

# Faculty Perception Towards a “Hybrid” Problem Based Learning Methodology

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## ABSTRACT

This sequential quantitative and qualitative study was done to assess the perception of faculties towards a hybrid Problem Based Learning (PBL) methodology. To begin with, all faculty members of the department featured in a round of PBL facilitation. Later in phase I, their perception was assessed using a validated self-administered questionnaire. In phase II, personalized interview was conducted with each faculty. Finally phase (III) involved a focus group discussion on issues identified in previous phases.

Among the 10 faculties, 9 had good and 1 had average perception about PBL. The various issues brought out by faculty in phase (II) and (III) were; need of formalized training in PBL for facilitators, need of integrated PBL sessions, need of variety of PBL exercises and need of student's assessment for every session.

**Keywords:** Faculties, Hybrid model, Perception, Problem based learning

## INTRODUCTION

Problem Based Learning (PBL) is currently gaining popularity at medical schools [1]. It was introduced for the first time in the Department of Community Medicine at the study institution. The self-directed learning activity, an essential requirement in this methodology is well supported by a well-resourced library and internet facility provided by the institute.

However, implementation and maintenance of PBL involves addressing other resource implications such as requirement of sufficient tutorial rooms [2-4]. Using a single tutorial room, by scheduling of PBL tutorials for multiple groups at different times may not be always possible during regular teaching hours. Hence, to ensure that all 50 students in a clinical posting batch get benefitted in a single setting, hybrid PBL was designed and implemented by the department.

Shifting from a teacher-centered to a student-centered curriculum in PBL, be it conventional or hybrid, involves change in identity of faculty, from a provider of information to promoter of learning as a facilitator which takes time to adjust [2]. Few faculties may also have a feeling of uncertainty in this role, as to when to and when not to intervene, during a session [2]. This aspect needs to be focused as facilitators' performance is crucial for success of PBL session [5]. For this, experience sharing by faculties becomes essential post implementation of PBL. This study was hence, done to assess the perception of faculty towards a hybrid PBL methodology.

## MATERIALS AND METHODS

This sequential quantitative and qualitative study was done in November-December 2015 among all faculty members of Department of Community Medicine, Kasturba Medical College, Mangalore, India. Approval of the institutional ethics committee was taken in November 2015.

Earlier, all faculties in this department were trained in PBL facilitation methodology by experts from Medical Education Unit (MEU) of this institution in June 2015 using power point slides, interactive discussion and demonstration. Following this each faculty had facilitated one PBL session involving final year medical students in the 3<sup>rd</sup> Clinical postings in Community Medicine.

A “hybrid PBL session” was conducted among the group of approximately 50 students posted each month. In this method, first 25 serial numbers constituted the “participants” and the rest were “observers” for first PBL session. For the second PBL session

conducted later in the month on another topic, the “observers” of first session played the role of “participants” and vice-versa. By this procedure, all students in the postings got an equal opportunity to be involved in all PBL sessions. Out of the 3 validated PBL exercises on tuberculosis, malaria and HIV, two were used on rotation every month.

Ten PBL sessions were conducted between June to October 2015 i.e. till the completion of the postings for the entire batch of 247 students. Each session was facilitated by a different faculty and it was modeled as per the Maastricht “seven jump” process [6]. The brainstorming session was of 45 minutes, the self-directed study period was of one week and the presentation session was for about two and half hours.

A self-administered structured questionnaire was used to assess perception after obtaining written informed consent from each faculty. This questionnaire was prepared from a standardized feedback form [7]. It was content validated by experts from MEU. It consisted of a total of 62 statements (parameters) to assess perception which included 10 statements related to perception towards application of knowledge base in PBL, 13 statements on clinical reasoning and decision making skills in PBL, 4 statements each on self-directed learning, collaborative work, feedback on PBL exercise and feedback on facilitator self-performance in PBL, 11 statements on student's performance and 12 statements on general perception about PBL facilitation.

The statements were designed in 5 point Likert scale (strongly agree 5, agree 4, neutral 3, disagree 2 and strongly disagree 1 point) responses. Reverse scoring was done for 7 negative statements. Cumulative scores ranging from 90 to 153 were considered as poor, 154 to 217 as average and 218 to 282 as good perception towards PBL.

