

**STUDENT PERSPECTIVES OF PROBLEM BASED LEARNING (PBL):  
A BOON TO KNOWLEDGE**

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**ABSTRACT**

**Background:** In medical education, there is a need for implementing new methods of teaching-learning for the present generation of medical students. This will help them to achieve desired learning outcomes and competencies. Problem-based learning empowers learners to conduct research, integrate knowledge and apply appropriate skills for understanding problems and sometimes even to develop a solution. Various studies have put forward the different characteristics which make a successful PBL. A study has shown that successful implementation depends on developing a sound PBL philosophy, strategies, and tactics of problem-based learning. Problem-based learning provides a constructive instructional methodology that has shown much promise in its application in many disciplines especially where students encounter cases. It also stimulates the students to learn and apply the knowledge in contextual situations. Personal knowledge is defined as the unique frame of reference and knowledge of self, is central to the individual's sense of self, and is a result of the individual's personal experiences. Much of the knowledge a practitioner uses in problem-solving and making clinical judgments is tacit and individual. In conclusion, it can be said with a certain amount of strength, arising from personal experience and review of literature that PBL learning is an interactive teaching-learning methodology, which promotes self-directed learning, responsibility, critical thinking, development of contextual knowledge base and motivation among students.

**Keywords:** Problem based learning, Education, students.

**INTRODUCTION**

In medical education, there is a need for implementing new methods of teaching-learning for the present generation of medical students. This will help them to achieve desired learning outcomes and competencies. These methods should be different from traditional teaching methods and should be more interactive and self-directed.

Problem Based Learning (PBL) represents a major developmental change in educational practice in that

direction and had a big impact on the medical education and other disciplines worldwide.

In the recent past, the teaching of medicine has changed, with a lot of new innovations in teaching and learning methods which are mainly student-centered.

Amongst the curricular changes, the most significant are (1):

1. Moving away from the 'traditional' subject-based curriculum to integrated curricula.
2. Moving away from the exclusive hospital-based teaching to community-based settings.
3. Development of Problem based learning rather than the traditional didactic lectures in discipline-based teaching.
4. Promoting students to be critical thinkers rather than being dependent on lectures

The main idea is to make the students learn the subject better not only in clinical years but also in pre and para-clinical ones, so as to develop a knowledge base which can be readily applied when encountering clinical cases.

Problem-based learning empowers learners to conduct research, integrate knowledge and apply appropriate skills for understanding problems and sometimes even to develop a solution.

The teacher in a PBL curriculum works as resource developer, case writer, facilitator of learning in skills training program, and a member or coordinator of educational committees (2,3).

The basic ideology of PBL programs is that it is student-centered. Students learn how to seek knowledge and apply it in solving clinical cases.

What are the characteristics of PBL:

Various studies have put forward the different characteristics which make a successful PBL. A study has shown that successful implementation depends on developing a sound PBL philosophy, strategies, and tactics of problem-based learning (4, 5). Another study has shown that PBL provides specific skills including the ability to think critically, analyze and solve complex, real-world problems, to find, evaluate, and use appropriate learning resources; to work cooperatively, to demonstrate effective communication skills, and to use content knowledge and intellectual skills to become lifelong learners.

Based on these facts a PBL methodology should have some guidelines to be perfect for a particular course. All the faculties should agree on implementing the PBL in a university and most importantly students should be motivated for adoption, implementation,

and acceptance of PBL (6, 7).

Following criteria's will help in help in implementing a successful PBL:

- Selection of a thought-provoking, an ill-structured problem which will promote critical thinking shells in students.
- A tutor who should always guide the students and encourage them to learn rather than teach during the PBL.
- Small groups ideally 5-8 students, so that a proper discussion and assessment is possible.
- A proper procedural implementation which will allow the students to analyze the problem step-wise in the first session.
- Encourage students so that they become responsible for their own learning with the tutor only helping them in finding the various resources
- Integrated learning across a wide range of disciplines or subjects and the students should learn all concepts relevant to the case.
- Stimulates proper interaction within the group, which will result in a successful PBL. The tutor plays an important role in achieving this goal.
- In The 2nd session of PBL, student's self-directed learning must be applied back to the problem with reanalysis and resolution.
- All the PBLs should end with self and peer assessment which will help the students asses them self and to know the effectiveness of the groups.

