



PBL

**“Within the problem lies
the solution”**

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Contents

- Introduction
- 5 W + 1H of PBL
- Problem scenarios crafting
- PBL tools
- Sample work done
- Conclusion
- Q&A

Let's discuss:



Approaches to Teaching

Teaching style

- the way a learning experience is conducted
- Built from behaviour of teacher and the strategy chosen to ensure that the planned learning takes place, lesson objectives achieved

Teaching Strategy

- Choice and range of teaching method – the method chosen influences decisions about assessment, evaluating grouping etc

Various Teaching Styles

Experimental

Learner-
centered

Teacher-
centered

Didactic

Content-
Based

Process-
based

Project
based

Blended
learning

PBL

List down what is the factors
that you think affect your
teaching style or strategies.

Factors affecting choice of style

- Learning needs of students – need variety to ensure learning is not restrictive

But also affected by.....

- professional knowledge
- beliefs, views and assumptions as well as professional knowledge, personal confidence and competence.
- environment in which you work
- personal qualities

Surface Approach

- Intention to complete the task, memorise information, make no distinction between ideas and existing knowledge and to treat the task as externally imposed (Fry et. al, 2009)
- Rote learning is typical surface approach
- Superficial levels of cognitive processing
- Facts are learnt without meaningful framework

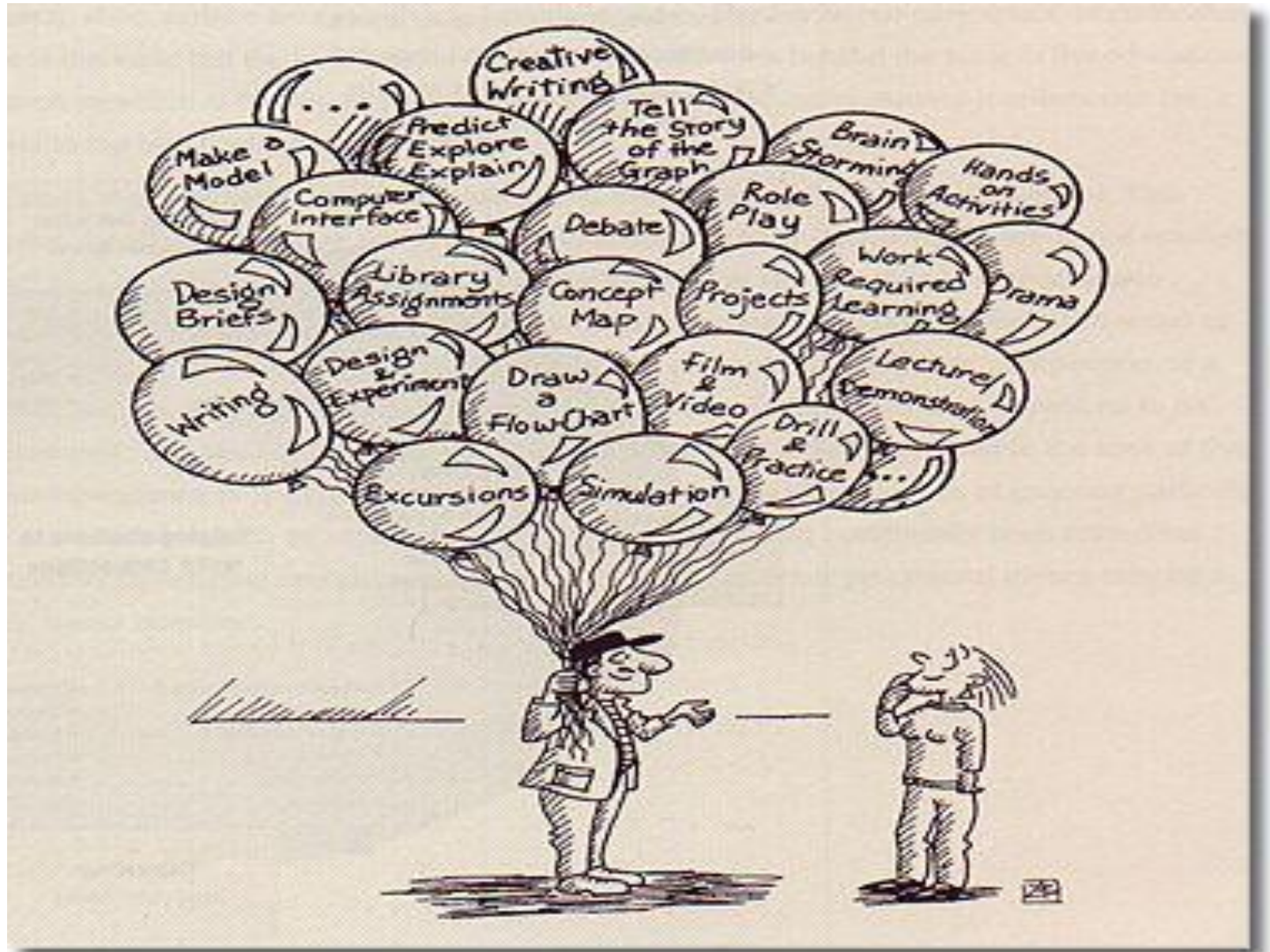
Deep Approach

- Intention to understand and seek meaning, leading students attempt to relate concepts to existing understanding and to each other, to distinguish between new ideas and existing knowledge, and to critically evaluate and determine key themes and concepts
- Gain maximum meaning from learners' studying and involve high levels of cognitive processing
- Possible to achieve through student-focused approach

Adult Learning Theory (Knowles, 1984)

- There are five principles:
 - a) As a person matures, he or she becomes more self-directed.
 - b) Adults have accumulated experiences that can be a rich resource of learning
 - c) Adults become ready to learn when they have a need to know something
 - d) Adults tend to be less subject centered than children, they are increasingly problem centered
 - e) For adults more potent motivators are internal

Choice of Methods



PROBLEM BASED LEARNING

PBL - Malaysia

no	university	field
1	UNIMAS /UKM	Medical
2	UIA	Law
3	UTHM/ UTM	Engineering
4	UM	IT / Mathematics
5	USM	Physic
6	MMU	Multimedia
7	UTeM	ICT & Engineering

PBL – Singapore, Australia, UK, US

DEFINITION OF PBL

Introduction

- PBL is characterised by the use of **real-life** and **ill** structured scenarios, those that are complex and generally have multiple responses as starting materials instead of the teacher simply assigning readings, providing lectures or walking students through a solution.
- Students identify **problems** associated with the scenario and use these problems to drive their learning process.
- Their **inquiry** and **exploration** leads to learning key concepts, principles, content knowledge, and strategies necessary to solve the challenges presented by the problem.
- The teacher's main role is to support student inquiry.

Introduction

- The key objective of PBL is to find appropriate **solutions** to the real, ill-defined problems that are happening in the professional context. For this reason, pure PBL is more suitable for experienced learners while hybrid PBL is better for inexperienced learners.

Introduction

- PBL is an instructional method that challenges students to "**learn to learn**," working cooperatively in groups to seek solutions to problems (Duch, Groh, & Allen, 2001). These problems are used to engage students' curiosity and initiate learning the subject matter.
- PBL is characterized by the use of "real world" problems as a context for students to learn critical thinking and problem solving skills, and thereby acquire knowledge of the essential concepts of the course.
- Using PBL, students acquire **life-long learning skills** that include the ability to find and use appropriate learning resources.

Introduction

- In encouraging students to assess their own knowledge, to recognize deficiencies, and to remedy those shortcomings through their own investigations, PBL provides them with an explicit model for lifelong learning (Boud, 1997). Through PBL, students learn how to learn by asking the right questions.
- The group format of PBL teaches students the power of working **cooperatively**, which in turn builds valuable communication and interpersonal skills and fosters a sense of community in which diversity enhances the learning experience for all.

1. PBL: Short Intro

- Solving problems together
- Education system
- Uses Constructivist principles
 - Student-centered
 - Active participation
 - Prior knowledge
- Student collaboration

What counts as PBL?

5 characteristics of PBL

1. Starting point is a problem
2. Authentic for professionals
3. Knowledge organised around problems
4. Students have responsibility for learning
5. Most learning in small groups, not lectures

PBL begins with a problem

- Group analysis of what needs to be known
- Individual research
- Developing a solution
- Reflection on process & learning

PBL involves group work

- Collaboration has benefits
Even for silent students
- Students need group skills
Medium-sized (6) groups work best
- Tutors need facilitation skills
Expertise in subject may be less important

Traditional

The teacher...



Teaches



Demonstrates



Tests

PBL

The student...



Collaborates



Discovers



Performs

The role of the facilitator



“... seems to be **extremely important** in an online learning activity.” (Chernobilsky et al 2005, 61)

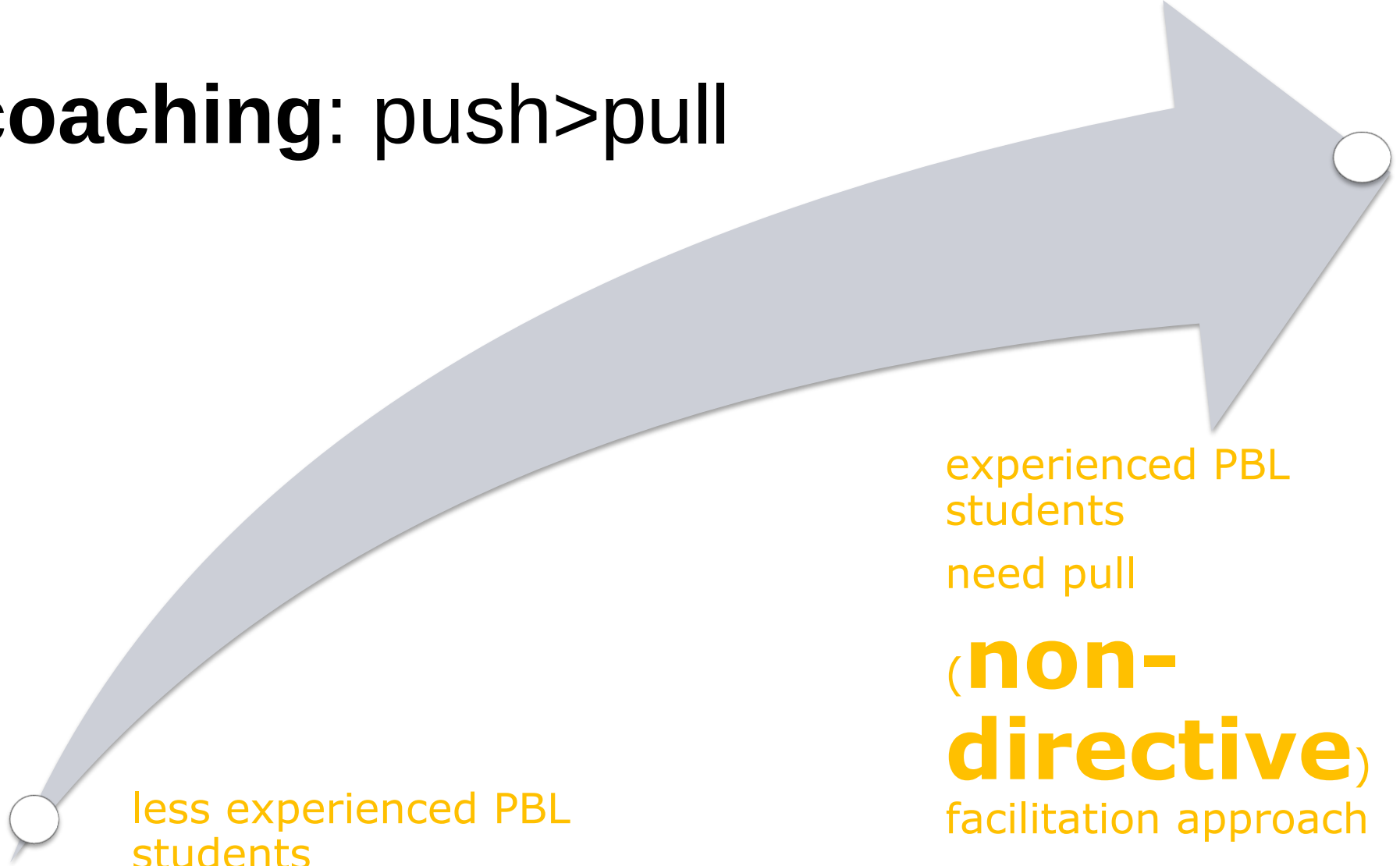
“Facilitators new to problem-based learning often feel that it is better to say less – or even nothing – so that the students feel that they are taking the lead in the learning.”

