



Original Research Article

Hybrid problem based learning: An innovative teaching learning method – Reflective experience

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ABSTRACT

Background: The concept of Problem-based Learning (PBL) was first introduced at McMaster University in the late 1960s and was subsequently accepted widely by the medical schools throughout the world. hPBL has been intuitively viewed by many as a cocktail curriculum of McMaster style of small group discussion PBL (generally referred to as “pure PBL”) with the blending of variable amounts of traditional lectures, practical sessions and case-studies. Objectives: The study was done as an introduction of innovative teaching learning method and its learning experiences by students and faculty involved.

Materials and Methods: The innovative teaching learning method was adapted during the year July – October - 2019 when the students were posted in the department of community medicine for four weeks. The TL methods included were blended lectures; case scenarios (clinico social case pertaining to community medicine subject), pre test and post test MCQs, case presentation and in small group discussion were done. The experiences were obtained as the reflective writing from the students and the faculty involved in implementation of h-PBL.

Results: Majority of the students expressed that the learning was useful, interactive, thought provoking, interesting and the group discussion paved the way for communication skill development among the peers. The students said that the learning happened actively and scope for self directed learning was also incorporated in the implementation of h-PBL. Faculties involved were very enthusiastic especially during the group discussions, because the sociogram was excellently represented that almost all the students took part in the discussion.

Conclusion: The h-PBL can be a part of the regular curriculum during the clinical postings which can include case based learning with blended lectures.

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1. Introduction

Problem based learning, originally introduced in the Medical School at Mc- Master University in Canada in the late 1960s, and is now being used as a learning method in many medical schools in the United Kingdom and worldwide.

2. What is Problem based Learning?

1. It is an active, self-directed and student-centred teaching approach in which students work in a group to solve a problem, as opposed to direct presentation of facts and concepts.¹
2. In PBL, case scenarios are used as an agent to stimulate the students to learn various concepts and principles.
3. It focuses not only on problem solving but also on enhancement of other traits such as group synergism,

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communication and critical thinking skills.

- The method of PBL was initially introduced for medical pedagogy and has since been used for various other fields as well.²

3. What is Hybrid PBL?

- Hybrid PBL can be defined as a curriculum which motivates students to take the initiative of self-directed learning with “faculty-guided” (and not “faculty-dictated”) identification of learning needs, through small group discussions (occupying a significant portion of the curriculum) and large group teaching formats (lectures) and uses assessment methods that apart from recall of information evaluate the deep learning and reasoning skills of students.
- hPBL has been intuitively viewed by many as a cocktail curriculum of McMaster style of small group discussion PBL (generally referred to as “pure PBL”) with the blending of variable amounts of traditional lectures, practical sessions and case-studies.³

3.1. Origin of PBL

- PBL was established by Barrows and Tamblyn at the medical school program at McMaster University, Hamilton in the 1960s.
- Students were discontented with the conventional medical curriculum stating that it had minimal relevance to clinical medicine.
- PBL was introduced to correlate the theoretical curriculum with clinical medicine.

3.2. Characteristics of good PBL sessions

- The problem must propel students towards the need for teamwork.
- It must drive the students for a self-directed learning to pursue for a deeper perception of several topics.
- The problem must act as a bridge between multiple fundamental concepts and other known facts.
- It should instil in the students the ability to make sensible decisions and give the reasons for the same.

3.3. Learning outcomes of PBL

- Application of theory-based knowledge
- Teamworks
- Critical thinking and analysis
- Holding leadership roles
- Enhancement of communication skills

The use of problem-based learning (PBL) in college education has spread extensively during recent decades. It has been suggested that PBL is better than the traditional approaches (lecture-based learning, LBL) for acquiring the generic skills needed for scientific careers, such as

cooperative working, integration of information, critical thinking, communication skills and self-directed learning.⁴ PBL is a student-centred approach, enabling deep and transformative student learning. A ‘hybrid’ approach to PBL uses a range of class-based teaching methods; delivering a mode of PBL which is less resource intensive and more flexible than ‘pure’ PBL. In hybrid PBL, problems are solved in groups, but lectures are used to present the fundamental concepts and difficult topics.⁵

4. Materials and Methods

The innovative teaching learning method was adapted during the year July – October 2019 when the students were posted in the department of community medicine for four weeks. The TL methods included were blended lectures; case scenarios (clinico social case pertaining to community medicine subject), pre test and post test MCQs, case presentation and in small group discussion were done.

