



## **Why, What, and How of Problem-Based Learning (PBL)**

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### ***Why PBL?***

1. Prepare students so they can cope with modern life and contribute responsibly and productively to their society.
2. Prepare students so they can adapt to change, initiate and participate in change within their profession.
3. Prepare students in communication, critical reasoning, logical and analytical approach to problems, decision making, and self evaluation.
4. Prepare students as life-long learners acquiring knowledge in the disciplines relating to their profession.

### ***What is PBL?***

1. Learning to Build Competencies:
  - a. Making reasoned decisions in unfamiliar situations
  - b. Critical thinking to examine assumptions and evidences, determine and update objectives, and evaluate conclusions.
  - c. Creative thinking to seek alternatives, combine ideas, and re-define problem.
  - d. Construct own understanding through experiences and reflections
  - e. Identify weaknesses and remedying with self-directed learning
  - f. Collaborating in groups
2. Atmosphere to foster engagement:
  - a. Active learning by posing own questions and seeking answers
  - b. Progressively moving toward more challenging situations
  - c. Learning for connected essential concepts instead of isolated facts.
  - d. Frequent feedback for analysis, application, and synthesis.

### ***How PBL?***

#### **Step-1**

- a. Assign a problem
- b. Through discussion, guide students to identify the components of the problem

#### **Step-2**

- c. Challenge students to associate the concepts in the existing knowledge with each component.

- d. Help students to rank the ideas and discuss merits and shortcomings
- e. Repeat (c) and (d) to organize their thoughts

### Step-3

- f. Discuss (e) to identify the deficiency in the dependencies of the concepts in (c)
- g. Challenge students to remedy the deficiencies and fix their own mistakes
- h. Discuss analytical approach

### Step-4

- i. Partition tasks among team members
- j. Collaborate, execute, and find the solution

### Step-5

- k. Identify discrepancies
- l. Identify the unanswered questions
- m. Discuss approximations and assumptions
- n. Discuss where in the curriculum better methods will be provided

### *Do's of PBL*

1. Introduced each idea repeatedly with increasing sophistication for Cumulative Learning
2. Introduce each idea in the context of a problem for Integrated Learning
3. Partition complex problems into a sequence of simpler problems for Progression in Learning
4. Do PBL through the entire academic year for Consistency in Learning

### *Preparation for PBL*

1. Problem Selection
  - a. Instructor
  - b. students
  - c. curriculum committee
2. Problem Selection Criteria:
  - a. in order to ensure that students cover a pre-defined area of knowledge
  - b. to help students learn a set of important concepts, ideas, techniques
  - c. for its suitability for leading students to the field
  - d. for its intrinsic importance or interest
  - e. because it is a typical problem faced by the profession
3. The form in which the problem is presented to students
  - a. a descriptive statement
  - b. a set of questions
4. The resources students will use to solve the problem
  - a. from a resource package
  - b. from textbook
5. The process that students follow in their work
  - a. in groups with a tutor
  - b. as individuals with a tutor
  - c. as individuals without a tutor
6. What do they do with the solution
  - a. identify similar problems where they can apply the method they just used
  - b. identify rules/procedures/corollaries/important ideas that are revealed in the through the solution process

### ***What can go wrong with PBL?***

1. Students control PBL; may interfere with teaching schedule and completing the syllabus
2. Students control PBL; may not meet teacher's expectations
3. Students control PBL; knowledge transfer may be fragmented or incomplete

#### Reference

D. Boud and G.I. Feletti Ed., *The Challenge of Problem-Based Learning, 2<sup>nd</sup> Edition*, Kogan Page Limited, London (1997)