(Savin-Baden 2003, 50)

“[...] students new to problem-based learning, [...] (feel) that the lack of direction is duplicitous because they feel it is the facilitator’s way of avoiding a declaration of their own agenda and concerns.

(Savin-Baden, 2003, p. 50)

coaching: push>pull



less experienced PBL
students

need push

(**directive**)

facilitation approach

experienced PBL
students

need pull

(**non-
directive**)

facilitation approach

(Neville, 1999; Savin-Baden 2006)

Why PBL?

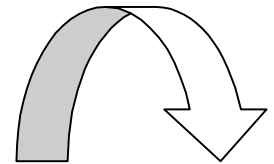
- Asks students to demonstrate understanding, not to just gather and rewrite information
- Builds critical thinking and reasoning skills
- Promotes student creativity and independence
- Allows students to manage their own activities
- Can change bored students into engaged students

PROCESS OF PBL

PBL Instructional Template

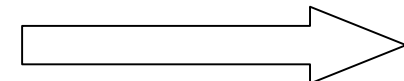
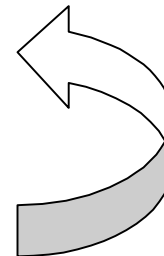
TEACHING AND LEARNING EVENTS

- **Prepare** the learners
- **Meet** the problem
- **Identify** what we know, need to know, and our ideas
- **Define** the problem statement
- **Gather** and **share** information
- **Generate** possible solutions
- **Determine** the best fit of solutions
- **Present** the solution (Performance Assessment)
- **Debrief** the problem



Embed instruction

And Assessment



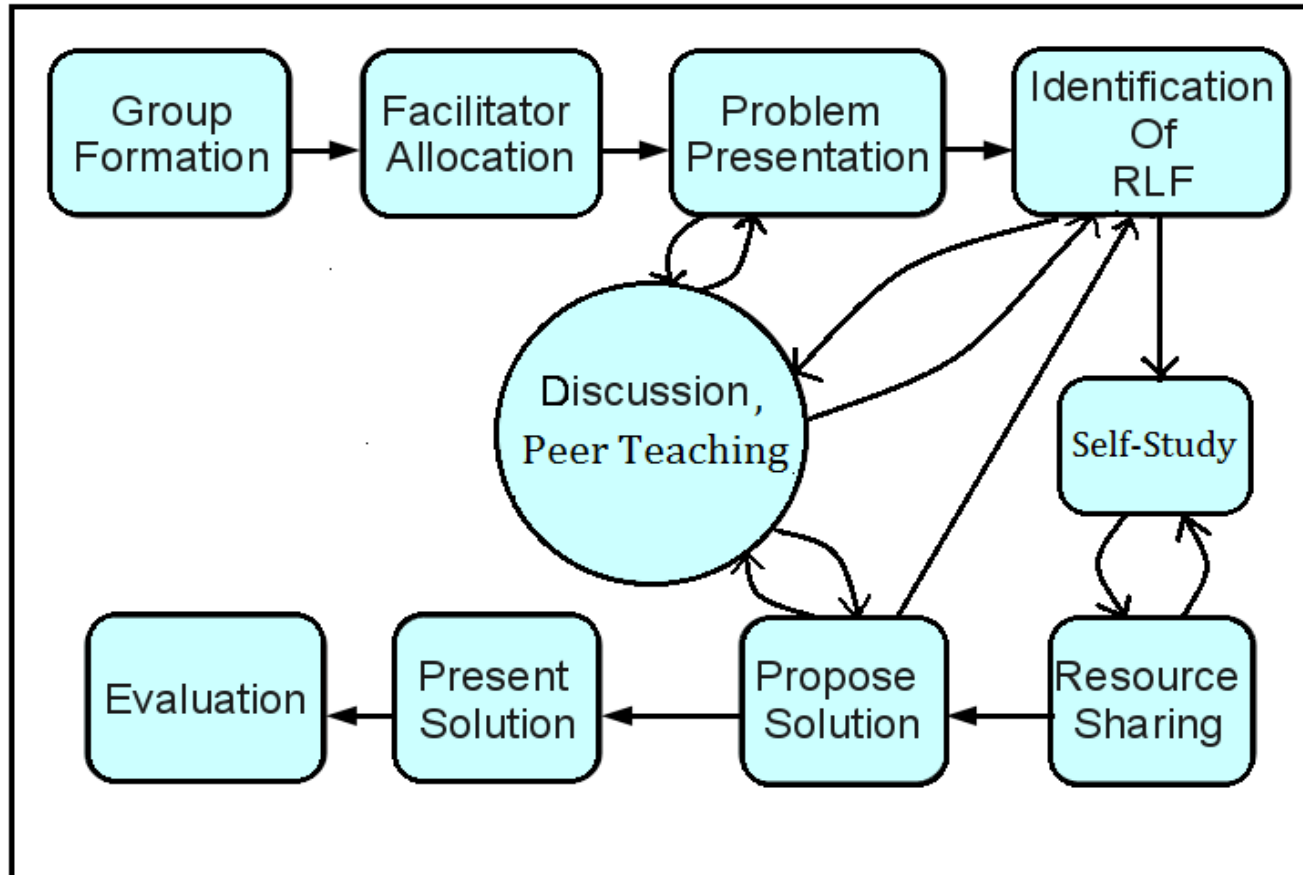
Steps in PBL

1. Students are divided into groups
2. One facilitator is assigned to each group
3. Facilitator presents the problem to the student
4. Student discuss among themselves and with the facilitator to have a better understanding about the problem
5. Students identify what relevant fact they already know and what they need to know to solve the problem
6. Student/facilitator search/share/evaluate resources which can be useful to learn about the problem domain

Steps Cont...

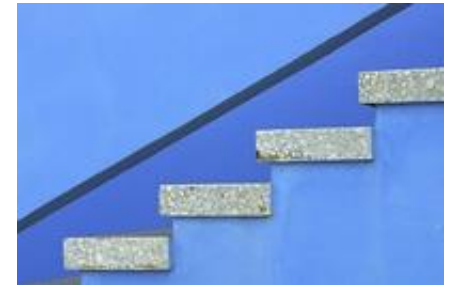
7. Student reads(books, documents, shared resources) /learns(can be done by doing some experiments) to gain knowledge about the problem domain
8. Student propose solution and discuss different aspect of it with-in the group
9. Ultimately they come up with the best solution they can think
10. Each group present the solution
11. Student self-evaluate themselves, and peer evaluate others in the group
12. Teacher do the final evaluation

Steps Cont...



Steps in PBL

1. Determine whether a problem exists.
2. Create an exact statement of the problem.
3. Identify information needed to understand the problem.
4. Gather information and organize it.
5. Generate possible solutions.
6. Decide on a solution.
7. Present the solution.
8. Reflect on & evaluate.



PROBLEM SOLVING METHODS (1)

In 2008, Panita Wannapiroon, Chulalongkorn University have suggested Problem Based Blended Learning model project for Education course with this solving method:

1) Study of content

2) Present the situation

3) Clarify the terms and concepts

4) Define the problem

5) Develop and sequencing the hypothesis

6) Formulate learning objective

7) Collect and validate new information

8) Synthesize information

9) Identify generalization & principles derived from this problem

10) Implementation of knowledge

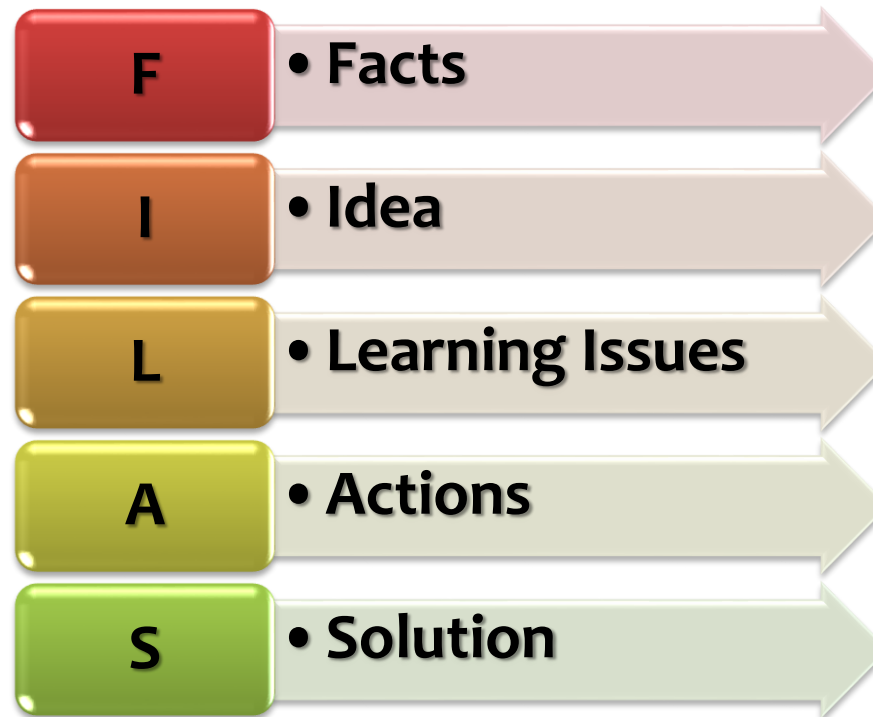
PROBLEM SOLVING METHODS (2)

- In 2007, Massa N. et al. have suggested PHOTON PBL Challenge project for Photonic Technology Education with this solving method:



PROBLEM SOLVING METHODS (3)

- In 2007, Faaizah Shahbodin and Halimah Badioza Zaman from Universiti Kebangsaan Malaysia with C²HADAM project, have create FILAS their problem based learning.