4.1. Implementation process of problem based learning

The PBL sessions implemented for teaching Clinico-social cases to the 4th semester MBBS Students posted in our department in batches. The students were given instructions by the faculty to prepare for the PBL sessions followed by the case discussion.

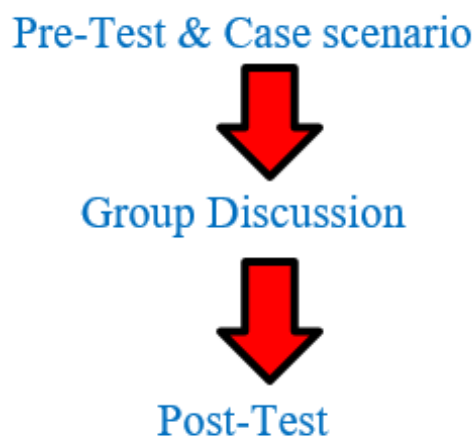


Fig. 1:

4.2. Pre-test

- Students did case presentation on cases such as Diabetes mellitus, Hypertension, Acute Respiratory Tract Infection (ARI), and Acute Diarrhoeal Disease (ADD) and Tuberculosis.
- On the same day all the students of the respective batch were given an assessment (Pre-test) consisted of 10

multiple choice type questions to assess their level of understanding of the particular disease.

3. After the Pre-test, the students were given a case scenario to induce self- directed learning. A duration of about 1 week was given to the students and a group discussion was conducted based on the given case scenario.
4. The participants of the group discussion were made to sit in the form of a circle and the remaining students sat around them in a concentric circle.
5. The faculty as a moderator for the group discussion initiated the discussion by posing a question and the participants were allowed to discuss about the case..
6. A student as a recorder/observer was recording the points discussed including the non-verbal communication of the participants.



Fig. 2: Group discussion

4.3. General points discussed recorded by the observer

1. For both cases of communicable and non-communicable diseases, the main factor being discussed is the socioeconomic status of the patient.
2. Those of lower socioeconomic status and living in overcrowded conditions are more prone to contract communicable diseases whereas those of higher socioeconomic status are more likely to develop non-communicable diseases such as Diabetes and Hypertension due to risk factors of stress, over-eating of unhealthy food and lack of physical exercise.
3. For Diabetes and Hypertension both modifiable and non- modifiable risk factors were scrutinized. In cases of ADD and ARI aspects such as modes of transmission, hand hygiene, dietary habits etc., were discussed.
4. Then the discussion moved on to the symptoms of the patient and clinical findings, lab investigations

and diagnosis and management of the particular disease was pondered upon. Prevention at all levels (primordial, primary, secondary and tertiary) were conferred about.

5. The audience actively jotted down the key points that were being discussed.
6. Lastly the moderator highlighted the salient points of the case scenario. The discussion was conducted in a coherent and organized manner. Then the audience of the group were posed certain questions to evaluate their understanding of the discussion. Their doubts were also clarified by the moderator and the participating members.

5. Results

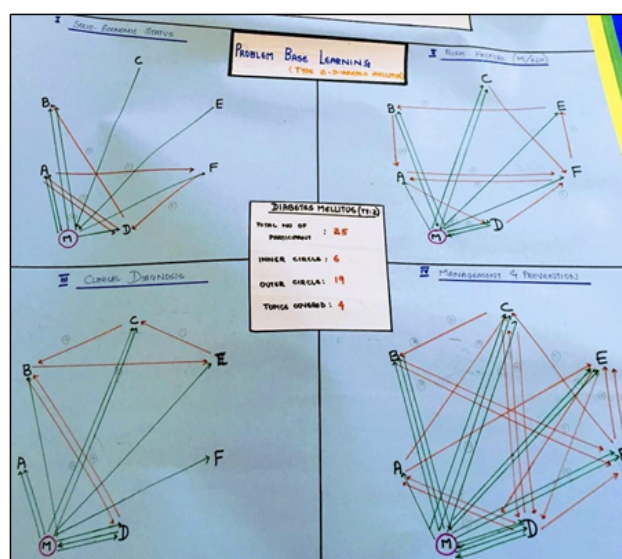


Fig. 3: Sociogram- The discussion web

1. A Sociogram was drawn by the observer to conceptualize the group dynamics and to show the interpersonal links of communication in the group discussion.
2. It proved that all the members were actively involved in the discussion and all of them contributed equally.
3. This also substantiated the fact that consistent teamwork was exhibited by the students.

