

# Problem Based Learning in B. P. Koirala Institute of Health Sciences

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**Abstract**—Problem based learning is one of the highly acclaimed learning methods in medical education since its first introduction at Mc-Master University in Canada in the 1960s. It has now been adopted as a teaching learning method in many medical colleges of Nepal. B.P. Koirala Institute of Health Sciences (BPKIHS), a health science deemed university is the second institute in Nepal to establish problem-based learning academic program and need-based teaching approach hence minimizing teaching through lectures since its inception. During the first two years of MBBS course, the curriculum is divided into various organ-systems incorporated with problem-based learning exercise each of one week duration.

**Keywords**—PBL, medical education.

## I. INTRODUCTION

A Problem-based learning (PBL) is defined as ‘learning that results from the process of working towards understanding or resolution of a problem. Dr. Howard Barrows felt the need for medical students to not only understand the core of knowledge, but also to have the ability to use it effectively to treat patients. PBL in medical education was first introduced at McMaster University in 1969 [1]. PBL has now become an increasingly popular alternative in medical education and literatures supporting the early acquisition of cognitive skills and deep learning among students are plenty. [2]. It is now a common curriculum component in most medical and health science schools around the world [3]. However it took some time to be accepted in Nepal. When the MBBS course started at B.P Koirala Institute of Health Sciences (BPKIHS), Dharan, Nepal, it deviated from the traditional teaching and introduced PBL as a basic mode of learning method. Additional inputs were provided from Maastricht University after which BPKIHS became the full member of the Network of the Community Oriented Medical Schools [4].

Traditional way of learning is often inadequate and ineffective to address the exponential increase and rapid change in information around our world. These days, students have to be more prepared than ever to enter the competitive workforce with a broad range of skills and knowledge. They

must be able to solve problems, work collaboratively, write and communicate at a high level, recognize when they don't know the answer to the problem, and quickly find the information they need to solve those problems and come to a decision tactfully. These are the basic issues that drive the need for a more problem-based approach in today's education.

The benefits of PBL over traditional methods of learning are even more as it provides a better setting for promoting interest, motivation, self-directed learning and an inquiring mind. There are evidences suggesting that students in a PBL system adopt better approaches to learning than those in conventional schools [2].

This paper describes this method of teaching and learning in small groups at the B.P Koirala Institute of Health Sciences, Nepal which has a partial PBL curriculum introduced in its medical education for undergraduates.

## What Is Problem Based Learning (PBL)?

Problem Based Learning (PBL) is a method of learning in which students first encounter a problem, followed by a student-centered inquiry process [2]. “A learning method based on the principle of using problems as a starting point for the acquisition and integration of new knowledge [5]”. It is an integrated system with student-centered learning process where five to eight students work collaboratively in a group with ample scope for small group discussion guided by one or more facilitators or tutors [6]. PBL is characterized by individualizing the learning needs of students, improving motivation for learning, and stimulating the integration of knowledge with formative evaluations [7]. The students come with problems without advance reading, lecture or preparation, which acts as a stimulus for the need to learn and explore more. It requires a shift from a teacher centered to a learner-centered and inquiry based environment for the students [3].

During discussion, they identify learning objectives; define problems while going through the process of understanding and resolving cases. Students determine and explore what they already know and what they need to learn in order to probe and understand the problems. Achieving those objectives using resource material with the help of facilitators; active discussion; analysis of problems, forming hypotheses, and learning issues among students is true problem based learning [7]. The components of PBL are PBL cases, group, PBL session, study session and feedback session.

The hallmarks of PBL are: relevant, realistic & logical; not too complex; cases being disclosed progressively, step-by-step leading to a discussion and next step [1].

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### *A. PBL in BP Koirala Institute of Health Sciences (BPKIHS)*

PBL is used either as a mainstay of an entire curriculum or for the delivery of individual courses. In practice, PBL usually is part of an integrated curriculum using a system based approach, with nonclinical material delivered in the context of clinical practice. Sufficient time is allowed each week for the group of students to encourage the self-directed learning required for PBL [3].

