PROBLEM BASED LEARNING

A coat of many colours
Training in innovative teaching methodologies

Slides adapted from a training provided by St John’s Medical College, Bangalore, India
ROLES AND COMPETENCIES

- Medical expert
- Communicator
- Collaborator
- Resource manager
- Health advocate
- Scholar
- Professional

*CanMeds2005 - Skills for the New Millennium*
LEARNING OBJECTIVES/Basic questions

At the end of this session the participant should be able to answer the following questions:

• What is PBL and its core elements?
• What are the objectives for PBL?
• What is the PBL Process?
  – Steps in the PBL process
  – Roles of the group members
• What are the dimensions of PBL that might vary (yet still maintain the essence of PBL)?
LEARNING OBJECTIVES

At the end of this session the participant should be able to:

• Outline the methods used to **evaluate** the PBL process.

• Discuss the possible ways to **incorporate PBL** into a **traditional curriculum**.

• Discuss the **advantages** and **disadvantages** of PBL.
WHAT IS PBL?

“A learning method ......An approach.....

......that uses problems as a starting point or stimulus

......for the acquisition and integration of new knowledge.”

• It is not a technique
• Learner centered rather than Teacher centered.

H.S. Barrows 1982
EDUCATIONAL PRINCIPLES

• Active learning
• Student-centered learning
• Learning in context.
• Focusing on concepts/prototypes
• Activating prior knowledge
• Cooperative learning.
• Reflection and Feedback
OBJECTIVES OF THE PBL PROCESS

• Knowledge
  - basic
  - and clinical content in context
  - integrated
OBJECTIVES OF THE PBL PROCESS

• Skills
  - scientific reasoning
  - critical appraisal and decision making
  - information literacy
  - self-directed, life-long learning
  - constructive self and peer assessment
OBJECTIVES OF THE PBL PROCESS

• Attitudes
  - value of teamwork
  - inter-personal and communication skills
  - psychosocial issues
  - professional ethics and behavior
TRADITIONAL 
LECTURE

“Tutor”

“Students”
"Tutor"

"Students"

PBL SESSION
WHAT IS THE PBL PROCESS

Four Components

1. The Problem. Describes a real world phenomenon.
2. Tutorial or Small group discussion.
3. Self directed study.
4. Exchange of information.
PROBLEM
• Description of Phenomena
• Prepared by Staff Team
• Directs Learning Activities

EXCHANGE OF INFORMATION
• Did we acquire a better understanding of the processes involved in the problem

SMALL GROUP DISCUSSION
• What do we already know about the problem = activation of prior knowledge
• What do we still need to know about the problem = learning objectives
• Using a specific methodology (7 Steps)

SELF STUDY
• Learning Resources
• Integration of Knowledge from different disciplines
Characteristics of PBL Cases

• Relevant, realistic, logical.

• Adapt well to students prior knowledge.

• Relevant context- (Related to future profession)

• Integration of knowledge.
Characteristics of PBL Cases

• Stimulates self directed learning.

• Enough issues for analysis and in-depth study

• Motivating and interesting

• Not too many distractors.
• What is a tutorial group?

• Composition - 6 to 10 students.
  - A Chair & a Scribe (rotational basis)
• - A tutor.
• Duration - 2 hours
• Frequency - Twice per week
• Good mix: sex, ethnic groups, disabled, different achievers.
• Should stay together for many weeks.
Steps involved in a Tutorial Process

1) Clarify terms and concepts not readily comprehensible.
2) Define the problem.
3) Analyze the problem, (brainstorming).
4) Resolve issues based on prior knowledge (inventory of explanations)
5) Formulate learning objectives
6) Information gathering, (self-study)
7) Synthesize and test the newly acquired information.
PBL - AN ITERATIVE PROCESS

Identify learning issues-4&5

“Brainstorm” define problem/hypothesize-2&3

Read the trigger/clarify terms -1

Next trigger

Research/gather info. (SDL) -6

EVALUATE

Return-Reread-Report-Review (Synthesize) -7

“Brainstorm” define problem/hypothesize-2&3

Identify learning issues-4&5

Read the trigger/clarify terms -1

Next trigger

Research/gather info. (SDL) -6

EVALUATE

Return-Reread-Report-Review (Synthesize) -7
ROLES

PBL Group

Scribe  Tutor  Chair  Group member
MOCK PBL
Catherine (Trigger)

• During the last few years, Catherine has grown tall very quickly. She has always been a tall girl, but at an age of 11 years and a height of five feet, four inches, she rises head and shoulders above her age group. People always take her to be older, which sometimes becomes wearisome. What will become of her? She still has not reached the age of puberty.
Students

STARTING THE PROBLEM.....