PROBLEM SOLVING METHODS (4)

- In 2006, Pawson E. et al. with project of PBL in Geography have provided this problem solving method:

Step	Explanation
Questions	Find out the fact, missing point, what needed.
Action Plan	Undertake regional analysis, population analysis, and list of resources.
Investigation	Independent work complete by each group.
Revisiting the cases	Reports, revisit the questions, further investigation.
Product of performance	(option) paper, group presentation.
Evaluation	Evaluate own performance, teams performance, quality of the problem, and whole process.

PROBLEM SOLVING METHODS (5)

- In 2005, Tse-Kian Neo and Mai Neo. Multimedia University, Malaysia with problem based multimedia project, used MDP.

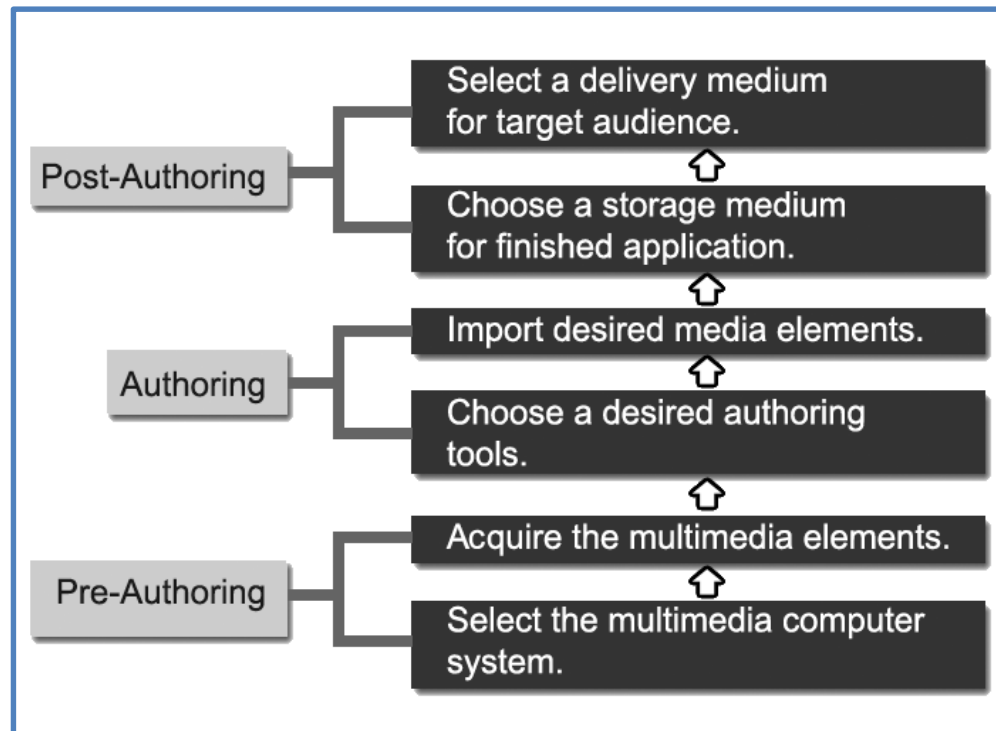
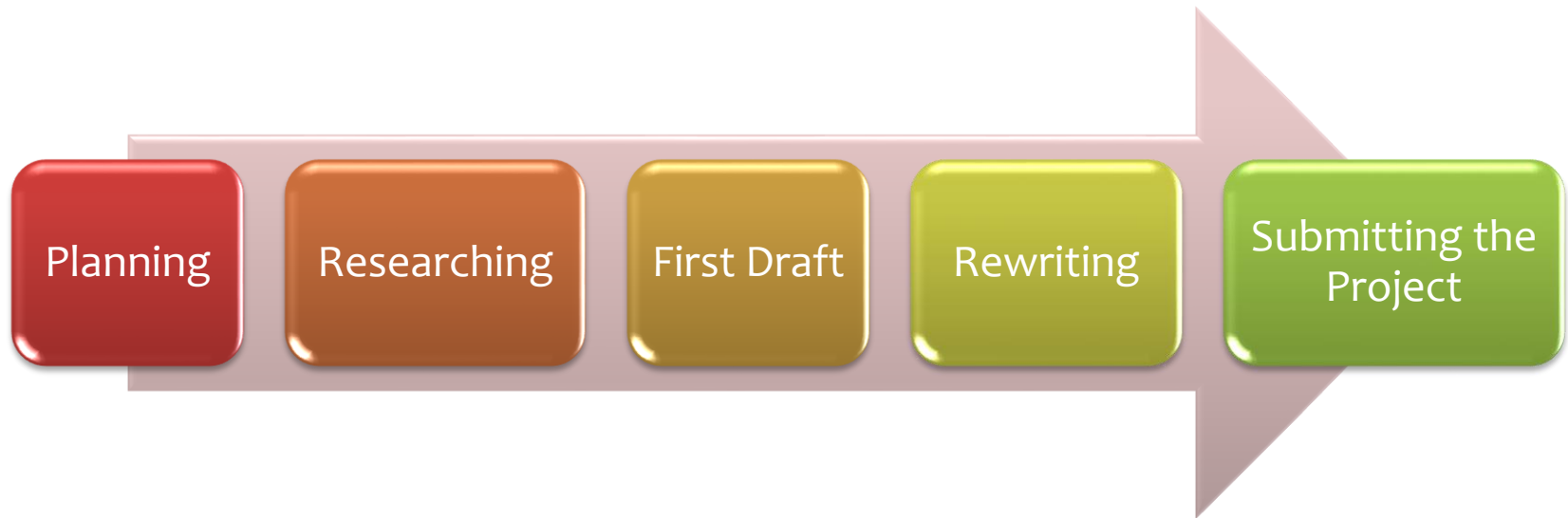


Figure 1: Multimedia Development Process in MMU (Neo & Neo, 2005)

PROBLEM SOLVING METHODS (6)

- In 2005, Roisen Donnelly and Marian Fitzmaurice, Dublin Institute of Technology, Ireland with CPBL and PBL in Higher Education, used this solving method:



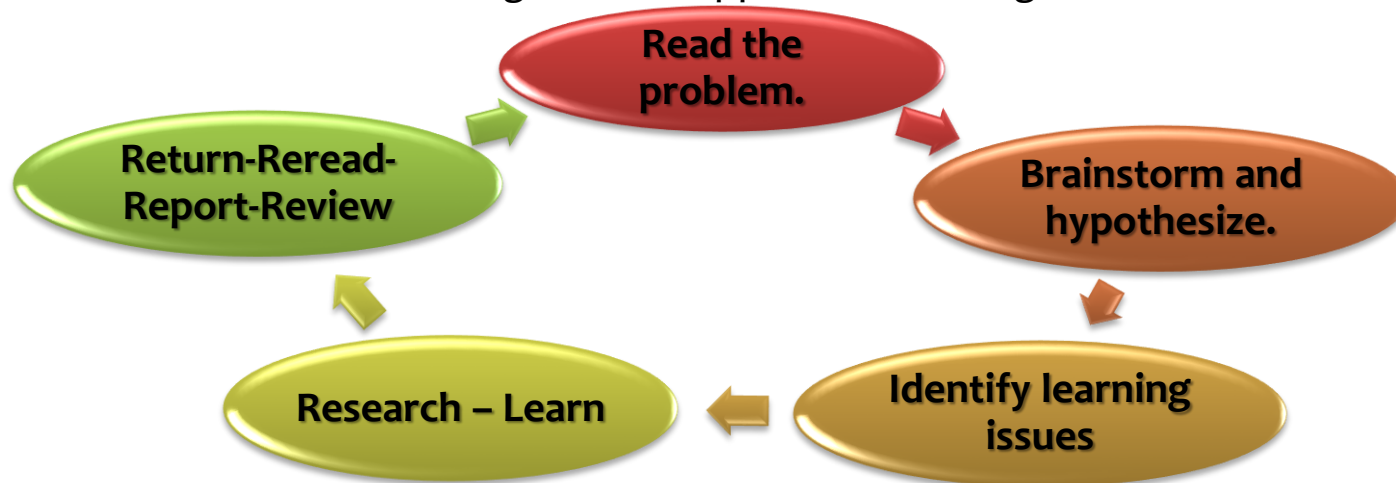
PROBLEM SOLVING METHODS (7)

- In 2005, Mohd. Kamaruddin A. H. et al. from Universiti Teknologi Malaysia with project of PBL in engineering education used this solving method:



PROBLEM SOLVING METHODS (8)

- In 2004, Rafidah Md. Noor and Nornazlita Hussin, University of Malaya with project of PBL for Network Design Course applied this solving method:

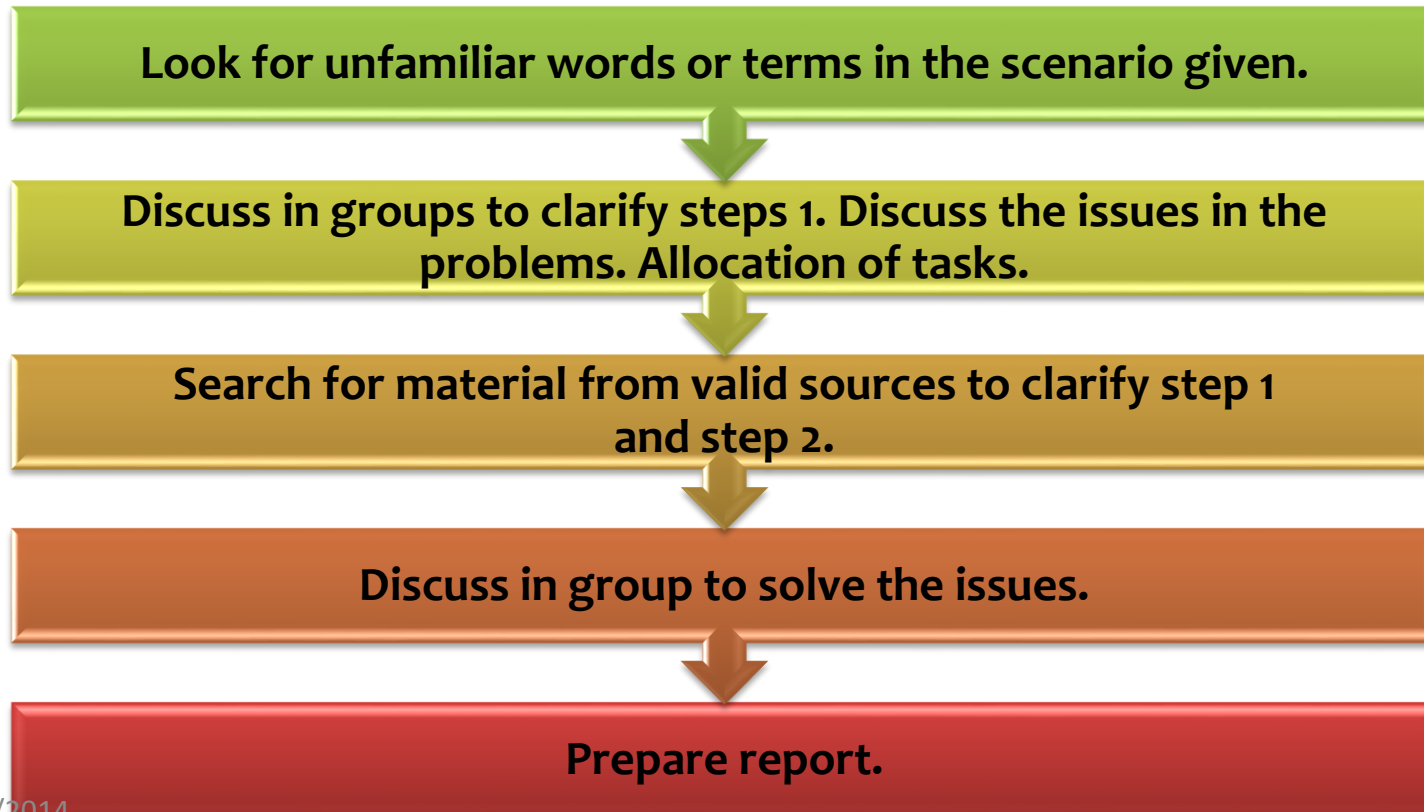


Before the end of each session:

- Identify significant issues and settle on a list of learning tasks for the next session
- Decide the issue to be tackled and divided amongst members.
- Decide what specific question needed to be answered.
- Decide how they want to address these learning issues.

PROBLEM SOLVING METHODS (9)

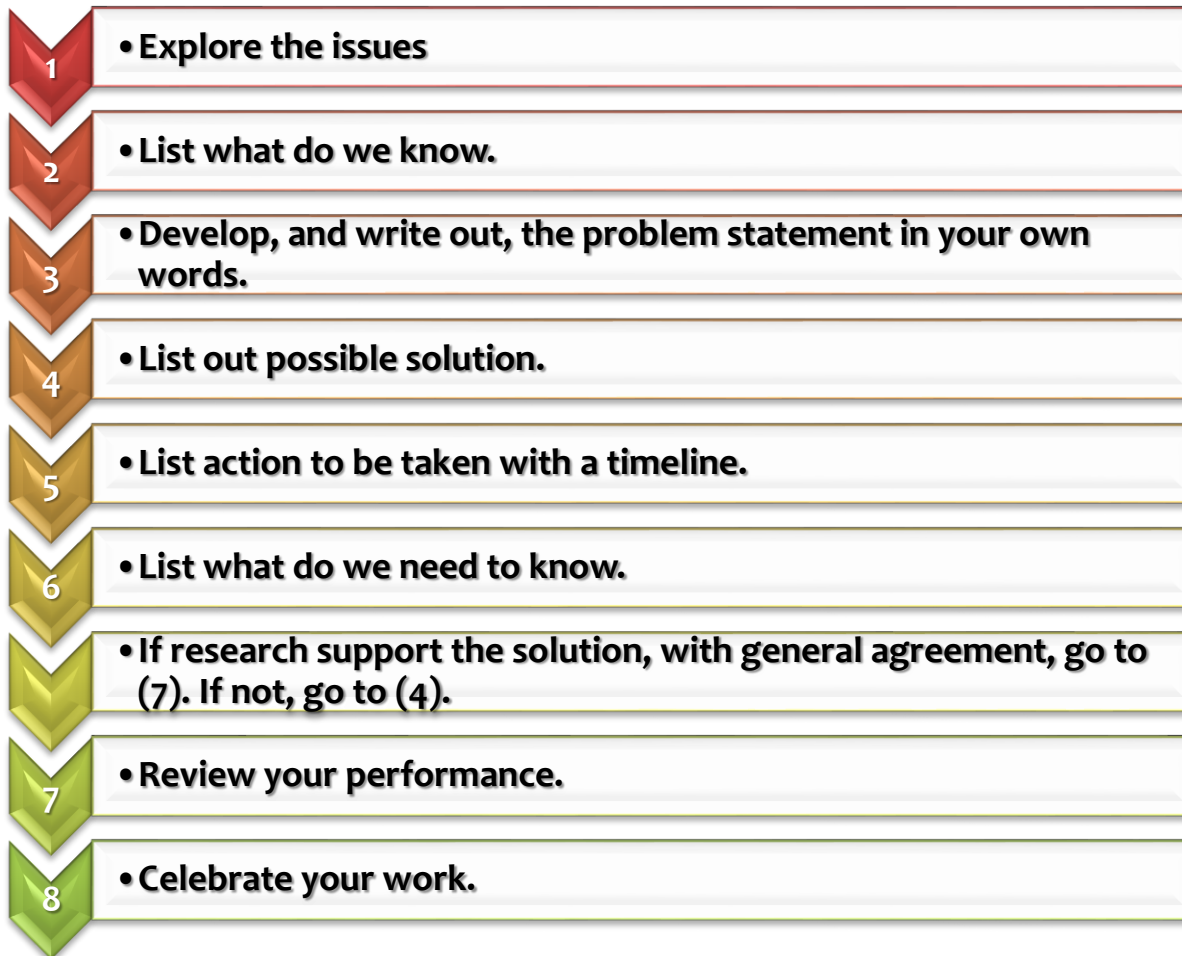
- In 2003, Tho L. M. et al. from University of Malaya with project PBL for Management Account applied this solving method:



PROBLEM SOLVING METHODS

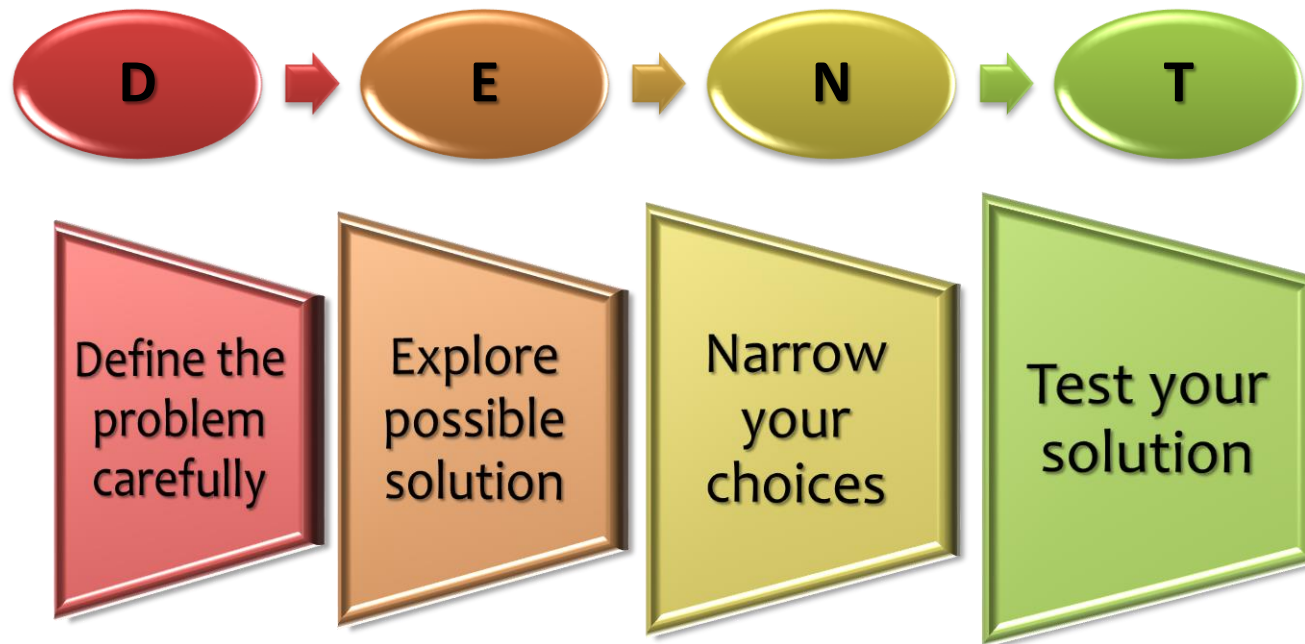
(10)

- In 2003, John W. Gardner have suggested this solving method for PBL:



PROBLEM SOLVING METHODS (11)

- In 2001, Peter Ommundsen have suggested **DENT** as solving method for PBL using in Biology subject:



The Process of PBL

- Problem (to triggers learning)
- Students specify:
 - what they know about the problem,
 - what they don't know
 - what they need to find out
- Student work together in teams to do research
- Presentation of findings
- Assessment & Reflection

Example of PBL in Action

Problem Based
Learning at the
Republic Polytechnic

*One Day, One Problem
Approach*



RP-PBL: 1st meeting

- Class of 25, 5 teams of 5 students
- Presented a **problem**
- Students under the guidance of the facilitator work on defining the problem and identify issues they will do research on.
- Approximately 1 hour



RP-PBL: 1st Breakout

Student work individually and in their teams to:

- Find and review resources
- Begin to develop tentative solutions for the problem
- Refine their definition of the problem



RP-PBL: 2nd Meeting

- Meet with the facilitator who checks on their progress
- Focus on any difficulties students may be having
- Helps students to develop learning strategies



RP-PBL: 2nd Breakout

- Student continue to work in their teams
- Review resources
- Develop a solution/ explanation based upon their shared understanding
- Produce a presentation
- 2-3 hours



RP-PBL: 3rd Meeting

- Meet with the facilitator
- Students present their solutions/explanations
- Students observe how others have solved the problem
- Facilitators probes and critique these solutions giving additional information where necessary
- Students further check their understanding by doing a quiz focussed on the key issues



BASIC SEQUENCE

1. Problem analysis
 2. Activation of prior knowledge
 3. Acquire new knowledge
 4. Construct an argumented solution
 5. Solve the problem
 6. Institutionalization / discussion
- With options
 - Data Sharing among groups
 - Peer reviews

Summary of Flow for PBL Unit

Choose a relevant problem

Draw ideas from
-Current events
-Topic, Theme
-Issues
-Interests

Develop PBL Adventure

- Decide**
-student roles
- Determine**
-outcomes
-problem terrain
- Develop**
-documents
-statement
-assessment

Build Teaching & Learning Template

Define
-Events
-embedded instruction
-embedded assessments
-time frame
-problem flow

Coach Critical Teaching & Learning Events

- Meet**
- Identify**
- Gather**
- Generate**
- Determine**
- Present**
- Debrief**

Embed Assessments & Instruction

- Periodic Assess**
-problem statements
-mind maps
-problem logs
- Instruction**
-guest speakers
-mini-lessons
-field trips
-labs

