

Problem Based Learning



Problem Based Learning

- First introduced in medical education Mc Master University 1969
- Lecture not the most satisfactory means of providing learning environment

Problem Based Learning

- Basic sciences presented in the context of clinical scenario to encourage integration
- Students take greater responsibility

Problem Based Learning

Two postulates

- Problem solving skills more important than memory skills
- Learning through problem solving is more effective than memory based learning

- PBL is the learning that results from the process of working toward the understanding or resolution of a problem
- The problem is encountered first in the learning process
 - Barrows and Tamblyn

Problem Based Learning

- Problem is a trigger to learning
- Objective of PBL is acquisition of new learning

Problem Based Learning

- Problem solving is a means rather than an end in PBL

In PBL, the purpose is not so much as to resolve the problem as to acquire new learning

Educational Equation



In problem based learning the teacher is a catalyst or enzyme

Characteristics of Problem-Based Learning

- Learning is student centered
- Learning occurs in small groups
- Teachers are facilitators or guides

Characteristics of Problem-Based Learning

- Problems form the organizing focus and stimulus for learning
- Problems are a vehicle for the development of clinical problem-solving skills

Characteristics of Problem-Based Learning

- New information is acquired through self-directed learning

Traditional	PBL
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Traditional	PBL
Competition	Co-operation
Fewer learning events	Wider range

Traditional	PBL
Subject oriented	Situation oriented
Large groups	Small groups
Information mastery	Information management

Traditional	PBL
Faculty role is lecture based	Several roles tutor, advisor, resource person

Structure of problems

- Title
- Trigger material (story, events)
- Instruction

A newspaper is better than a magazine. A seashore is a better place than the street. At first, it is better to run than to walk. You may have to try several times. It takes some skill but it's easy to learn. Even young children can enjoy it. Birds seldom get too close. Rain, however, soaks very fast. Too many people doing the same thing can also cause problems. One needs lots of room. If there are no complications, it can be very peaceful. A rock will serve as an anchor. If it breaks loose, you will not get a second chance.

MAKING AND FLYING A KITE

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A problem

- Concise
- Lend itself to discussion
- Link with prior knowledge

Tutorial group

- 8-10 students
- 1 Group leader
- 1 Scribe

Group selects group leader
and scribe

Tutorial group

Two meetings:

1. Brainstorming

2. Presentation

Tutor (faculty) facilitates the
sessions

Brainstorming

Unfamiliar terms

Issues

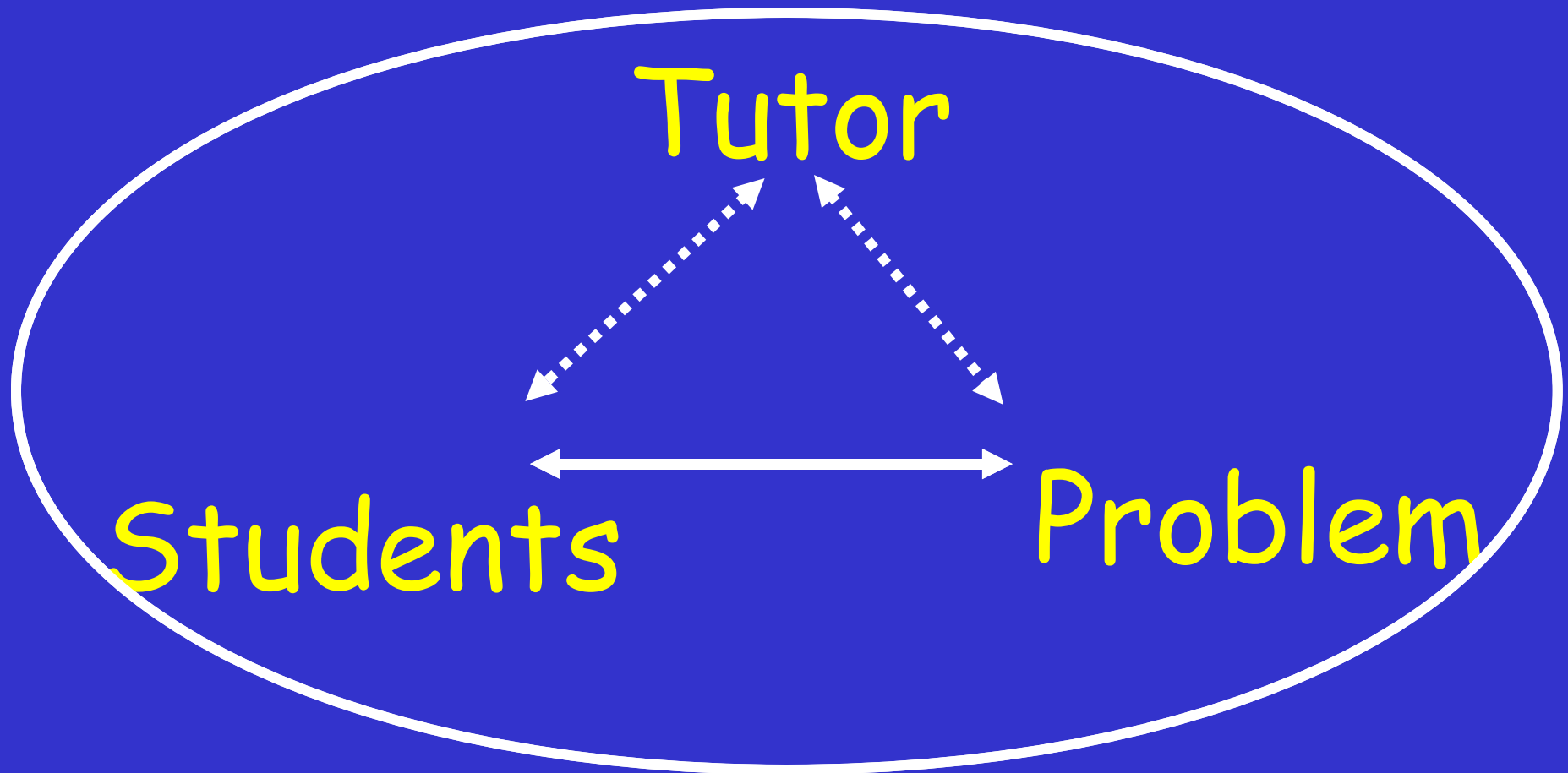
Hypotheses

Learning objectives

Prioritization
Resources

Meet again after self-study

Tutorial group process



Problem Based Learning





Problem Based Learning



Group learning process: acquiring desirable learning skills



Issues

- ① 10 yr old boy - bitten by a street dog
- ② behaving abnormally (dog)
- ③ immediately taken to hospital disease
- ④ immunized against tetanus
- ⑤ observe the dog for 10 days
- ⑥ report for any death
- ⑦ Control the street dog menace

Hypothesis

- ① Transmission of the infection is thru the bite from the infected dog
- ② dog behave abnormally (link)
 - coz virus has infect CNS (sys.)
 - leads to aggressive behaviour of the
 - as a survival strategy (virus)
- ③ To spread of virus the higher center
- ④ T at tetanus infection
- ⑤

LO

Two female students in white lab coats and hijabs are standing in front of a green chalkboard. The student on the left is holding a piece of paper. The student on the right is also holding a piece of paper. The chalkboard contains handwritten notes under the headings 'Issues' and 'Hypothesis'.

Role of tutor

- Active listening
- Ensure equal participation of all students
- Guide to resources

Role of tutor

Will NOT

→ Teach

→ Act as expert

→ Determine learning
objectives

In PBL, the teacher is

- A guide by the side,
NOT a sage on the stage
- A provider of learning
opportunities, NOT a dispenser
of factual knowledge

Purists

- All the learning through problems
- No didactic teaching

Hybridists

- Didactic teaching
- Problem Based Learning

Impediments to change

1. Lack of conviction among faculty that change is indicated
2. Additional work change involves (Introduction and maintenance)

Impediments to change...

1. Examination system
discourages innovation and
encourages tradition
2. Lack of understanding of
the concept of PBL

Impediments to change...

1. No prestige or recognition for teaching
2. Willing faculty may not have the skill and support
3. Traditional departmental structure impedes integration

Problem Based Curriculum versus Conventional Curriculum

*Academic Medicine 1993, 68 (1),
52-81 (Albanese and Mitchell)*

*Academic Medicine 1993, 68 (7),
550-563, (Vernon and Blake)*

- PBL Evaluation for the past 20 years
- The two meta-evaluations
- PBL has done no harm in terms of conventional tests of knowledge

- Students show better clinical problem solving skills
- Students are stimulated and motivated by PBL as a method

Advantages of PBL

- Student centred
- Integration
- Motivation
- Deep learning
- Generic competencies

Generic skills and attitudes

- Teamwork
- Chairing a group
- Listening
- Recording
- Cooperation
- Respect for colleagues' views

Generic skills and attitudes

- Critical evaluation of literature
- Self-directed learning and use of resources
- Presentation skills



Group learning process: acquiring desirable learning skills

- *ABC of Learning and Teaching in Medicine: Problem Based Learning BMJ 2003;326:328-330 (8 Feb 2003)*
- *Problem Based Learning: Where are we now. Medical Teacher 2008; 30:742-763*

Disadvantages of PBL

- Facilitation frustrating
- Human resources
- Library and computer access
- Role model/inspiration missing
- Information overload

One of the greatest (and rarest !) talents a teacher can have is to make students feel comfortable, safe and able to expose their ignorance and misunderstandings and to ask for help

Principles of effective case design

1. Context relevance to future profession
2. Present basic sciences concepts in a clinical setting
3. Stimulate self-directed learning

Principles of effective case design

1. Cues that stimulate elaboration
2. Enhance students' interest
3. Match faculty objectives
4. Adapt to prior knowledge

Self-directed learning

- Consulting more than one source
- Knowing the boundaries of sciences
- Preparing for life long learning
- Learning to work independently
(take one's own decisions)

Large Group Problem Based Learning: a possible solution for the 2 sigma problem

- Howard Barrows and others
Medical Teacher 8: 325-331, 1986
- Tutorial method produced student achievement 2 standard deviations above the mean achieved in conventional classroom teaching