienced PBL training experts from reputable medical universities. Proper faculty training requires orientation of facilitators to be aware of PBL philosophy, learning objectives specified task, their role and specific duties as designated by the particular institution. Through training workshops, with appropriate role-playing, trainee facilitators develop a clear understanding of what they should and not do in the tutorial with encouragement, monitoring and assistance in learning¹¹.

Series of workshops were attended by all faculty members; majority did not have a prior experience of construction and facilitation of PBL. In these workshops, they were encouraged to understand rationale of PBL education, its need in development of active learning. The faculty members were told about the impact of punctual, tolerant, motivated and fair facilitator (role model) on behavior of students which is the pedagogic philosophy underpinning learning in PBL¹¹. They were given group projects to carry out a PBL session in seven jumps, encourage generation of discussion, welcome suggestions, avoid interruption in productive discussions and promote equal participation from all students.

The medical educationists at BUMDC wanted to know accomplishment of their endeavor (workshops) and carry on with its implementation, progress and development. For this purpose, all the departments were scheduled to present the PBL in educational structured meetings on alternating Fridays¹². These meetings; a core part of BUMDC routine from the beginning, gave faculty members a chance to present, defend and improve the presentation in a conducive learning environment. Presentation of PBL incorporated reflective practice of adult learning principles with challenges to come forward in the academic world through inquiring, discovery and solution of the clinical case and problem¹³.

Different studies have documented importance of PBL as a useful learning experience by both faculty and students¹⁴⁻¹⁶. The number of reviewed PBLs (Table1) represents interest of all departments to understand its philosophy and adopt it as a useful method in perceiving a better learning experience. Just as the finer de-

tails of the implementation of any PBL programme are unique to each institution, so are the particular expectations from the facilitator. In order to convey the explicit expectations to them, organization of pre PBL meetings before each session was made. Here comes the most imperative role of facilitator which is influenced by several contextual factors; student prior knowledge, familiarity with the PBL tutorial process, problem design, department affiliation, group composition and group productivity^{5,6} for which all the facilitators were trained to jump over the hurdle race and get the final award (accomplishment of learning).

The study is unique in the sense as it narrates story of development and implementation of PBL in a medical university which will prepare our students to meet challenges of future medical practice¹⁷. It however declares need of post PBL meetings which should be introduced to incorporate feedback from facilitators and session evaluation by the students for improvement of problems and hence learning of medical students.

CONCLUSION

PBL system was implemented as part of hybrid modular curriculum at BUMDC. The execution was made possible through training workshops, presentations of PBL and facilitation of these sessions. This indeed is an achievement which has been acquired by deep commitment to change mindsets of staff and students, appropriate training of faculty members empowered by strong leadership from the Dean of the university.

REFERENCES

1. Barrows HS, Tamblyn RM. Problem-based learning: an approach to medical education. New York: Springer Publishing Company: 1980.
2. Irie T, Nitta A, Akaike A. Current state of training in pharmacy education using a problem-based learning/tutorial model with simulated patients and standardized patients at National University Corporation. *Yakugaku Zasshi* 2012;132:357-63.
3. Tavakol M, Dennick R, Tavakol S. A descriptive study of medical educators' view of problem based learning. *BMC Med Educ* 2009;9:66.
4. Barrows HS. A taxonomy of problem based learning methods. *Med Educ* 1986;20:481-6.
5. Maung M, Abdullah A, Abas ZW. Appreciation of learning environment and development of higher order learning skills in a problem – based learning medical curriculum. *Med J Malaysia* 2011;66:435-9.
6. Ishikawa H, Hashimoto H, Kinoshita M, Yano E. Can non verbal communication skills be taught? *Med Teach* 2010;32:860-3.

7. Matthes J, Look A, Hahne AK, Tekian Ara, Herzig S. The semi-structured triple jump-a new assessment tool reflects qualifications of tutors in a PBL course on basic pharmacology. *Naunyn Schmiedebergs Arch Pharmacol* 2008;377:55-63.
8. Neville AJ. Problem based learning and medical education forty years on. A review of its effects on knowledge and clinical performance. *Med Princ Pract* 2009;18:1-9.
9. Butler R, Inman D, Lobb D. Problem-based learning and the medical school: another case of the emperor's new clothes? *Adv Physiol Educ* 2005;29:194-6.
10. Hmelo-Silver CE. Problem-based learning: what and how do students learn? *Educ Psychol Rev* 2004;16:1-32.
11. Zaidi Z, Zaidi SM, Razzaq Z, Lumen M, Moin S. Training workshops in problem-based learning: changing faculty attitudes and perceptions in a Pakistani medical college. *Educ Health (Abingdon)* 2010; 23:440.
12. Usmani A, Rehman R, Babar S, Afzal A. Impact of structured meetings on the learning of faculty members. *J Postgrad Med Inst* 2012;26:283-90.
13. Colliver JA. Effectiveness of problem-based learning curricula: research and theory. *Acad Med* 2000;75:259-66.
14. Whitney EM, Walton JN. Faculty and student perceptions of the success of a hybrid-pbl dental curriculum in achieving curriculum reform benchmarks. *J Dent Educ* 2010;74:1324-36.
15. Amato D, de Jesús Novales-Castro X. Feasibility of implementing learning based problem solving and peer evaluation approach among medical students in Mexico. *Gac Med Max* 2009;145:197-205.
16. Rehman R, Rubab Z, Usmani A, Rehan R. Problem based learning development program at Bahria University Medical and Dental College. *Pak J Med Dent* 2013;2:21-6.
17. Gwee MCE, Tan CH. Problem-based learning in medical education: the Singapore hybrid. *Ann Acad Med Singapore* 2001;30:356-62.

CONTRIBUTORS

RR conceived the idea, planned and wrote the manuscript of the study. ZR, AU and RR helped in the data analysis and write up of the manuscript. All the authors contributed significantly to the research that resulted in the submitted manuscript.