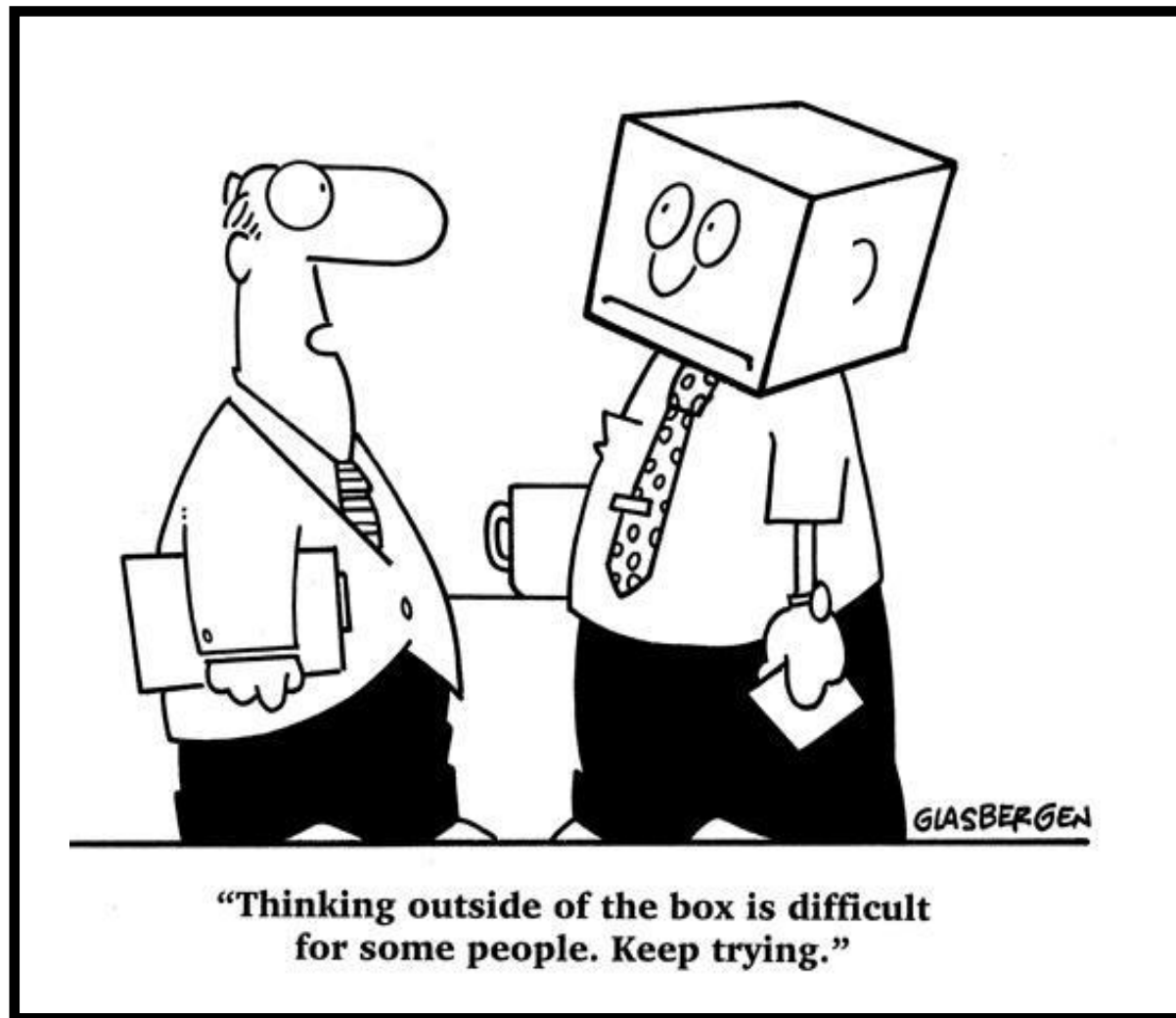
Problem Design

Implementation

PBL LEARNING OUTCOME

PBL Learning Outcomes

- PBL is recognised as highly appropriate for developing professional competence and a wide range of generic abilities. It develops deep understanding and the higher-order thinking skills of critical thinking, application and problem solving, etc. practice of self-directed learning while small groups provide conditions for the improvements in communication and teamwork skills.



“9 out of 10 companies believe that soft skills are as important as academic qualifications.”

2. Constructivist Learning Theory

- People learn by:
 - “Constructing” upon previous knowledge
 - Giving meaning to new ideas
 - Active coding and decoding
 - Building schemas
- Different between learners

2. Constructivist Learning Theory

- Main aspects of learning process:
 - Students' learning predisposition
 - Structuring knowledge for the learner
 - Effective sequencing of material presentation
 - Type and application of rewards/punishments
- Critical factors:
 - Self discovery
 - Active dialog

3. Traditional design vs. PBL

- Three main (general) issues:
 - a. Teaching, learning, and assessment methods
 - b. Learning environment
 - c. Integrating students' prior knowledge

3.a. Teaching, learning, and assessment methods

Traditional

- Goal: knowledge transfer
- Information reproduction
- Content-first approach
- Lectures or classroom teaching

PBL

- Goal: stimulate active learning
- Information comprehension
- Student-first approach
- Tutorial groups

3.b. Learning environment

Traditional

- Instructor-centered
- Formal
- One-way information flow

PBL

- Student-centered
- Informal
- Multi-directional information flow

3.c. Integrating students' prior knowledge

Traditional

- System of prerequisites

PBL

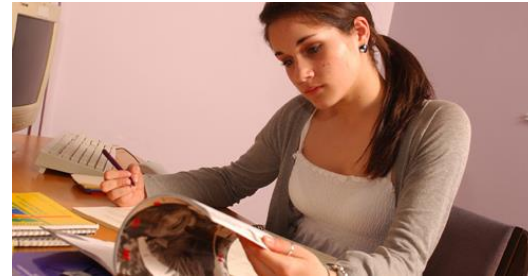
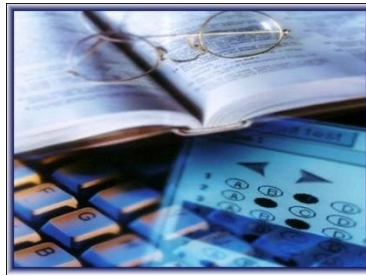
- System of prerequisites
- Prior knowledge takes center stage

This traditional approach has been criticised for a number of reasons:

- Many existing curricula fail to meet the needs of current and future doctors
- It creates an artificial divide between the basic and clinical sciences
- Time is wasted in acquiring knowledge that is subsequently forgotten or found to be irrelevant (The acquisition and retention of information that has no apparent relevance can be boring and even demoralising for students)
- Application of the acquired knowledge can be difficult

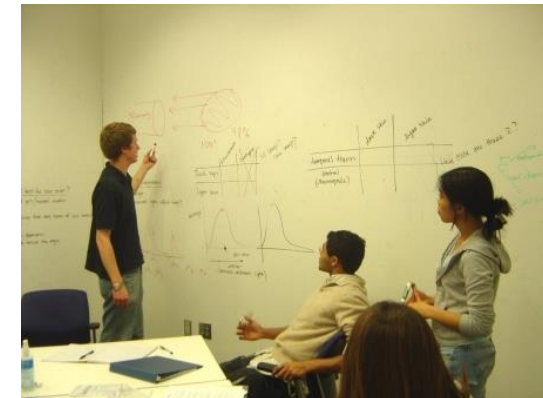
- The educational objectives of PBL address many of the perceived problems in traditional medical curricula
- Its possible advantages over traditional approaches include: its greater relevance to the practice of medicine, its ability to promote retention and application of knowledge, and its encouragement of self-directed life-long learning

ADVANTAGES AND DISADVANTAGES



Generic skills and attitudes

- Teamwork
- Chairing a group
- Listening
- Recording
- Cooperation
- Respect for colleagues' views
- Critical evaluation of literature
- Self directed learning and use of resources
- Presentation skills



Advantages of PBL

- Problem-solving and Research skills
 - Students develop the skill “how to learn”
 - Develop critical thinking
- Social skill
 - Collaborative and communication skill improves
- Effective
 - Student can apply their knowledge better if taught using PBL
- Motivation
 - Higher than traditional teaching method
- Implementation in courses
 - Supports that PBL is a good teaching methodology

The rapid changes in work have challenged the relationship between working life and education. Lifelong learning and demand for continuous development of skills, knowledge and attitudes needed in working life have resulted in a call for new ways to organise learning. The knowledge gained in education becomes quickly outdated and loses its value for working life. The skills and knowledge needed in working life cannot all be taught during formal schooling and training. Working life requires new kinds of competences including independent knowledge acquisition and application, problem solving, co-operative and multidimensional professional skills and abilities for continuing learning.

Too much debates!!



How does problem-based learning work?

What instructors do:

- Develop real-world, complex and open-ended problems such as might be faced in the workplace or daily life.
- Act as facilitators, making sure students are staying on track and finding the resources they need.
- Raise questions to student groups that deepen the connections they make among concepts.
- Strike a balance between providing direct guidance and encouraging self-directed learning.

What students do:

- Address the problem, identifying what they need to learn in order to develop a solution and where to look for appropriate learning resources.
- Collaborate to gather resources, share and synthesize their findings, and pose questions to guide further learning tasks for the group.

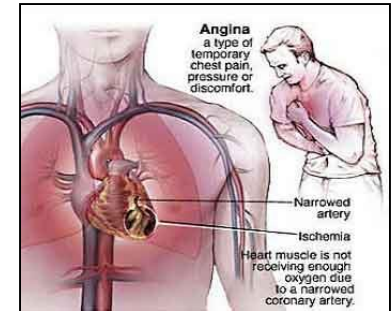
PROBLEM SCENARIO



Case presentation

Examples of trigger material for PBL scenarios

- Paper based clinical scenarios
- Experimental or clinical laboratory data
- Photographs
- Video clips
- Newspaper articles
- All or part of an article from a scientific journal
- A real or simulated patient
- A family tree showing an inherited disorder



How do I get started with PBL?

Develop problems that:

- Capture students' interest by relating to real-world issues.
- Draw on students' previous learning and experience.
- Integrate content objectives with problem-solving skills.
- Require a cooperative, multi-staged method to solve.
- Necessitate that students do some independent research to gather all information relevant to the problem.

Design assessment tools that:

- Account for *process* (e.g. research, collaboration) as well as content skills.
- Are closely tied to course learning objectives.
- Balance individual and group performance.