5.1. Post- test

1. At the end of the discussion a post-test was given to the students with the same MCQ's which was given for the pre-test.
2. It was of similar format as the pre-test.
3. It was issued to ensure that all the students were able to grasp the important concepts and salient features of the case discussed.

5.2. Students' experience on PBL

“We found this session as a knowledge sharing platform. It helped us in gaining the knowledge about an important public health issue, by a new approach.” (**Thaniska K, II-year M.B.B.S student**)

“The whole group discussion in general was a very informative one and the discussion was conducted in a very professional manner. All the participants were well prepared and it was visible with the way they discussed the topics.” (**Shruthi Pandey (II-year M.B.B.S student)**)

“I personally felt that the problem-based learning was more helpful for us to understand the topic in detail. Communication skills among the students improved; there was an increase in their confidence level.” (**Saumiya E.M. (II-year M.B.B.S student)**)

“This session helped us

1. Learn in-depth about acute diarrhoeal disorder under various subtopics.
2. Build our communication skills
3. Imparted knowledge on working in team
4. Correlation of the subject with the clinical scenario)

Pooja(II-year M.B.B.S student)

“A whole lot of grinding, tinkering and a broader way of thinking was implied to think if we were making the right diagnosis. At the end of the group discussion, the active as well as the passive participants learned how to communicate, how to listen to other point of views, how to put forward one's statement and how to think in a broader way than just being thinking not anymore beyond the case report. We learned how to arrive at better diagnosis and conclusions by the cumulative effect of teamwork and communication.” (**Dave Mathew(II-year M.B.B.S student)**)

5.3. Faculty/Mentor experiences

As a member of Medical Education Unit, being a teacher in community medicine for more than 12 years, I have always been curious in introducing new teaching learning methods for my students to motivate them to learn and know the importance of community medicine. The competency based undergraduate curriculum' that has been prepared by the Medical Council of India in creating a competent Indian Medical Graduate to serve the community. This Competency Based Medical Education is learner-centered, offers flexibility in time, and focuses on all the three domains of learning together; the teaching-learning activities would need a change in structure and process. Since it focuses on outcomes and prepares students for actual professional practice, teaching-learning activities should be more skill-based, involving more clinical, hands-on experience. In view of this I wanted to introduce this Hybrid PBL, which is always a fascinating topic for me.

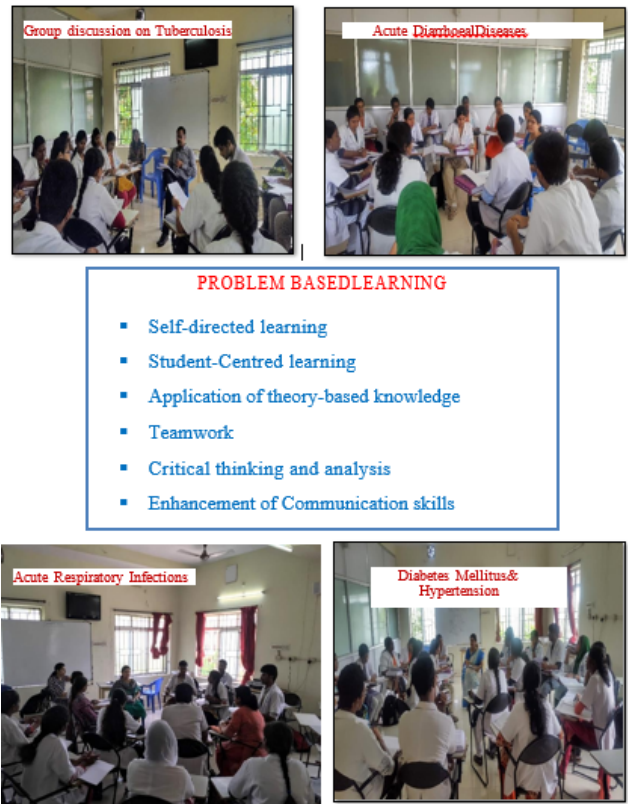


Fig. 4:

Our students have shown immense interest and actively participated in the PBL sessions which include traditional case discussion, pre and post-test and a group discussion. The main objective of this session is to guide the students towards self-directed learning and in application of theory-based knowledge. (**Dr. Balaji Arumugam MD, Professor and Head, Department of Community Medicine**)

A new teaching learning method, Hybrid PBL proposed by our Professor and Head Dr. A. Balaji was implemented to our 4th semester MBBS students. He has encouraged and guided for implementing the Hybrid PBL for Clinico-social case discussions for the five batches of 4th semester students posted in our department. It was conducted in an organised manner by giving case scenarios on Tuberculosis, ADD, ARI, DM&HT with a set of questions to guide the students to prepare for the group discussion after the traditional case discussion. Before the case discussion the students were given a pre-test and after the session, the printed case scenarios were given to all the students.

