

Students' Perception of Problem-based Learning in the Medical Curriculum of the Faculty of Medicine, University of Colombo

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Abstract

Introduction: Problem-based learning (PBL) is used as an instructional method in the system-based modules of the new innovative curriculum of the Colombo Medical Faculty in Sri Lanka. This study was undertaken to assess whether objectives of having PBL to facilitate acquisition of desirable learning skills and generic skills had been achieved. The perceived advantages and disadvantages of PBL were also studied. **Materials and Methods:** The study population comprised third year medical students who had completed 12 PBL sessions. A self-administered questionnaire, which measured learning outcomes and acquisition of generic skills on a 5-point Likert rating scale, was used. **Results:** The response rate was 87.2% (n = 188). Eighty per cent of students were aware of the rationale for having PBL and of learning from recommended material. Seventy-five per cent knew the competencies that could be acquired from PBL and two-thirds knew about the importance of small group discussions. PBL had helped to improve communication skills in 57% and problem solving skills in 52%. The main disadvantage was that it was time-consuming. Only 46.6% were satisfied with the participation of colleagues in the group. Seventy-six per cent felt that PBL could be better conducted. **Conclusion:** Awareness of concepts of PBL, reasons for its inclusion in the curriculum and educational advantage was high. The main disadvantage perceived was that it was time-consuming. There is a need to improve the conduct of PBL and, provide guidance and awareness programme for students.

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Key words: Generic skills, Learning skills, Tutor guidance, Undergraduate learning

Introduction

The Colombo Medical Faculty introduced a new curriculum with many innovative features in 1995. Problem-based learning (PBL) is used as an instructional method within system and topic-based modules. There are 12 to 14 four-hour PBL sessions in a one-year academic programme. A PBL session is conducted in two parts. The first half is of 2 hours duration. The second half, also two hours long, is conducted within 4 to 7 days of the first. This method of learning is new to students who have been educated in schools using a teacher-centred, didactic approach. The PBL learning activities are compulsory.

The rationale for having PBL is to give students the opportunity to benefit from its potential advantages of encouraging self-directed and deep approach to learning; facilitating acquisition of generic skills; increasing motivation and enjoyment of learning and in promoting development of clinical reasoning.¹⁻³

Objectives

This study was undertaken to evaluate:

- 1) the success of PBL in helping students
 - to become self-directed learners, acquire a deep approach to learning, identify learning needs and to use learning resources
 - to acquire generic skills of problem solving, working in groups and developing communication skills
 - to be motivated learners
- 2 the advantages and disadvantages as perceived by students
- 3 the conduct of PBL

Materials and Method

A descriptive cross-sectional survey was carried out among 188 third year medical students, who had experienced PBL for a year, using a self-administered questionnaire. The questionnaire measured outcomes of learning (9 items) and acquisition of generic skills (2 items) on a 5-point Likert rating scale. The questionnaire also elicited responses to more specific questions on participation of group members in the sessions and their enjoyment and motivation to learn. Opinion was also sought from the students on the

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conduct of the PBL sessions. Open-ended questions were also asked to obtain the perceived advantages and disadvantages of PBL.

Results

The questionnaires were given out to 188 students and 164 responded. The response rate was 87.2%. The students had been exposed to 12 PBL sessions over a 1-year period of academic study. Table I shows that 50% of students who answered the questionnaire had attended 9 or more PBL sessions.

Eighty per cent of students were aware of the rationale for having PBL in the curriculum and of the importance of learning from recommended resource material (Table II). The competencies that could be achieved were known by 75.6% and the importance of identifying personal learning needs by 71.3%. Only a little more than two-thirds knew of the need for participation in small group discussions. Twelve per cent to 25% were not aware of these concepts.

Active learning rated a mean score of 30.5 out of a total score of 45. The mean score for acquisition of generic skills was 7.2 out of 10. The percentage student rating of acquisition of learning and generic skills and in motivating students to learn are shown in Tables III and IV.

Over two-thirds of students agreed that learning objectives were clear (68.1%), and 66% were using learning resources such as books and journals after the first half of the session (Table III). Sixty-seven per cent did not perceive it as a teacher-centred learning method, 56.1% agreed that PBL helped in active learning and 46.7% said that it encouraged a deep approach to learning.

TABLE I: ATTENDANCE AT PBL SESSIONS

No. of PBL sessions	Students' attendance	
	No.	%
0-4	15	11.7
5-8	49	38.3
9-12	64	50

(36—no response)

TABLE II: STUDENTS' AWARENESS OF RATIONALE AND BASIC CONCEPTS OF PBL IN THE UNDERGRADUATE CURRICULUM (n = 164)

Students' awareness	Percentage		
	Yes	No	NR
1. Rationale for using	79.9	13.4	6.7
2. Importance of learning from resource material	79.9	12.8	7.3
3. Competencies that can be acquired	75.6	17.1	7.3
4. Identification of personal learning needs	71.3	19.5	19.5
5. Need for participation in discussions	68.3	24.4	7.3

NR: no response

PBL has helped to improve communication skills in 57% of students and problem solving skills in another 52%. Only 50% found the PBL sessions stimulating. The proportions that enjoyed (38.3%) and did not enjoy PBL were (38.9%) similar.