How to create effective PBL scenarios

- **Learning objectives likely to be defined by the students after studying the scenario should be consistent with the faculty learning objectives**
- **Problems should be appropriate to the stage of the curriculum and the level of the students' understanding**
- **Scenarios should have sufficient intrinsic interest for the students or relevance to future practice**
- **Basic science should be presented in the context of a clinical scenario to encourage integration of knowledge**
- **Scenarios should contain cues to stimulate discussion and encourage students to seek explanations for the issues presented**
- **The problem should be sufficiently open, so that discussion is not curtailed too early in the process**
- **Scenarios should promote participation by the students in seeking information from various learning resources**

CHECKLIST

- Is the content of the problem geared to students' prior knowledge?
- Is there a clear connection with one or more of the objectives of the block?
- Is the problem sufficiently complex to offer cues for initial discussion and for generating learning issues?
- Is the problem structured in such a way that it offers cues for discussion in the group?
- Has the problem been formulated clearly and, if possible, does it offer links with professional practice?
- Is the problem multidisciplinary and is clear to students?
- Does the length of the problem enable inclusion of all the relevant information that is needed for identifying learning issues and does the problem not contain superfluous irrelevant information?
- Is the available time sufficient for studying the learning issues?
- Is there sufficient time available for reporting on all the learning issues?
- Does the block offer sufficient variety in learning activities, i.e. does it include different types and formats of problems?
- Is the number of problems geared to the number of group meetings in the block? Has a schedule been drawn up that specifies which problems are to be discussed when?
- Which problems should be tackled in a specific sequence?

EXAMPLES OF PROBLEM SCENARIO

Example 1

Pure PBL

- In the first session, present the problem case scenario to the students. Identify and clarify unfamiliar terms presented in the scenario.

A Memo from the Manager of Coronary Care Unit dated July 16, 2004:

- Recently our hospital admitted a 40-year-old Chinese female by the name of AhYan, who lost 50 lbs in 6 months. Her previous weight was 160 lbs. Her primary physician admitted her with the diagnosis of malnutrition. She thinks she looks wonderful and is happy that she can wear a size 5 dress. Her haemoglobin was 3.3 and hemocrit 17. Patient shows little concern with her diagnosis. She has visual signs and symptoms of someone malnourished. I am requesting a comprehensive evaluation of her condition and interventions to assist her with future diet and weight management. I would like to have the evaluation by July 31, 2004. Thanks again for any assistance you can offer.

Example 1

- When encountering the authentic scenario, students have to define the problem(s) and identify the issues to be discussed. They formulate learning objectives and research consensus on appropriate and achievable learning objectives. After class, they conduct private study.
- In the following session, students bring in and share the results of their private study. They discuss to reach the best solutions, present them and justify them altogether. Then they keep revising hypotheses through the application of newly acquired knowledge. In the process, the tutor prompts them for more clarifications and explanations. At the end, the tutor lists the concepts missed and the pertinent data that contribute to finding the best solutions.

Example 2

Hybrid PBL

- In the first session, the teacher gives a mini lecture on the theories and principles.
- Then the teacher presents the problem case scenario which is written around the theories and principles covered in the mini lecture.
- When encountering the authentic scenario, students have to define the problem(s) and identify the issues to be discussed. They examine the details with reference to the theories and principles learned in the lecture.
- Students discuss to reach the best solutions, present them and justify them altogether. Then they keep revising their hypotheses through the application of newly acquired knowledge. In the process, the tutor prompts them for more clarifications and explanations. At the end, the tutor lists the concepts missed and the pertinent data that contribute to finding the best solutions.

EXAMPLE 3

Example:

PBL tutorial process

1. **Case presentation:** The tutor provides the group with some introductory clinical information about a hypothetical patient.

Mary Smith, a 28-year-old office worker and part-time swimming instructor, comes to see her GP because of **pain in her chest and shortness of breath**. This has been a recurring problem in recent months and seems to be gradually worse. On the previous evening, while participating in a swimming gala, she became so short of breath that she found it difficult to walk.



2. Identifying key information

discuss, extract, identify, summarize



3. Generating and ranking hypotheses:

e.g., Infection, cardiac problem, allergy, asthma, broken rib.

Allergy > cardiac problem

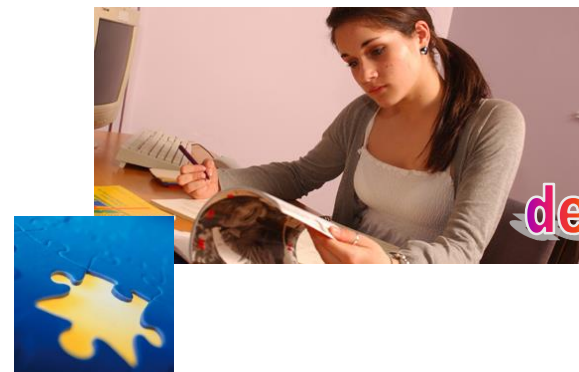


brainstorm

4. Generate an enquiry strategy:

What additional information is required?

e.g., Previous medical problems and relevant drug, family & psychosocial histories, physical exam, lab. tests.



decide



Additional information



Further discussion with her GP reveals that Ms Smith's chest pain and shortness of breath come on following exercise, particularly in a cold environment. When she becomes particularly short of breath, she starts to wheeze. She sometimes has a dry cough and has never had haemoptysis. There is no recent history of physical trauma and no personal or family history of heart disease. She had eczema in childhood but has never had asthma. She has smoked for the past 5 years and increased her smoking to 40 cigarettes a day since she broke up with her intimate friend 3 months ago. She takes an oral contraceptive pill but no other medication.

New information



Revising their hypotheses



Discard / Re-rank / Other hypotheses



- Broken rib



- Asthma ↑
- Cardiac problem ↓



- Anxiety attacks with hyperventilation
- Possible thromboembolic disease due to oral contraceptive use

5. Defining learning objectives

Once the students have decided on a preferred hypothesis (e.g., allergy), they must explain the **biomedical science mechanisms** that link their hypothesis to the presenting problems.

- What students *know*?
- What they *do not know*?
- What they *need to know*?

to further their understanding of the underlying mechanisms, and their ability to solve the clinical problem.

e.g., Students may identify gaps in their knowledge of the mechanics of breathing, anatomy of airways, mechanisms of oxygen delivery to tissues, or mechanisms of pain perception.

5. Defining learning objectives (cont.)

- The identification of gaps in knowledge helps students to define their learning objectives and these become the focus of self-directed study in the interval between tutorials.
- Learning objectives should be clear and specific and of appropriate scope to be addressed in the time available between tutorials (typically 2-3 days).
- At each tutorial, the group might identify three to five major learning objectives and perhaps an equal number of lesser objectives.

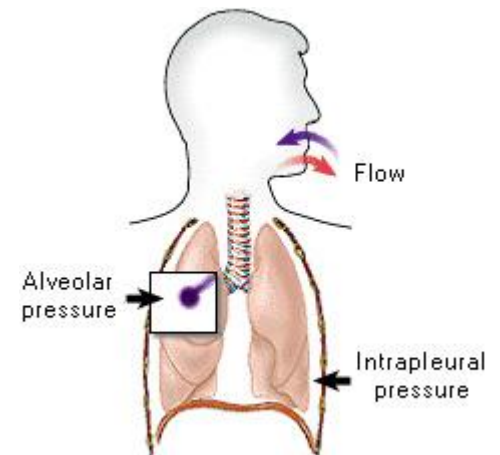
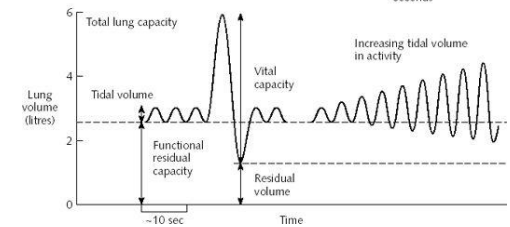
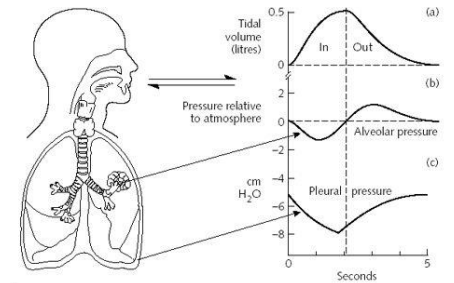
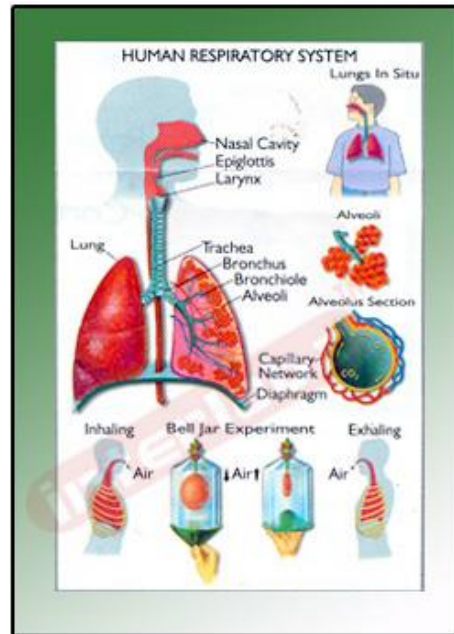
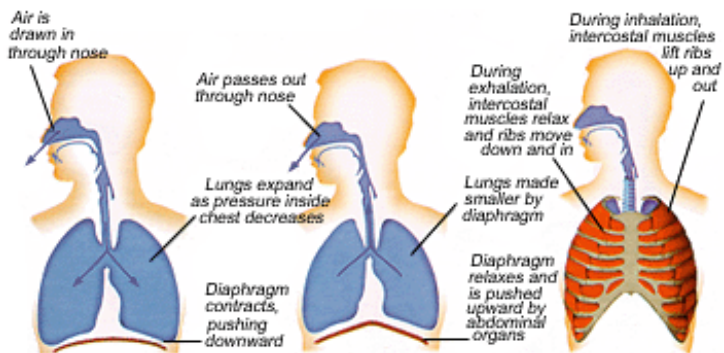
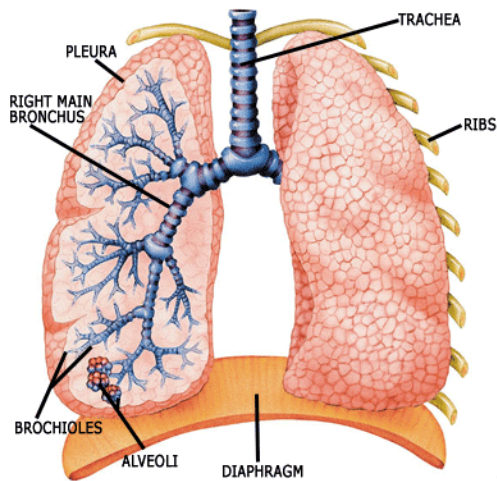
5. Defining learning objectives (cont.)

- Although the PBL tutorial is student-centered, *major learning objectives are identified in advance by the case writers as part of the overall curriculum design*. Tutors may need to provide prompts to ensure that major objectives are identified and pursued.
- In PBL, as *knowledge is acquired in the context of a specific clinical problem* (the problem is encountered before the student has the knowledge to understand it), it is likely to be *better focused and retained*.

