

Should Problem based Learning be Included in Teaching Physiology along with Traditional Method of Learning? A Student's Perception

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Abstract

Aim: To evaluate students' perceptions about the role of Problem Based Learning (PBL) in Hybrid curriculum. **Background:** Problem Based Learning is an approach which has more leaning towards student centered pedagogy. The general consensus is that PBL inculcate self directed learning which help them in learning core concept, improves communication skill, formulation of their own learning objectives and team work. Particularly in basic sciences the triggers which are used in PBL gives the students prior idea of the clinical relevance of the topic and this act as a great impetus for the student towards self directed learning. **Material and Method:** This questionnaire-based study was conducted in the Department of Physiology, IGIMS, Patna. 98 Medical students from first professional MBBS were inducted in the study. Questionnaire consisted of 15 items and used three point Likert scale as "disagree," "neutral," or "agree," to measure students' perception of Problem Based Learning effectiveness. Questionnaire judged the perception in the field of quality of learning, ability to inculcate team work, confidence, interpersonal communication skill with colleague as well as seniors and role of facilitators.

Result: Statement enquiring about the role of PBL in clarifications of doubt, learning from the peers, in overcoming the nervousness and anxiety while speaking in front of class, ability to communicate more effectively, better understanding of the applied aspect and in ability to develop acute clinical acumen, we got a positive (agree) response which was well above ninety percent. For the rest of the statement the answer had a stronger leaning towards agree and the mean percentage for them was hovering around eighty five percent. **Conclusion:** The student's perception is strongly in favor of PBL. According to them PBL will help them to excel in all the aspect of Blooms taxonomy.

Keyword: Problem based Learning Self directed learning, Communication skill, team work

Introduction

Recent history has seen a quantum leap in the field of medical education. Newer methodology and techniques of imparting medical knowledge are abundant, and it's a herculean task to choose the best among them to teach our medical student a particular

topic. Now the curriculum development is in fluid state and it needs serious research with due diligence to develop a curriculum which imparts in-depth knowledge to the student as well as to incline the students towards self-directed learning, critical analysis and application of the knowledge towards the treatment of the patient as a whole.^{1,2,3,4,5}

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Age old tradition of teaching by using didactic lecture has lost its relevance of late since it is teacher centric and autocratic in nature and doesn't promote active participation from the students. It blunts students own critical thinking, reasoning and analysis.

In hybrid curriculum students gets exposed to two different type of teaching strategy i.e. PBL in small group and traditional didactic lecture and practical classes. In this set up students gets opportunities to utilize their earlier exposure to the topic instructed through didactic lecture and practical classes.^{6,7}

Problem Based Learning is an approach which has more leaning towards student centered pedagogy. The general consensus is that PBL inculcate self directed learning which help them in learning core concept, improves communication skill, formulation of their own learning objectives and team work. Particularly in basic sciences the triggers which are used in PBL gives the students prior idea of the clinical relevance of the topic and this act as a great impetus for the student towards self directed learning.^{8,9,10,11,12}

Objectives

To evaluate students' perceptions about the role of Problem Based Learning in Hybrid curriculum.

Methodology

This questionnaire-based study was conducted in the Department of Physiology, IGIMS, Patna. 98 Medical students from first professional MBBS were inducted in the study. Students were informed about the research methodology, objectives and formal written consent was obtained and permission was taken from the institute ethics committee.

98 students were further divided into were divided into small group of 8 to 10 students. A facilitator was assigned to each group. Among the group a chair and scribe was selected for each PBL scenario. The chair and the scribe rotated for each PBL scenario. The group stayed together for the entire duration study to allow positive group dynamics. Study group was instructed in cardiovascular physiology using didactic lectures and practical classes and Problem based learning method (PBL).

Creation of the scenario was done with utmost diligence since it should lead to compilation of learning objective by students matching to those of faculty. It was pertaining to the current stage of learning, and had future clinical relevance and capability to involve the entire group. The facilitators or tutors were trained in PBL methodology.

PBL tutorial Step followed in our study:¹³

1. Identification and clarification of unfamiliar term included in the problem scenario

2. Consensus of the students on the problem scenario to be included i.e. every student must be satisfied that their learning objective will be achieved by problem scenario and facilitator must himself be satisfied that learning objectives set by the students is relevant, compact and achievable.

3. Orchestrated in a way so that there is through brainstorming and everyone's individual knowledge should complement that of others. Group should share their result of private study. Restructuring can be done when ever needed.

Questionnaire consisted of 15 items and used three point Likert scale as "disagree," "neutral," or "agree," to measure students' perception of Problem Based Learning effectiveness. The questionnaire was prepared in such a manner that it judged the perception in the field of quality of learning, ability to inculcate team work, confidence, interpersonal communication skill with colleague as well as seniors and role of facilitators

Results & Observations

98 students were part of the study. Among 98 participant 56 were male and 42 were female and they fell in the in the age bracket of 17 to 23 years (Mean±SD= 18.76±0.53). For all the statement of the questionnaire we did not observe any change in pattern on the basis of gender.

