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Problem Based Learning: What and Why

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SHORT REVIEW

ABSTRACT

The goal of Medical Education is to produce qualified Physician. Though we are using different method to train undergraduate students, but Problem based learning (PBL) is an innovative teaching learning method that impart knowledge, enhance intrinsic motivation, promote self learning, encourage clinical reasoning and also encourage them to work in a team. Activation of prior knowledge, encoding specificity and elaboration of knowledge are three principles of acquiring new information. These principles have been included in the seven jump theory. In conclusion, the PBL is student centered self motivational, active and a challenging method of teaching and learning both for faculties as well as students.

Key Words

Basic Science Curriculum, Medical Education, Problem Based Learning.

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INTRODUCTION

The goal of Medical Education is to produce the physician we would like to see if we are sick. - Melinkof

The above goal can be achieved only when we train the student in such a way that they obtain knowledge and retrieve it whenever required. In present scenario we have three type of curriculum in Medical School namely, Discipline Based, Partially Integrated and Integrated. Traditional curriculum is teachers centered and promote mainly rote learning. Research results of concerned studies undertaken during the last few decades concluded that the discipline based curriculum is overloaded with factual information.¹ Most of these information's are forgotten by students after passing examinations² and some of these are irrelevant.³ In India We have the disciplin based curriculum only except few premier institute practicing partially problem based learning in their curriculum.^{4,5,6}

Now the scenario needs to be changed because we need education that must be student centered and more beneficial to the student. The problem based learning is one of the innovative approaches for the benefit of students.

What is PBL?

Problem based learning was originally introduced and developed by Medical School of Mc Master University in Canada during 1960^{7,8} Barrows and Tamblyn defined problem based learning (PBL) as "The learning which result from the process of working towards the understanding of a problem"⁹. Dutch Gron and Allens elaborated the PBL as, "small groups of students are presented with contextual situations and asked to define the problem, decide what skills and resources are necessary to investigate the problem and then pose possible solutions"¹⁰. Currently in USA about 82% of the medical schools have some elements of PBL in their curriculum"¹¹.

The three principles for acquiring new information, (Anderson 1977) are activation of prior knowledge, encoding specificity and elaboration of knowledge². These principles are used in PBL.

Wood DF et al suggested the seven jump theory procedure for PBL¹²

Step	Event
I	Clarify terms and concept not readily comprehensible
II	Define the problem
III	Analyze the problem (use prior knowledge and common sense and try to give as many explanations as possible)
IV	Draw a systematic inventory of the explanations referred from step 3 (give structure to the outcome of the brain storm, hypothesize and set up a model or produce a coherent description).
V	Formulate learning objectives.
VI	Collect additional information outside the group.
VII	Report the finding in the tutorial group.(integrate the knowledge and check whether the information you have obtained meet the objectives of the case)

Time given for each step is variable institute to institute. One or two problem can be taken in a week.

Why PBL?

Study found that physician after graduation were found to have difficulty in using acquired information in practical context.¹³ In a controlled trial Gonella et al found that doctors and residents of a large general hospital were in 50% of cases unable to perform critical screening activities on patient that were suspected case of Pyelonephritis. When tested on this subject by means of Multiple Choice Questions the same group performed very well. Their mean score on test was 82%. This concludes that people can possess knowledge which they seem unable to apply.¹³

The report of study conducted on PBL in B P Koirala Institute of Health Science, Dharan, Nepal concludes that PBL.¹⁴

- I. Useful and enjoyable (96%)
- II. Facilitate integration (100%)
- III. Help in development of self directed learning (88%)
- IV. Help in problem solving skill (81%)
- V. Provide opportunity to learn from peers (73%)
- VI. Help in understanding a principle (96%)

The medical education literature cites many potential advantages of problem oriented training. These advantages included¹⁵

- a) Encourage contextual learning;
- b) Promotes self directed learning;
- c) Activates previously acquired knowledge;
- d) Encourage clinical reasoning
- e) Facilitates transferability of principles and concepts;

- f) Facilitates problem solving, logic taking and discovery;
- g) Increases the intrinsic motivation of students; Facilitates acquisition of essential knowledge;
- h) Encourages learners to be active;
- i) Encourages openness of mind and self trust;
- j) Makes learners respected and accepted;
- k) Permits confrontation of ideas;
- l) Encouraging ability to work in teams.

The main reason for encouraging innovation in basic medical science education are.^{16,17}

- To individualize education
- To improve motivation of students
- To make education more students centered
- To improve independent learning
- To stimulate integration of disciplines and
- To promote lifelong education.

The problem should be expected to satisfy some or all of the following criteria.¹⁸

- a) Prevalence
- b) Life threatening potential
- c) Prototypicality
- d) Usefulness in illustrating professional skills
- e) Interdisciplinary nature
- f) Useful in illustrating basic mechanism

Finally we can quote the word of De Goeij AFPM et al.¹⁶

PBL is	PBL is not
Problem Based Learning	Problem based teaching
Acquisition of knowledge	Transfer of knowledge
The use of several hand books	The use of single hand book
Long term memory	Short term memory
Motivation for life long motivation	Disinterest in acquiring new information
Understanding	Rote learning
Student centered	Teacher centered
Self motivating	Organization of teaching
Learning through problems	Learning to solve problems
Interacting with staff	Listening to staff
Active	Passive
Challenging	Discouraging
Asking questions	Giving answers
Lightening a heart fire	Filling a bucket

CONCLUSION

In conclusion we can say that problem based curriculum the subject content is structured around health problem, which relieve the learner from remembering large chunk of information in isolation. In PBL curriculum we train humanistic physician for a long term memory and better understanding.

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