



RESEARCH ARTICLE

INTEGRATED LEARNING AND EVALUATION BY PROBLEM BASED LEARNING IN UNDERGRADUATE MEDICAL STUDENTS

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ABSTRACT

**Background:** PBL is a small group teaching method that combines the acquisition of knowledge with the development of skills and attitudes. Educationally, it is based on adult learning theory and is predicted to produce a better learning environment and improved outcomes in terms of graduate knowledge, skills, and attitudes. It can also be of benefit in integrating learning and evaluation for undergraduate medical students.

**Methodology:** Problem based learning program was started in the syllabus of medical education in Jinnah Medical and Dental College in 2016. The PBL process was divided into three sessions. In order to evaluate the PBL process we designed an evaluation form to be filled in by facilitators.

**Results:** The three sessions were scored, Session 1: punctuality, teamwork, chair (leadership), cooperation in group, applying prior knowledge. Session 2, makes them self-learners and improve their literature search skills, according to learning objectives. Last but not the least Session 3 in addition to above students update integrated knowledge (Table - 1). The scatter plot the score achieved by hundred students in the three session of PBL which shown in Table 2.

**Conclusion:** It can be concluded that problem based learning is for attaining integrated knowledge and skills. Along with being useful tool for evaluation and assessment of the individual student.

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INTRODUCTION

PBL is a small group teaching method that combines the acquisition of knowledge with the development of skills and attitudes. Educationally, it is based on adult learning theory and is predicted to produce a better learning environment and improved outcomes in terms of graduate knowledge, skills, and attitudes. Problem based learning was developed in the late 1960s and has been the most useful strategy in medical education (Wood, 2003). Following are the benefits of Problem-Based Learning (Weimer, 2009) For Students: It's a student-centered approach. Typically students find it more enjoyable and satisfying. It encourages greater understanding. Students with PBL experience rate their abilities higher. PBL develops lifelong learning skills. For Instructors: class attendance increases, the method affords more intrinsic reward. It encourages students to spend more time studying and it promotes integrated learning. For Institutions: It makes student learning a priority, it may aid student retention and it may be taken as evidence that an institution values teaching.

Risks of Problem-Based Learning include:

For Students: PBL requires more time and takes away study time from other subjects. It creates some anxiety because learning is extensive and in depth. Sometimes group dynamics issues compromise PBL process. Less content knowledge may be learned. But as it has been mentioned the process has been much discussed and now it is time to examine the outcomes (Wood, 2008) PBL teaching application in introductory undergraduate medical courses has shown to increase course examination excellence rates and scores in Chinese medical education system (Yanqi Zhang et al., 2015). Problem-based learning (PBL), a conceptual model of facilitated learning, with outstanding results in the education of various health care professions including medical undergraduates, nursing, pharmacology, and physician education. The components of PBL, using real world situations (problems), group learning, student-directed solutions for problems, and teacher role is that of a facilitator only. Introduction of this process of learning has much promise and has shown to be important applications in the curriculum (Downing, Kevin et al., 2009). The aim of this study was to determine the effectiveness of PBL learning in undergraduate medical students.

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## MATERIALS AND METHODS

Problem based learning program was started in the syllabus of medical education in Jinnah Medical and dental College in 2016. In order to evaluate the PBL process we designed an evaluation form to be filled by facilitators. The PBL process was divided into three sessions. In session one evaluation form comprised of coming on time, participate in discussion, prior knowledge, group dynamics. Session two comprised of self-learning and no evaluation was done. Session 3 comprised of coming on time, knowledge, discussion and group dynamics.

## RESULTS

From the evaluation form we developed the benefits to the students participating in the three sessions include punctuality, teamwork, chair (leadership), cooperation in group, applying prior knowledge. Session 2, makes them self-learners and improve their literature search skills, according to learning objectives. Last but not the least Session 3 in addition to above students up date knowledge as students use various resources to obtain the learning goals and gives them confidence for oral presentation and examination Table 1. The scatter plot the score achieved by hundred students in the three session of PBL which shown in Figure 1.

Table 1. Knowledge and Skill learning in PBL

Session I
Punctuality
Team Work
Group Leadership
Group Dynamics & Cooperation
Apply Prior Knowledge
Session 2
Self - Learning
Literature Search
Session 3
Punctuality
Team Work
Group Leadership
Up to Date Knowledge
Oral Presentation & Confidence
Integrated learning of basic & clinical Medicine

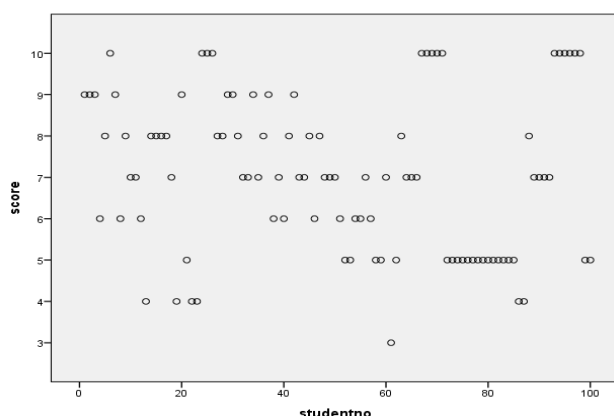


Figure 1. Students Score in PBL Sessions

## DISCUSSION

Problem based learning is a form of education in which information is mastered in the same context in which it will be used. Also, in its most recent medical forms, PBL is seen as a student-driven process in which the student sets the pace and the role of the teacher becomes one of guide, facilitator, and

resource person. Contemporary PBL in medical programs usually apply two fundamental principles: basic sciences are learned in the process of analyzing typical cases (Donner, 1993). In study done on 10 faculties, 9 had good and 1 had average perception about PBL. The various issues brought out by faculty were (9); need of formalized training in PBL for facilitators, need of integrated PBL sessions, need of variety of PBL exercises and need of student's assessment for every session. Overall perception of facilitators shows that PBL, be it conventional or hybrid, is a useful activity and should therefore be sustained (Rao, 2013) it has shown that Problem based learning not only improved the knowledge but also attendance in undergraduate medical students (Aziz, 2014; Singh et al., 2014; Hagi et al., 2011).

**Conclusion:** It can be concluded that problem based learning is not only good strategy for improvement in integrated knowledge and skills. But is also a useful tool for evaluation and assessment of the individual knowledge and improvement achieved by each student by attending the PBL sessions.

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