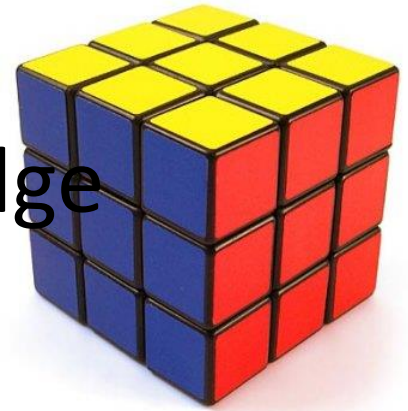
6. Reporting back



- In the follow-up tutorial, students reconvene to report on their self-directed study and share and integrate new knowledge.
- All students should contribute to the report-back and their unique perspectives are incorporated into the process of knowledge building. The exchange and debate of ideas promotes the consolidation and elaboration of new knowledge and understanding



7. Integrating new knowledge



- Based on the principle that knowledge is consolidated more readily in context, students, guided by the tutor/facilitator, *should relate new biomedical knowledge to the patient's problem.*
- Students are required also to extend their discussion beyond the biomedical and clinical sciences and consider *the public health, socioeconomic, ethical and legal aspects of the case.*

EXAMPLE 4

Why is it to important to follow laws onboard public transport?

One of your classmates, Jeremiah, was caught eating a sweet on board a SMRT train and was fined \$30. You and your classmates feel unhappy about the punishment and wish to help.

The task for your class

- Draft a proposal including 3 reasons why you feel the punishment for Jeremiah's crime was too severe and convince the authorities that the severity of punishments meted out to commuters who break other laws on board public transport should be reconsidered. Suggest alternatives.

In your proposal you should include:

- Background information
- What you are proposing e.g.: *the alternative methods to prevent commuters from breaking the law.*
- Reasons and evidence to support your proposal

You have to use at least **2 different types** of resources e.g.

- Internet
- Newspapers
- Books
- Television/documentary

The 'What we KNOW' column

<u>What we Know</u>	<u>What we Need to know</u>	<u>What we need to Do</u>
Facts	<u>Learning Issues</u>	Action Plan
Jeremiah was caught eating a sweet on board the SMRT train and fined \$30. 6/3/2014		

- Read the Problem Statement very carefully and understand it thoroughly.
- One example was shown about how to fill in the 'What we KNOW' column.
- Fill in the rest of the 'K' column with facts from the Problem Statement and Task.
- Break down the information and write down one fact in each box of the column on Page 5 and 6.

6/3/2014
→ You have 5 minutes.

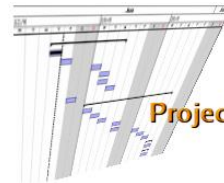
The ‘What we NEED to know’ column

<u>What we Know</u>	<u>What we Need to know</u>	<u>What we need to Do</u>
Facts	<u>Learning Issues</u>	Action Plan
Jeremiah was caught eating a sweet on board the SMRT train and fined \$30. 6/3/2014	• Why is eating sweets on board SMRT trains not allowed ? • Why is the fine \$30 ? • Are only sweets not allowed to be eaten on board the trains ?	

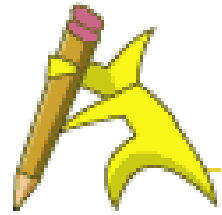
- Read the Problem Statement again very carefully and understand it thoroughly.
- Now you are was shown about how to fill in the 'What we NEED to know' column.
- Discuss with your group mates and fill in the rest of the 'N' column with the questions you think you need to ask to help you complete your task.
- You have 5 minutes.

PBL Planning Tools

PBL Planning Form



PBL Information Gathering Tools



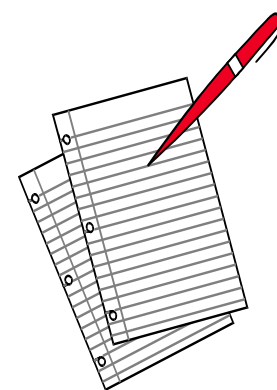
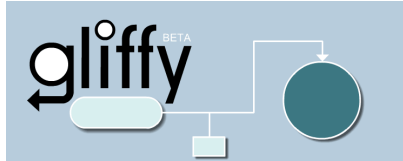
PBL Wiki



mynoteIT
Beta



PBL Organizing Tools



Online
learning
journal

PBL Presentation Tools



You **Tube** Broadcast Yourself™

picaboo

Gcast

 **Audacity**®

Google
Docs & Spreadsheets BETA

toufee™ movies in flash!

think**free** ONLINE BETA

PBL Assessment Tools



RECEIVED OFFER LETTER

DEAR TINA,

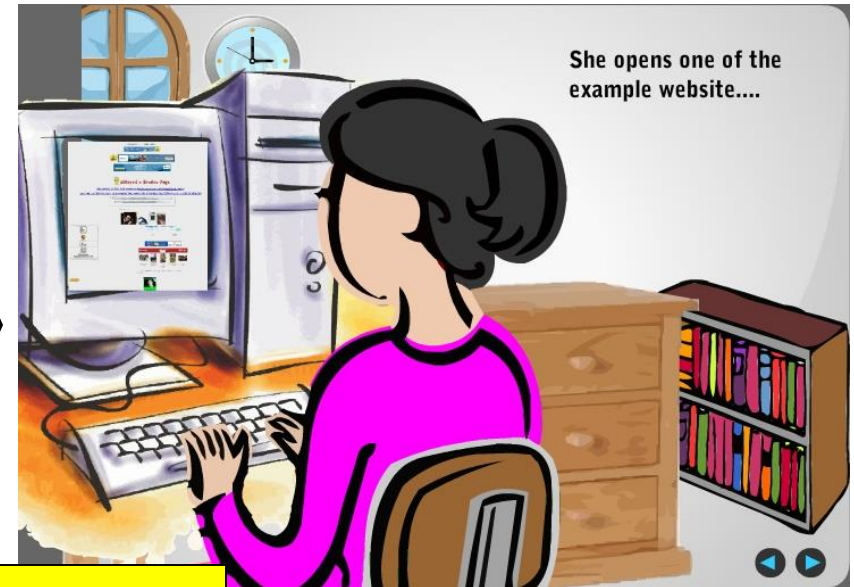
CONGRATULATIONS! YOU HAVE BEEN APPOINTED AS A MULTIMEDIA DESIGNER AT NEWMEDIA HOUSE. PLEASE COME AND REPORT FOR DUTY AS SOON AS POSSIBLE.

WE HAVE FULL CONFIDENCE IN YOUR ABILITY TO PERFORM YOUR DUTIES AND RESPONSIBILITIES. WE WISH GOOD LUCK AND ALL THE BEST.

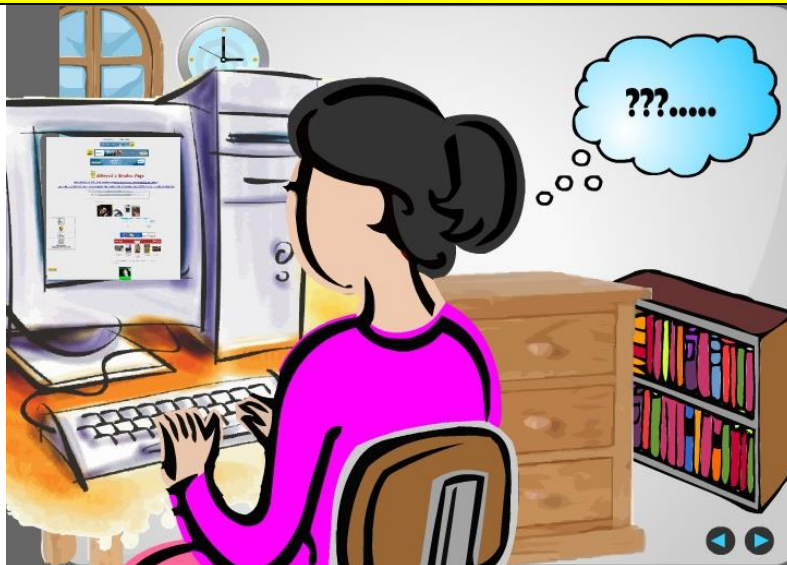
Pn. Nona Ahmad
Director
NEWMEDIA HOUSE.

NEXT

Student will receive
offer letter
and play a role



The problem scenario presented using 2D animation.



PROBLEM SCENARIO

The School of Informatics aims to redesign its website and commissions you to advise them on several matters.

The School wants to know website design process. Inform the School what each component of the design process means and help define the activities for each component for this website redesign project.

The School plans to redesign the website. Please advise the School in using multimedia elements on the website such as audio, video, image, graphics, text and animation.

As a multimedia designer, how would you explain this phenomena and what would be your suggestions to the School?

NEXT

Student will be presented with a problem scenario. They have to define and analyze the problem



PBLAssess

Problem Based Learning



PROBLEM SCENARIO

LECTURER MODULE

PROBLEM SOLVING

GLOSSARY

EXPLORATION

ASSESSMENT

FORUM

MODULE OUTCOME

PROGRAMME OUTCOME

LECTURER MODULE



COGNITION



MENTAL MODEL



USER INTERFACE
COMPONENTS



3D INTERFACES

After finish the lecturer module, you are free to
test your understanding. You can click button TEST.

TEST

Main modules
in PBLAssess



PROBLEM SCENARIO

LECTURER MODULE

PROBLEM SOLVING

GLOSSARY

EXPLORATION

ASSESSMENT

FORUM

MODULE OUTCOME

PROGRAMME OUTCOME

FILA Activity

Facts,Idea,Learning Issues,Action Plan

Here you need to develop a FILA table. The process has 4 steps.

Step 1

Student has to identify the Facts (**F**) from the problem scenario.
List what you can understand from the scenario.

Step 2

Student has to identify the Ideas (**I**) from the problem scenario.
List all the possibilities related to the scenario.

Step 3

Student has to identify the Learning Issues (**L**) from the problem scenario.
List all that you need to know in order to solve the given problem.

Step 4

Student has to identify the Actions Plan (**A**) from the problem scenario.
Prepare a list in order to solve the problem.

Click the button **Develop** to start FILA activity.

DEVELOP

FILA is one of the structured method in PBL to solve the problem.

STEP 1 - Identify Facts

The problem scenario shows that The School of Informatics aims to redesign its website.

As a Multimedia Designer, how can you help that School? You need to use FILA steps to start your activity. Before you solve the problem given, you need to identify what are the **Facts** given from the scenario. List out all the facts that you can gather from the problem scenario.

*Once you complete Step 1, proceed to Step 2, 3 or 4.

HINT

1. Get the meaning of the user interface design.

You can refer glossary/lecture module.

2. Know the design of website that suits your user

click on the exploration module to get the ideas.

STEP 1 : Facts

STEP 2 : Ideas

STEP 3 : Learning Issues

STEP 4 : Actions

STEP 2 - Identify Ideas

After you have identified all the facts. The next step is you have to identify the ideas. You can have a brainstorming session to get the idea. Be a creative person. You can browse the internet or information that might be related to the problem scenario.

