Conceptualizing Problem-Based Learning: An Overview

In an attempt to restructure the medical undergraduate curricula so as to equip medical graduates with essential competencies expected of an Indian Medical Graduate (IMG) and to keep pace with the changing dynamics of health in India, the National Medical Commission has introduced competency-based medical education in Graduate Medical Education Regulations-2019. Competency in medical graduates can be developed through the acquisition of knowledge integrated with clinical and attitudinal skills necessary to provide high-quality, effective patient care. Competency development is also influenced by the way medical educators facilitate the growth of an integrated knowledge structure in place of rote memorization of facts or procedural practice.

In view of the above, new learning strategies are required to be adopted by medical faculty across the country. These strategies need to focus on being learner centric, multidisciplinary, system based, integrated, and problem based. The SPICES model of educational strategies is a key tool for structuring the undergraduate medical curriculum and its key elements include: student centered, problem based, integrated, community based, elective, and systematic or a planned approach.

Problem-based learning (PBL) is an important aspect of this new model and a contributor in competency-based learning method. PBL was introduced by McMaster University, Canada, in 1969 as a unique, hands-on approach to learning medicine. It is pertinent to mention here that PBL is not the same as “problem-solving,” as the goal of learning is not to solve the problem which has been presented. Instead, the problem is used to help students identify their own learning needs as they attempt to understand the problem, to pull together, synthesize and apply information to the problem, and to work effectively to learn from group members as well as facilitators.

The PBL approach, an innovative teaching and learning method, stands to provide greater challenges and motivation by making use of realistic scenarios to engage and interact with students by building on their prior knowledge, enhancing comprehension of basic concepts, and molding knowledge gained in silos to establish a complex yet elaborate and well-integrated knowledge structure. The knowledge structure so created aids in learning, as it integrates and concretizes theoretical knowledge with its clinical relevance. Furthermore, thoughtfully created problems can foster active and deep learning (as students interact with learning materials and relate concepts to everyday activities), improve understanding, knowledge retention, and development of lifelong learning skills. PBL also allows students to activate prior knowledge and build on existing conceptual knowledge frameworks and thereby develop generic skills and attitudes such as teamwork, communication, respect for colleagues, critical evaluation, self-directed learning and use of resources, cooperation, and presentation skills desirable for their future practice.

In PBL, the student controls the reins for steering the learning process. It is a self-reflective process, and students learn to monitor their own learning. In PBL, students use “triggers” from the problem case or case scenario/vignette to identify and define their own learning objectives. This is followed by the independent, self-directed study before returning to the group to share, discuss, and refine their acquired knowledge. Thus, PBL uses problems as a base to increase knowledge and understanding. It would thus make sense to think of PBL as a small-group teaching technique that combines the acquisition of knowledge with the development of generic skills and attitudes. Clinical triggers serve as the stimulus for learning and enable students to understand the relevance of underlying scientific knowledge and its application in clinical practice.

Commonly used trigger material for PBL scenarios includes paper-based clinical scenarios, laboratory reports, photographs, audio-video clips, newspaper articles, research publications, a real or simulated patient, and a family tree showing an inherited disorder.

A typical PBL tutorial consists of a group of students (usually 8–10) and a facilitator/tutor to guide the session. The number and length of sessions should allow for effective group dynamics to develop. The tutor facilitates the process and ensures that the student group achieves appropriate learning objectives as conceptualized by the PBL curriculum design team. The tutor should encourage students to check their comprehension of the triggers/case material. This can be done by encouraging the students to engage in open conversation with the tutor and with other members in the group. “Seven jump” process is the most suited method for conducting PBL sessions. PBL discussions differ from other small groups by the fact that the tutor has to push the students to the edge of their knowledge, setting the scene for further relevant learning.

The pillars of problem-based learning include small-group learning (tutorial-style setting and includes 8–10 student participants), faculty facilitation (to strike a balance between directing the tutorial and actively soliciting student feedback to ensure that a student’s knowledge gap is adequately and appropriately addressed), use of patient-based cases (realistic clinical cases), and
well-defined learning objectives (essential to ensure that students address the correct content and identify their strengths and weaknesses).

For the purpose of assessment, it is advisable to use an appropriate range of assessment methods following the basic principles of assessing the student in relation to the curriculum outcomes. It is also desirable to consider the assessment of the group in the form of reflections on its PBL performance, adherence to the process, communication skills, teamwork, respect for others, and individual contributions as these encourage students to achieve the generic attributes associated with PBL. Ample opportunities for process assessment must be there, along with content assessment.[7]

PBL is primarily based on the principles of adult learning, motivating, and encouraging the students to set learning goals, and allowing them to take decisions that affect their own learning. PBL also generates a more stimulating and challenging educational environment that has the potential to influence permanent change in behavior. PBL can be used as an intervention to promote self-directed learning and ultimately lifelong learning goal of IMG. Everyone may not be able to use the classical version, and partial implementation (with partial benefits) is possible. The benefits go far beyond simple pretest and posttest.

Amrit Virk, Rajiv Mahajan¹, Tejinder Singh²
Department of Community Medicine, Adesh Medical College and Hospital, Kurukshetra, Haryana, ¹Department of Pharmacology, Adesh Institute of Medical Sciences and Research, Bathinda, ²Department of Paediatrics and Medical Education, SGRD Institute of Medical Sciences and Research, Amritsar, Punjab, India

Address for correspondence: Dr. Rajiv Mahajan, Department of Pharmacology, Adesh Institute of Medical Sciences and Research, Bathinda, Punjab, India.
E-mail: drrajivmahajan01@gmail.com

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