What do we know?

What do we need to know?

Discuss & list learning issues

Organize who does what

Tutor
Catherine

- During the last few years, Catherine has grown tall very quickly. She has always been a tall girl, but at an age of 11 years and a height of five feet, four inches, she rises head and shoulders above her age group. People always take her to be older, which sometimes becomes wearisome. What will become of her? She still has not reached the age of puberty.
Learning Issues

• Normal growth patterns
• Factors influencing growth
• Which tests can be used?
• Which interventions are possible?

Objectives

• Normal rates of child growth
• Mechanisms/processes influencing growth
• Psychological effects of being tall
• Diagnostic procedures to predict growth
FUNCTIONS/ROLES IN THE TUTORIAL GROUP

- Discussion Leader/Chairperson
- Scribe/Secretary
- Tutor
- Group members
The Discussion leader

- Structures the content and sequence of events
- Ensures correct steps are applied
- Ensures that interaction and co-operation between group members proceeds properly

Roles:
- Preparation
- Structuring
- Summarizing
- Stimulating
- Asking questions
- Reformulating
- Concluding
- Keeping time.
SCRIBE (MINUTES SECRETARY)

• Organizing thoughts of group members
• Summarizes
• Visual aid (Externalises memory)/ records progress
• Keeps group focussed
• Documents questions (??)
• Selects /structures recording
• Can complement discussion leaders.
GROUP MEMBER

Communicates both verbally and non-verbally with other group members, exchanging ideas, thoughts, views and emotions.

Role
- Taking minutes
- Providing and Asking for Information
- Summarizing
- Active listening
- Providing; Asking for and Receiving feedback
THE TUTOR

Main task - promote both the learning process and group dynamics.

• Facilitating the tutorial process
• Facilitating group dynamics
• Serving as a Resource
• Evaluating performance
Tutor Skills

• Being student Centred
• Creating a Motivating Environment
• Managing Time and Process
• Using Questions Effectively
• Managing Group Dynamics
• Providing/Ensuring constructive feedback
Dimensions on which PBL can vary

- The person or group who selects the problem
- The purpose of the problem
- Nature of educational objectives and control over their selection
- The nature of the task
- The presentation of the problem
- Format of the problem
Dimensions on which PBL can vary

• The process students follow
• Resources utilized and how they are identified
• The role of the tutor
• Integration with other teaching methods
• Relation between planned educational activities and study time
• Assessing students’ achievement
Process Evaluation

At end of Tutorial session

• Tutor & students all participate.

• **Assessment of & reflection** on tutor, student & group performance

• Effective performance **reinforced**

• **Opportunities for improvement** identified

• **Suggestions for improvement** provided on K, S, & A
End of Course Evaluation

- Critical appraisal of the course itself
- Structure & Organization
- Content, linkages, tutorial problems, load, patients and patient contacts.
- Learning resources & utilization
- Group work
- Attitudes and communication skills
- Tutor role & Supervision
End of Semester/Year Evaluation

Tutor to Student

• Knowledge
• Skills
• Attitude
MUSOM/SPH-15 Step process

First Tutorial

1) Group Organization
2) Reading thru’ the problem
3) Identify and Clarify unfamiliar terms.
4) Define the problem.
5) Raise learning issues
6) Resolve issues based on prior knowledge
7) Organization of unresolved issues
8) Formulate learning objectives from unresolved issues

SDL (Usually Tuesday to Thursday)
7) Information gathering, (self-study)
8) Synthesize and test the newly acquired information.
Second Tutorial

11) Synthesize and test the newly acquired information.

12) Identification of objectives not addressed and resources

Second SDL Period

13) Information gathering on difficult objectives

14) Final collation of information and solving of the problem

15) Identify areas of difficulty and seek for help.
## A student's week - Preclinical (Yr.1)

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Daily timetable may vary according to departments
INCORPORATION INTO TRADITIONAL CURRICULUM

• Hybrid

• Parallel track

• Pilot courses

• Integration with other teaching methods
INCORPORATION INTO CURRICULUM

• Facilitator training

• Development of problems and tutor guides

• Identification of student group

• Logistics
“More and more patients are going to the Internet for medical advice. To keep my practice going, I changed my name to Dr. Google.”
“Personally, I’m always ready to learn, although I do not always like being taught”

- Winston Churchill