Problem-based Learning vs. Case-based and Project-based Learning:

Both case-based and project-based approaches are valid instructional strategies that promote active learning and engage the learners in higher-order thinking such as analysis and synthesis. These can be applied when the students already have basic concepts in place.

Case studies can help learners develop critical thinking skills in assessing the information provided and in identifying logical flaws or false assumptions.

Working through the case study will help learners build discipline/ context-specific-vocabulary/ terminology, and an understanding of the relationships between elements presented in the case study. This will help the students to acquire proper communication as well as the use of their skills of analysis.

Cases may be used to assess student learning after instruction or as a practice exercise to prepare learners for a more authentic application of the skills and knowledge gained by working on the case (8).

While cases and projects are excellent learner-centered instructional strategies, they tend to diminish the learner's role in setting the goals or outcomes for the "problem."

In PBL the learning outcomes are already set by the faculty and students should achieve these outcomes through discussion.

Hence case based is effective when dealing with the cases in a clinical setting and PBL is effective in building the basics at initial stages of medical students.

Role of students and an effective group in PBL:

The specific format for implementation of problem-based learning varies from one institution to another. PBL success depends on the group of students, Now in this section, we will outline the characteristics of the group, its composition, and role. The PBL group

- Should consist of 5-8 students in a group.
- Work's together to generate and refine hypotheses related to the problem.
- Members should actively participate in the discussion.
- The leader should be selected to monitor and involve all the students in discussion.
- Leader and the tutor should seek and involve non-participating students into discussion.
- Should list out the learning objectives pertaining to the case.
- Makes sure that all the students learn all the objectives before the 2nd session.

- Should be graded according to their knowledge and extent of involvement in the discussion.

### **The benefit to the students:**

Problem-based learning provides a constructive instructional methodology that has shown much promise in its application in many disciplines especially where students encounter cases. It also stimulates the students to learn and apply the knowledge in contextual situations.

Students work regularly in small groups to acquire the conceptual knowledge and procedural skills needed to develop one or more plausible solutions to each of the problems presented to them.

A literature review showed that, relative to a conventional lecture-based curriculum, PBL curricula improve student problem-solving skills (9, 10) enhances understanding and retention of basic science concepts and improves performance in clinical clerkships (11, 12, 13).

### **Role of facilitator:**

The faculty takes on a largely facilitative role in the problem-based learning yet, they remain a central determinant of the success of the problem-based strategy. The facilitator

- Presents a limited amount of information in the form of "case scenario" (Paper, picture, video clip) about the problem and the group is charged with the task of identifying the different aspects of the problem. The facilitator asks questions to elicit information relevant to the problem.
- Will act as an observer and will not interfere with students unless the students are deviating away from the topic.
- Encourages the students to share their concepts and reach the learning objectives.
- Encourages and involves non-participating students by asking open-ended or closed-ended questions.
- Assesses the student's grades and gives an unbiased feedback.

### **Research findings on student attitude:**

Many studies have shown that PBL achieves superior learning as compared to the traditional instructional methodology. This is consistent with a number of other research studies, in which students in problem-based learning environments reported significantly higher levels of motivation and satisfaction (14-17). The other major advantage shown is that problem-based learning enhances greater intrinsic interest in the subject matter than traditional instructional methods (18).

### **Use of personal knowledge in problem-solving:**

Personal knowledge is defined as the unique frame of reference and knowledge of self, is central to the individual's sense of self, and is a result of the individual's personal experiences. Much of the knowledge a practitioner uses in problem-solving and making clinical judgments is tacit and individual (19).

Becker et al (20) emphasize that clinical experience is important for preparing medical students for practice. According to these authors, book learning, which usually presents general knowledge, has several disadvantages as compared with learning from experience as it

- May contradict the knowledge acquired from experience.
- Is not always available.
- Does not always exist, yet a decision on care must be made.
- Ignores the basis of learning by using one's senses.
- Does not take into consideration all the other factors that doctors encounter in their daily lives.