The students were excited and showed immense interest in solving the cases. They were given a time of 1 week to prepare themselves for the group discussion. 6-8 students were selected randomly for the group discussion. All the students were actively participated and they were able to correlate the various risk factors in the disease causation,

clinical findings, arriving at a diagnosis and appreciate the importance of disease prevention. The students shared their experiences on PBL sessions that it helped them in knowledge sharing and enhanced their communication skills.

“As a faculty, it was a great learning experience of a new teaching learning method. Definitely the Hybrid PBL, a curriculum which motivates students to take the initiative of self-directed learning, identification of learning needs, generates interest for learning a new topic through small group discussions and assessments with MCQs.” (Dr. Sivapriya.K.R.S., Assistant Professor)

6. Discussion

The term student-centred learning (SCL) is widely used in the teaching and learning literature. Many terms have been linked with student-centred learning, such as flexible learning,⁶ experiential learning,⁷ self-directed learning and therefore the slightly overused term student-centred learning’ can mean different things to different people. In addition, in practice it is also described by a range of terms and this has led to confusion surrounding its implementation. One such experiential cum student centered learning which is Hybrid problem based learning was implemented in the clinical posting in the department of community medicine at our institute which gave a great feedback among the students. Similarly results from meta-analyses showed PBL courses were preferred for the long-term retention of course content, short-term retention involving elaboration of new information and the application of clinical skills and reasoning. Traditional approaches were favoured for short-term retention of course content that did not require any elaboration. The qualitative studies reveal a diversity of student views about the concept of PBL pedagogy and approaches to learning in PBL curricula. They show that the ways in which students approach their studies in PBL in health sciences are closely related to how they conceive of PBL and that these dimensions are closely related to how the goals and standards of PBL courses are perceived.⁸ Another article explored the utility of projects in problem-based learning-project-PBL-as a way to supplement traditional case-PBL. First, project-PBL may enhance student engagement and motivation by allowing them to direct their own learning. Second, project-PBL may help students develop metacognitive competencies by forcing them to collaborate and regulate learning in settings without a facilitator. Finally, project-PBL may foster skills and competencies related to medical research. As illustrated through a brief example from Aalborg University, Denmark, students learn differently from project-PBL and case-PBL, and so one implementation cannot simply replace the other.⁹ Ours is a type of case based hybrid problem based learning which utilized the pre and post test, scope

of self directed faculty guided learning and group discussions and presentations. Similarly a meta-analysis of sex randomized controlled studies proved that the pooled effect size showed that problem-based learning was better than lecture-based learning in improving the medical educational environment, as measured by the Dundee Ready Education Environment Measure (DREEM), with statistically significant differences.¹⁰ So recently the idea of h-PBL has attracted many educationists and medical schools. The hPBL curriculum can be identified with various aspects of a true PBL such as the SPICES model of the range of educational strategies and concept of PBL as a continuum rather than one immutable process. However, the definition of hPBL is equally vague and there are a vast number of variations in its comprehension and implementation. hPBL has been intuitively viewed by many as a cocktail curriculum of McMaster style of small group discussion PBL (generally referred to as “pure PBL”) with the blending of variable amounts of traditional lectures, practical sessions and case-studies. So our effort in making use of the case studies and blended lectures as a part of h-PBL in this educational training during the early part of clinical postings in the community medicine has given a great learning experience for the students as well as the faculty.

7. Conclusion

Problem-based learning (PBL) is a continuum of approaches rather than one immutable process. It is a teaching method that can be included in the teacher’s tool-kit along with other teaching methods rather than used as the sole educational strategy. PBL reverses the traditional approach to teaching and learning. It starts with individual examples or problem scenarios which stimulate student learning. In so doing, students arrive at general principles and concepts which they then generalize to other situations. PBL has many advantages. It facilitates the acquisition of generic competences, encourages a deep approach to learning and prepares students for the adult learning approach they need for a lifetime of learning in the health care professions.¹¹

8. Source of Funding

None.

9. Conflict of Interest


The author declares no conflict of interest.


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