Demographic information on age, gender, designation, years of teaching experience and prior experience in PBL facilitation was also obtained from each faculty.

In the second phase, in-depth structured face to face personalized interview was done privately with each faculty using open ended questions, as to what went on well, what did not and how things could be bettered upon next time with respect to the various barriers identified during hybrid PBL facilitation.

In the third phase, a focus group discussion was conducted in December 2015, involving all faculties in the department, on overall

Characteristics of PBL	Mean score	Kendall's tau - b coefficient	p-value
Students can make connections between related subjects.	4.2±0.4	0.0	1.0
Helps to make decisions in unfamiliar situations.	3.1±1.2	0.0	1.0
Leads to active involvement of students in the class.	4.3±0.8	0.027	0.922
Helps students to develop skills in group learning.	4.2±0.6	-0.029	0.929
Enhances clinical approach.	4.1±0.6	0.031	0.929
Gives way for students to read diverse and recent bibliographic sources.	4.4±0.7	0.028	0.932
Helps in better retention of knowledge.	3.6±1.1	-0.028	0.922
Enhances student's ability to work productively as a team member.	4.1±0.6	0.031	0.929
Helps in improving time management skills.	3.8±0.8	0.0	1.0
PBL exercises were well framed.	4.2±0.4	0.0	1.0
Active involvement of participants was seen in brainstorming session.	3.8±0.8	0.0	1.0
The facilitator ensured that discussions were taking place in the right direction.	4.3±0.5	-0.033	0.916
Preparation of new PBL exercises would not be a challenging task.	1.7±1.1	-0.028	0.922

**[Table/Fig-1]:** Agreement between faculties regarding few selected parameters of PBL.

Sections of PBL methodology	Number of parameters	Total mean score	Mean score per parameter	Kendall's tau - b coefficient	p-value
Application of knowledge base	10	39.2±2.7	3.92±0.27	-0.048	0.84
Clinical reasoning and decision making skills	13	48.3±5.56	3.71±0.43	-0.27	0.217
Self-directed learning	4	14.4±2.17	3.6±0.54	-0.047	0.867
Collaborative work	4	14.8±2.1	3.7±0.52	-0.236	0.414
Feedback on PBL exercise	4	17.1±1.45	4.27±0.36	0.307	0.207
Feedback on students' performance in PBL tutorials	11	39.8±5.9	3.62±0.54	0.494	0.024
Feedback on facilitator performance	4	16.7±1.06	4.17±0.26	0.028	0.914
General perception towards PBL methodology	12	42.5±3.84	3.54±0.32	-0.116	0.705

**[Table/Fig-2]:** Agreement between faculties regarding different sections of PBL methodology.

experience in hybrid PBL facilitation and for discussion on various issues raised in the interview during the second phase.

Data entry and analysis was done using SPSS Inc., Chicago, IL version 16. Agreement between faculties was assessed using Kendall's tau-b test. Non-parametric tests like Mann-Whitney U and Spearman's rank correlation were used to test association and correlation respectively, taking  $p \leq 0.05$  as statistically significant. To identify parameters with best agreement among faculties, p-values near to 1 was taken, indicating insignificant difference in opinion between faculties. Qualitative data was analysed through content analysis.

## RESULTS

The faculties comprised of 3 Assistant Professors, 6 Associate Professors and 1 Professor. Those with designation Associate Professor and above were considered as senior faculties. Mean

age of the faculties was  $36.6 \pm 7.7$  years and their mean years of teaching experience were  $8.7 \pm 9.4$  years. Only one faculty was a female. Three faculties had prior experience in PBL.

Among the faculties, 9 had good perception and 1 had average perception about PBL. All faculties agreed that PBL elaborates student's prior knowledge through co-operative discussions, it helps students to make connections between related subjects while studying, triggers in PBL exercises help to stimulate discussions, PBL exercises were well framed, their own performance as a facilitator was good, they were now aware of PBL methodology, were now confident in conducting the sessions, and that they would like to have PBL sessions with greater integration of disciplines. Half of the faculties strongly agreed that PBL helps in development of critical thinking skills among students, paves way for active involvement of students in the class and encourages students to read diverse and recent bibliographic resources.