Read the articles regarding user interface design to get ideas.

*Once you complete Step 2, proceed to Step 3 or 4.

HINT

1. This is a creativity part. You should be able to identify which ideas are great, and which are not so great. Making sure that your idea is expandable is a good way.

STEP 1 : Facts

STEP 2 : Ideas

STEP 3 : Learning Issues

STEP 4 : Actions

FILA Table

STEP 4 - Identify Actions

You have to identify the possible actions or resources to solve a problem given.

List out the resources needed such as the internet, HCI books, conduct interview, observation, gallery, online forum and etc.

HINT

1. You can click on the exploration module and forum to get the sources.

STEP 1 : Facts

STEP 2 : Ideas

STEP 3 : Learning Issues

STEP 4 : Actions

DEVELOP FILA TABLE

STEP 3 - Identify Learning Issues

You are required to identify learning issues in order to solve the given problem.

List out all the Learning Issues that you can gather from problem scenario.

*Once you complete Step 3, proceed to Step 4.

HINT

1. The knowledge that you discovered from the scenario given. You can apply 4W 1H (what, where, why, when and how) to identify learning issues.

STEP 1 : Facts

STEP 2 : Ideas

STEP 3 : Learning Issues

STEP 4 : Actions

PROBLEM SCENARIO

LECTURER MODULE

PROBLEM SOLVING

GLOSSARY

EXPLORATION

ASSESSMENT

FORUM

MODULE OUTCOME

PROGRAMME OUTCOME

CHOOSE TYPES OF ASSESSMENT



SELF ASSESSMENT

Self assessment is a process where students are involved in and are responsible for assessing their own piece of work.



PEER ASSESSMENT

Peer assessment is where students are involved in the assessment of the work of other students. They have to work in pair.

Type of assessment based on students preferences. They have to fill The answers using FILA table. The can download FILA table form in the system.

FILA Table

FACTS	IDEAS	LEARNING ISSUES	ACTION PLAN

Student has to fill in the FILA table based on the problem.

To fill in the table, click [FILA TABLE FORM](#)

CLOSE



EXPLORATION



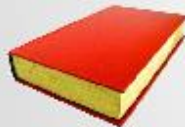
WEB LINK



ARTICLE



**EXPERT VIEW
ON PBL**



e-BOOK



GALLERY



**EXPERT VIEW
ON HCI**

Example of
submodules
in Exploration
module

PROBLEM SCENARIO

LECTURER MODULE

PROBLEM SOLVING

GLOSSARY

EXPLORATION

ASSESSMENT

FORUM

MODULE OUTCOME

PROGRAMME OUTCOME



WEB LINK

HCI WEBSITE

hci journal
interaction design
hci at stanford
hci institute
hci group
hci resources
sigchi
interaction design
user interface design

EXAMPLE OF WEBSITE

EDUCATION

e-learningforkids
educational games

COMMERCIAL

1malaysia
tourism malaysia

PERSONAL

siti zone

ORGANISATIONAL

government portal

BLOG

googleblog

NEWS

the start online
new straits times

ENTERTAINMENT

flyfm
tv3

Please make sure you have connected to the internet before choosing any listed sites above.
The site will automatically opened in your internet browser.

Example of
Web links

PROBLEM SCENARIO

LECTURER MODULE

PROBLEM SOLVING

GLOSSARY

EXPLORATION

ASSESSMENT

FORUM

MODULE OUTCOME

PROGRAMME OUTCOME



PROBLEM SCENARIO

LECTURER MODULE

PROBLEM SOLVING

GLOSSARY

EXPLORATION

ASSESSMENT

FORUM

MODULE OUTCOME

PROGRAMME OUTCOME



Introducing User Interface Design



Golden Rules of User Interface Design
by Theo Mandel



Interface Design
by Spring 2010



User Interface Design in Modem
by Dmitry Fadeyev

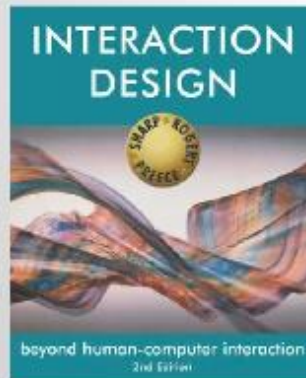
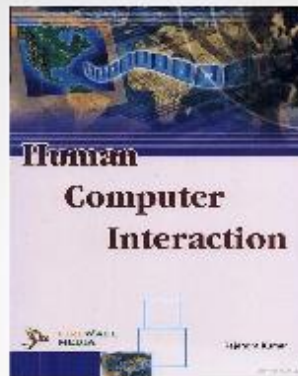


Experience Design vs. Interface Design
by Bill Buxton

There articles are in PDF format and need **Adobe Acrobat Reader** to read the files.
The file will be opened in your internet browser.

Example of
related
articles.

e-BOOK



Example of e-books for reference.

Please make sure you have connected to the internet before choosing any listed forums above.
The forum will automatically opened in your internet browser.

PROBLEM SCENARIO

LECTURER MODULE

PROBLEM SOLVING

GLOSSARY

EXPLORATION

ASSESSMENT

FORUM

MODULE OUTCOME

PROGRAMME OUTCOME

PBLAssess

Problem Based Learning



GALLERY



Example of good website design.

PROBLEM SCENARIO

LECTURER MODULE

PROBLEM SOLVING

GLOSSARY

EXPLORATION

ASSESSMENT

FORUM

MODULE OUTCOME

PROGRAMME OUTCOME

PBLAssess

Problem Based Learning



PROBLEM SCENARIO

LECTURER MODULE

PROBLEM SOLVING

GLOSSARY

EXPLORATION

ASSESSMENT

FORUM

MODULE OUTCOME

PROGRAMME OUTCOME

FORUM

ulearn.utem.edu.my

designerstalk

webdevforums.com

websitebabble.com

daniweb.com

cnet.com



ulearn.utem.edu.my
Is linked to UTeM
e-learning portal

*Please make sure you have connected to the internet before choosing any listed forums above.
The forum will automatically opened in your internet browser.*

UTeM e-learning portal

<http://ulearn.utem.edu.my>

Browser address bar: <http://ulearn.utem.edu.my/>

Navigation bar: Most Visited, Getting Started, Latest Headlines, Customize Links, Free Hotmail, Windows Marketplace, Windows Media, Windows, Keep It!

Search bar: mywebsearch, ulearn.utem.edu.my, SEARCH

UTeM Official E-Learning Platform

FTMK FKE FKM FKEKK FKP FPTT PBPI

ANNOUNCEMENTS

WELCOME TO e-LEARNING PORTAL

FTMK CCNA Timetable updated and Late Registration <+More>

Master by Taught Course: [Subjects for Special Semester](#) (Please do before **24 April 2011**)

Final Examination Schedule for Postgraduate (Master by Taught Course): [\(Click here please\)](#)

Amalan Kejuruteraan(Engineering Practice) FKE Sesi 20102011. [Click Here.](#)

Authentication :

User name
cknuraini

Password
.....

Enter

Any problem !!! please contact our administrators? [Click Here](#)

Library UTeM

MyLinE

News & Update from

News and Update from

News and Update from

Authentication:
Student need to register
first before login to
the portal



Login

Authentication :

User name

Password

Any problem !!! please contact our
administrators? [Click here](#)

Library UTeM

MyLinE

 News & Update

News and Update from FKE

News and Update from FTMK



FAAIZAH BT. SHAHBODIN, PM. DR. || : My desktop | My course list | My User Account | My messages | Logout

► HUMAN-COMPUTER INTERACTION

BITM2313 - SYARIFFANOR BINTI HISHAM

Forums

UTeM Official E-Learning Platform > BITM2313 > Forums

View mode : Student | Course manager

► Forums

Forum Index > BITS > what is the special about Star model compared to Spiral model?

Reply | Search | Last message

Export to HTML Export to PDF

1 2 3 4 5 6 7

what is the special about Star model compared to Spiral model?

Notify by email when replies are posted

FAAIZAH BT. SHAHBODIN, PM.
DR. ||
February 11, 2011 at 11:21 AM

pls answer



FAAIZAH BT. SHAHBODIN, PM.
DR. ||
February 11, 2011 at 11:22 AM

do not copy and paste !!explain in your own word.

happy answering.



NUR ATIQA BINTI ABD HAMID
||
Februav 11, 2011 at 11:24 AM

the star model can evaluation anytime we want to.

Internet | Protected Mode: Off

100%



Rubric of Scoring Performance Assessments

Score will be given based in 4 constructs:

1. Facts Understanding
2. Ideas Generation
3. Issues Performing
4. Action Plan

Score

- 1 - Deficient
- 2 - Flawed
- 3 - Limited
- 4 - Competent
- 5 - Strong

ANALYSIS OF PROBLEM

Facts (Known/ Given info)	Ideas (Opinions/Idea derived from the facts)	Learning Issues (What you need to know)	Action Plan (What you need to do)
1.	1.	1.	1.
2.	2.	2.	2.
3.	3.	3.	3.
4.	4.	4.	4.

Rubric of Scoring Performance Assessments

Criteria	Score					
	1 (Deficient)	2 (Flawed)	3 (Limited)	4 (Competent)	5 (Strong)	
Facts Understanding						
Ideas Generation						
Issues Performing						
Action Plan						
Total Score						/ 20

1. Rubric of Scoring

Rubric of Scoring Performance Assessments

Criteria	Score					
	1 (Deficient)	2 (Flawed)	3 (Limited)	4 (Competent)	5 (Strong)	
Facts Understanding					x	5
Ideas Generation				x		4
Issues Performing					x	5
Action Plan					x	5
Total Score						19 / 20

2. Example student answer- Good

Facts (Known/ Given info)	Ideas (Opinions/Idea derived from the facts)	Learning Issues (What you need to know)	Action Plan (What you need to do)
1. Designing website product that seed education market.	1. There are rules to design a website.	1.What is the suitable rules to design website?	Perform interview With expert in education. Google website, search any templates
2. Target user primary student.	2. We need to know target user for our designs.	2. What is the suitable syllabus for the target user?	Conduct research regarding with suitable syllabus.
3. Help people get started with the educational website.	3. Design website is not an easy process.	3. How to make a simple and understandable website?	Replacing icon button instead text. Use the simple and understandable words. Plan storyboard and flow
4. Develop a good educational website.	4. Contents and format are important in producing good website	4. What are the sources needed to develop the content?	.Adding multimedia elements that appealing to primary students

2. Rubric of Scoring

Rubric of Scoring Performance Assessments

Criteria	Score					
	1 (Deficient)	2 (Flawed)	3 (Limited)	4 (Competent)	5 (Strong)	
Facts Understanding				x		4
Ideas Generation				x		4
Issues Performing				x		4
Action Plan					x	5
Total Score						17/ 20

THANK
YOU

***Give someone a fish
you feed him for a day;***



***Teach him how to fish
and you feed him a lifetime.***

THE END
Q & A