The students agreed that the main disadvantages were that PBL was time-consuming (52.8%) and that the teacher's input was not enough (51.9%, Table IV). Only 44.8% of students agreed that the knowledge gained was less structured.

Student participation in the group discussions was not adequate. Only 46.6% were happy with the participation of their colleagues in the group and a majority (53.2%) found the atmosphere during PBL sessions uncomfortable (Table V).

76% of students felt that PBL could be better conducted. Only 49% agreed that they received adequate guidance on resources (Table V). Only one-third agreed that the facilitators did not participate well in the PBL sessions.

The open-ended questions, asking for the students' opinion of the advantages of PBL, elicited the information that acquisition of communication skills (n = 59, rank 1), ability to retain knowledge in long-term memory (n = 28, rank 2) and active learning (n = 22, rank 3) as being the most important.

The three commonest perceived disadvantages in order of their ranking were: time-consuming (n = 96), poor participation by fellow students (n = 21) and poor facilitation (n = 20).

TABLE III: % STUDENT RATING OF THE ACQUISITION OF SKILLS AND MOTIVATION THROUGH PBL

	% student rating		
	Agree	Disagree	Unsure
Learning skills			
Objectives were clear (n = 163)	68.1	15.3	16.6
Read more books and journals after 1 st session (n = 159)	66	28.8	8.2
Helped in active learning (n = 164)	56.1	26.2	17.7
Encourage deep approach to learning (n = 163)	46.7	26.3	27
Teacher-centred (n = 160)	18.1	66.9	15
Gain more knowledge from a lecture compared to PBL (n = 163)	33.1	39.3	27.6
Generic skills			
PBL improves communication skills (n = 164)	57.3	22.6	20.1
Actively involved in problem solving	51.8	25.6	22
Motivation			
PBL sessions were stimulating (n = 163)	50	24.4	25.6
Enjoy PBL (n = 162)	38.3	38.9	22.8

TABLE IV: % STUDENT RATING OF DISADVANTAGES

Disadvantage	% student rating		
	Agree	Disagree	Unsure
Time-consuming (n = 159)	52.8	35.9	11.3
Teacher's input is not enough (n = 162)	51.9	26.5	21.6
Knowledge gained is disorganised (n = 163)	44.8	28.2	27
Makes it difficult to identify a good teacher (n = 152)	25	31.6	43.4

Discussion

The students' awareness of the rationale of using PBL and its basic concepts was satisfactory. Only two-thirds expressed an awareness of the need for active participation in small group discussion. This is also confirmed by the fact that only 47% were happy with the participation of other group members, and that poor participation of fellow students ranked second among the disadvantages identified by them. Many authors have highlighted the importance of group participation and group process in achieving the goals of PBL through providing opportunities to elaborate their knowledge.^{1,4} Reasons for this can be due to one or a few students taking the leadership role hence affecting the group process. Difficulties in communicating in English, as they learn in their mother tongue till they enter the medical faculty, could be another reason.

Students' achievements in the area of learning skills were consistent with commonly expressed PBL outcomes such as self-directed learning, identification of learning objectives, use of learning resources and deep active learning. Albanese and Mitchell⁵ summarising literature on PBL concluded that students tend to be active and self-directed learners using library, textbooks, journals and other resources more than students learning in traditional curricula. Similar conclusions have been drawn by other authors.^{1,2,6}

The study also shows that learning through PBL has improved communication skills and problem solving skills in over 50% of students. However, Norman and Schmidt² after a review of literature concluded that there is no evidence that PBL results in improvement in general, content-free problem solving skills.

More than half of the students felt that PBL is time-consuming compared to the traditional method of learning. This may be due to the fact that they are used to didactic lectures throughout their student learning and find unstructured information gathering time-consuming.

Three-quarters of students felt that the PBL could be better conducted. This may be related to the uncomfortable atmosphere during PBL (53%) and poor participation by colleagues (41%). Only 50% of respondents agreed that the

TABLE V: STUDENT RATING OF GROUP PARTICIPATION AND CONDUCT OF PBL SESSIONS

	Agree	Disagree	Unsure
Student participation in group discussions			
Happy with participation of other group members (n = 163)	46.6	41.1	12.3
Atmosphere not comfortable (n = 158)	53.2	34.2	12.6
Conduct of PBL sessions			
Can be conducted better	76	16.6	7.4
Received adequate guidance on resources (n = 164)	49.3	22	28.7
Facilitators do not participate well in PBL sessions (n = 164)	33.1	43.3	23.6

guidance received on resources was satisfactory while 28% were not sure. Contrary to what was expected, only 50% of the students found PBL motivating and 38.3% enjoyed PBL.

Conclusion

The awareness of the use of PBL in the undergraduate curriculum and the competencies that could be acquired is well understood by nearly 80% of the students. However, there is scope to improve PBL; by improving the conduct of PBL sessions and providing adequate guidance to staff and students. PBL could be made more stimulating and enjoyable through paying more attention to problem design, improving the atmosphere at PBL sessions and training of facilitators.

The active participation of students in PBL group process should be improved by conducting study skills on PBL showing the rationale and emphasising the need for active student participation, introducing a marking scheme for group activities and using the marks in the assessment.

Though the Colombo Medical Faculty uses PBL only as an instructional method among many others, students have benefited from its potential advantages to a greater extent.

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