Regarding the negative aspects about PBL, five faculties agreed that students tend to selectively prepare for certain learning objectives rather than reading the topic as a whole, seven agreed that during the course of the session, contribution was not satisfactory by few students, six agreed that PBL is a time consuming methodology and eight agreed that preparation of new PBL exercises would be a challenging task.

Parameters which showed very good agreement between faculties ( $p = 1$ ) and a mean score above 4 are shown in [Table/Fig-1]. The opinion that preparation of new exercises for future PBL sessions would be a challenging task showed very good agreement between faculties [Table/Fig-1].

The parameters under the section on application of knowledge base using PBL, self-directed learning activity in PBL and feedback on facilitator's (self) performance showed very good agreement between faculties [Table/Fig-2].

The correlation between age of participants with perception scores towards PBL was found to be Spearman's  $\rho = 0.426$  ( $p = 0.22$ ). The mean perception scores among junior faculty was  $227 \pm 9.2$  and among senior faculty was  $235.3 \pm 14.6$  ( $Z = 0.8$ ,  $p = 0.424$ ). The correlation between years of teaching experience with perception scores towards PBL was found to be Spearman's  $\rho = 0.015$  ( $p = 0.967$ ). The mean perception scores among faculty with prior experience in PBL was  $242.3 \pm 22.1$  and among those without was  $228.7 \pm 6$  ( $Z = 1.029$ ,  $p = 0.304$ ).

The issues about PBL brought out by faculties during in depth interview were as follows: need of formal training and periodic refresher training for facilitators, need of integrated PBL sessions involving other subject faculty, need of more variety of PBL exercises on topics like non-communicable diseases, paediatrics and reproductive and child health, and assessment of performance of students to be done in both brainstorming and presentation sessions to make students serious in the given task. Some of the concerns about PBL brought out in the interview were, students read certain issues on the topic in-depth, which are not routinely asked in exams and that it is a time consuming methodology.

The focus group discussion provided further clarifications on the issues identified in phase I and II. One of the junior faculty remarked, "As a facilitator I felt that I should have prepared further on the learning objectives so that I could have supplemented more in addition to what students presented towards the end". Another junior faculty commented that, "Observer group did not contribute at all in PBL session. It was very evident from their body language that they haven't come prepared at all on the topic chosen for the day".

A senior faculty felt almost the same about the participants group. "Framing 25 learning objectives led to students not having sufficient content to present and thus, were not serious at all in the task

assigned on presentation of learning objectives,” was one of the narrations. Remedy to this problem was commented by another senior faculty as, “Marks are to be linked with performance of participants and only then students will be more serious with PBL. The observer group students also have to be assessed by questioning them randomly at the end”.

## DISCUSSION

Almost all faculty in this study gave a favourable feedback about PBL which was conducted in an innovative manner. Similarly, in studies done in other medical colleges in India and abroad, 61.2% to 96% faculty agreed that PBL was better than traditional teaching methods [8-10] and 64% to 83.9% of faculties welcomed its implementation at their institutes [8,10-13].

Feedback on current experience in PBL given by majority of faculties in other studies was as follows: students showed less interest in PBL because PBL attendance and evaluation was not given any weightage in internal assessment or in professional examination [13], self-perceived need of special training in PBL [11] and no difficulty in adjusting to a PBL curriculum from a lecture-based curriculum [9,13]. We had similar observations in the present study.

However, in this study we did not encounter feedback such as current workload cannot be managed with present faculty strength [10] and good confidence in ability to design PBL exercises [9] as expressed by majority of faculties in other studies. Logistics requirements and challenges in PBL implementation, as identified by majority of faculties in a Pakistani study were non-availability of rooms, furniture, access to computer and internet and no remunerations for extra laborious job [14].

Regarding training in PBL, the faculty opined that it could be conducted by the institutional MEU or by doing video demonstration [15] or organizing hands on workshop on PBL [16].

In other studies, senior faculties were less enthusiastic than junior faculties towards implementation of PBL based curriculum which was different from our observations [9,17].

The perception towards PBL in this study was slightly better among faculties with prior experience compared to those without experience indicating that facilitators tend to become more comfortable with repeated experiences in PBL facilitation.

## LIMITATION

The current study did not evaluate the perception towards hybrid PBL among faculties from other departments.

## CONCLUSION

Overall perception of facilitators shows that PBL, be it conventional or hybrid, is a useful activity and should therefore be sustained.

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