B.P Koirala Institute of Health Sciences, a deemed university is the only tertiary hospital located in the eastern part of Nepal. The MBBS curriculum of BPKIHS is thoroughly integrated and community-oriented and partially problem based incorporating the organ-system and need-based approach. Teaching through lectures has been restricted to a minimum while problem-based learning and other unconventional learning experiences (UNCLE) are encouraged. Various learning modes as: structured interactive lecture sessions (SIS), laboratory exercises (labex), Problem based learning (PBL), Learning in field (LIF) are used [8].

The first institute in Nepal to adopt PBL with integrated Medical Basic Sciences was Institution of Medicine, Tribhuvan University, in 1980. BPKIHS became the second to implement PBL in 1998 [4]. During the planning stage, the authorities took a bold decision to move away from the traditional system. The institute adopted a partially problem based, integrated curriculum. A module or short course is designed to include mixed teaching methods (including PBL) to achieve the learning outcomes in terms of knowledge, skills and attitudes. A small number of lectures are introduced to provide an overview of difficult subject material in conjunction with the PBL scenarios. During the first 18 months, students of phase I (first and second year) learn all pre and para clinical subjects integrated around the organ systems and interfaced with clinical disciplines. A total of eight PBL sessions, each of six days duration each take place. Each PBL week consists of three tutorial sessions, two resource sessions, one or two laboratory or hospital based skills sessions and one review session. At the end of each PBL block, students are asked to provide their feedback on the effectiveness of PBL block they had just completed maintaining the confidentiality. Some of the course content is elaborated on, through PBL sessions in every system [8]. The system is working satisfactorily and this concept of education to the undergraduates has made it a role model for other established medical colleges.

### *B. PBL Cases*

A senior faculty prepares a highly relevant clinical based case which provides highest yield of basic concept. The problems are approximated according to the stage of the curriculum and the level of the students' understanding. The case is then discussed among faculty members and once finalized, is sent to the PBL coordinator for further management. It is then distributed to each tutor and co-tutor. Tutor guide is provided with each case. In average there is one case for one week for a system (block). Two hours are

allocated for each PBL session which is held three times in a week on alternate day. An ideal PBL group is around six to eight students and any more than twelve students become unmanageable. In BPKIHS; Each PBL group has eight to ten students along with a tutor and resource person. Both basic medical sciences and the clinical science teachers are involved as facilitators. During the PBL session the case is progressively disclosed to the students and they are left open ended at the end to allow learning in the interval except in the process. After each PBL session, two Resource Sessions each of two hours duration and one or two laboratory or hospital based skill sessions are allotted. Followed by two hours of self-directed study, where they do some researches and discover the fact regarding the case. The students are supposed to use this time and also other time for the preparation related to problem based learning. During study session, students use available resources with students, available books in library, Journals, Internet resources and Researches. At the end of each block, two hours of feedback session is held. Seminars are conducted on the last day for the students to present different topics related to the PBL case which are made in their learning objective. Reviews and feedbacks are taken as well to evaluate the learner, case and tutor. All faculties member are present in feedback session.

It has promoted interaction between the students, teachers and interdepartmental collaboration. Students and teaches enjoy the session and have found it to be stimulating and humane. Few disadvantages or difficulties that have been observed are difficulty in implementation when class size is large or when there is lack of enthusiasm towards the problem. The range of topics which can be discussed is a limiting factor which sometimes can be compromising in terms of quality.

## II. CONCLUSION

PBL has been a topic of discussion in several recent papers. BPKIHS has problem based learning since its inception in the phase 1 MBBS curriculum. A partial PBL curriculum in BPKIHS has now a successful running, appreciated by the students, tutors and has been a role model in this region. Its need to be operated in phase 2 has been realized. A strong correlation between good group learning and enthusiast tutor is fundamental and crucial in the effectiveness of a PBL method.

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