In recent years, there has been increasing concern about the growing gap between research-based knowledge taught in professional schools and the practical knowledge and actual competencies required of practitioners in the field.

### **CONCLUSION:**

In conclusion, it can be said with a certain amount of strength, arising from personal experience and review of literature that PBL learning is an interactive teaching-learning methodology, which promotes self-directed learning, responsibility, critical thinking, development of contextual knowledge base and motivation among students.

But, to achieve the best results it should be implemented correctly, with everyone being fully orientated about their individual roles. All this requires a lot of effort, dedication, costs and above all the change of mindset of the faculty and administration at the medical schools.

### **REFERENCES:**

1. Jafarey NA. The anatomy of the living. J Pak Med Assoc 2004;54:29-30.
2. Schreurs ML, Roebertsen H, Bouhuijs PAJ. Teacher Training for All Teachers in A Faculty of Health Sciences, ICED Conference in Austin, Texas,1998.
3. Benor DA. Faculty development, teacher training and teacher accreditation, Medical Teacher 2000; 22: 503-513.
4. Boud, D., &Feletti, G. The challenge of problem-based learning (2nd ed.). London: Kogan Page.1997.
5. Duch, B. J., Groh, S. E., & Allen, D. E. Why problem-based learning? A case study of institutional change in undergraduate education. In B. Duch, S. Groh, & D. Allen (Eds.), The power of problem-based learning (pp. 3-11). Sterling, VA: Stylus.2001.
6. Torp, L., & Sage, S. Problems as possibilities: Problem-based learning for K-16 education (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.2002.
7. Hmelo-Silver, C. E. Problem-based learning: What and how do students learn? Educational Psychology Review 2004; 16(3): 235-266.

8. John R. Savery. Overview of Problem-based Learning: Definitions and Distinctions. *Interdisciplinary Journal of Problem-based Learning*. Vol1(1);2006:9-20.
9. Hmelo CE. Problem-based learning: Effects on the early acquisition of cognitive skill in medicine. *J Learning Sci* 1998;7:173-208.
10. Hmelo CE., Gotterer GS Bransford JD. A theory- driven approach to assessing the cognitive effects of PBL *Instructional Science* 1997;25:387-408.
11. Dods RF. An action research study of the effectiveness of problem-based learning in promoting the acquisition and retention of knowledge. *J Educ Gifted* 1997; 20:423-37.
12. Finucane PM, Johnson S.M, Prideaux DJ. Problem-based learning: its rationale and efficacy. *Med J Aust* 1998;168:445-8.
13. Schwartz RW, Burgett JE, Blue, AV, Donnelly MB, Sloan DA. Problem-based learning and performance-based testing: Effective alternatives for undergraduate surgical education and assessment of student performance. *Med Teacher* 1997;19:19-23.
14. Alabi, G. A., Gerritsma, J., Maude, G., and Parry, E. Problem-based learning for tuberculosis and leprosy supervisors. *World Health Forum* 1996; 17: 411-414.
15. Bell, F. A. and Hendricson, W. D. A problem-based course in dental implantology. *Journal of Dentistry Education* 1993; 57: 687-695.
16. Chang, G., Cook, D., Maguire, T., Skakun, E., Yakimets, W. W., and Warnock, G. L. Problem-based learning: its role in undergraduate surgical education. *Canadian Journal of Surgery* 1995; 38: 13-21.
17. Bligh, J., Lloyd-Jones, G., and Smith, G. Early effects of a new problem-based clinically oriented curriculum on students' perceptions of teaching. *Medical Education* 2000;34: 487-489.
18. Norman, G. R. and Schmidt, H. G. The psychological basis of problem-based learning: a review of the evidence. *Academic Medicine* 1992;67: 557-565.
19. HaimEshach, PhD, and HaimBitterman, MD. From Case-based Reasoning to Problem-based Learning. *Academic Medicine*, Vol 78(5);2003:491-496.
20. Becker HS, Geer B, Hughes EC, Strauss AL. *Boys in White: Student Culture in Medical School*. Chicago, IL: University of Chicago Press, 1961.