For the statement enquiring about the role of PBL in clarifications of doubt, learning from the peers, in overcoming the nervousness and anxiety while speaking in front of class, ability to communicate more effectively, better understanding of the applied aspect and in ability to develop acute clinical acumen we got a positive (agree) response which was well above ninety percent.

For the rest of the statement the answer had a stronger leaning towards agree and the mean percentage for them was hovering around eighty five percent.

Few statements of the questionnaire were purposefully similar to obviate any misunderstanding the question.

Table: 1 Perception of undergraduate medical Students towards PBL (n=98)

S.N.	Statements	Disagree	Neutral	Agree	Score(Mean±SD)
1.	PBL will help me to acquire better clinical acumen.	5	8	85	2.81±0.50
2.	Discussion during the PBL helps to clarify my doubts on the subject matter.	3	2	93	2.91±0.37
3.	Healthy peer competition makes the learning more interesting and challenging.	8	7	83	2.76±0.45
4.	PBL gives me chance to know about the methodology my peers adopt and imbibe into my learning process if I find it useful.	4	3	91	2.88±0.42
5.	Allowed to overcome nervousness while speaking in front of class.	3	2	93	2.91±0.00
6.	PBL boosted my confidence and my ability to express my thought and gathered information.	4	5	89	2.86±0.17
7.	PBL improved my interpersonal communication skill, leadership quality and how to approach any problem as team.	7	5	86	2.86±0.30
8.	Small group made the learning more challenging, interesting, motivating, engaging and fun.	8	6	84	2.77±0.34
9.	Small group enhanced my ability to communicate more effectively	3	5	90	2.88±0.32
10.	Knowledge and skill acquired in group will help me in clinical practice.	2	3	93	2.92±0.00
11.	I have understood the applied aspect in a better way	2	3	93	2.92±0.00
12.	In general, tutors stimulate students to make use of different sources of information and stimulated my learning activity.	6	8	84	2.79±0.28
13.	PBL will help me to become doctor with better teaching ability	6	5	87	2.82±0.22
14.	PBL will help me to understand the subjects of the other professionals easier and interesting	3	2	93	2.89±0.01
15.	Facilitators have a positive influence	7	9	82	2.74±0.40

Discussion

This study was undertaken with the purpose of finding out student's point of view with respect to small group teaching particularly Problem Based Learning in addition to didactic lecture. PBL effectiveness was assessed for five major domains of learning i.e. self directed learning, ability for critical analysis and its application in clinical scenario, building up of self confidence and motivation, Communication and ability to work as a team.

In our study mean score of almost all the questions asked hovered mainly around three (on a three point Likert scale) which is in alignment with the studied opinion of Dochev et al. and that of Saha et al and others. In their view PBL enhances self directed learning, ability to critically analyze and brings about increment in the self confidence and critical analysis and has over all positive bend in the learning attitude of students ^{14, 15,16,17,18}

Students were strongly of opinion that PBL gave them the opportunities to acquire the art of team work and to imbibe the learning methods of others and got motivated from each other. Similar observation was made by Dolmans et al in their study.¹⁹

On the question of problem solving skill, self directed learning and the opportunities to clarify doubt students vehemently supported PBL. Studies undertaken by several researchers had showed similar observation.^{14, 15, 16,17,18,20}

A number of studies have reported advantages for small group teaching method which include increasing opportunities to ask questions; increasing student faculty and peer to peer interaction; improving communication skills, and improving presentation skills of the students.¹⁵. In our study, students indicated that learning in small group settings have helped them communicating effectively.

On the issues of improving communication and presentation skill, doubt solving with the help of peers and facilitators we had a similar finding to that of studies done by Euliano TY et al.¹⁵

One of the statements of our questionnaire was enquiry about effectiveness of the PBL in overcoming the nervousness of speaking in front of class. Our study found out PBL is an effective tool in this regard which is in contradiction to the observation made by Rehman et al.²¹

Our study also draws a conclusion that facilitators or tutors had a positive influence on the students with respect to their process of learning. Similar observation was made by Chung et al. and others^{16,22}

The questionnaire used by Saha et al in their study had few open ended question regarding the role of facilitators. They observed that students were uncomfortable by dominating role of the tutor. For overcoming the above mentioned difficulty they suggested proper training of the tutor by medical education unit for conducting a fruitful PBL session

Limitations of the study

The current study was confined to Department of Physiology so we cannot extrapolate the observation to other subject of the same professional and to that of other professionals. The questionnaire prepared is influenced

by the subject of physiology and therefore it cannot be used as an umbrella questionnaire.

Conclusion

The student perception is strongly in favor of PBL. According to them PBL will help them to excel in all the aspect of Blooms taxonomy.

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