Practical Strategies for Implementing Problem Based Learning and Engaging Students in Learning

**Workshop for Centre for Teaching and Learning
Sungkyunkwan University
Seoul, Korea
Oct. 29, 2010**

**Diane Salter
djsalter@hkucc.hku.hk**

cetl

- Founding Year: 1911

- Number of Students: 21,652

- Number of Faculty: 1,160

- QS University World Ranking: 23 (2010)

- TIMES Higher Education World University Ranking: 21 (2010)

cetl

Collaborative Learning Space in HKU

- Link: http://www.cetl.hku.hk/new_space

Goals of this session:

-Describe the OBASL approach and how PBL can be incorporated

-Review the steps involved in PBL

-Consider practicalities of conducting PBL in large classes

-Consider language issues related to PBL implementation

- Discuss practical strategies to apply PBL to your subject

Process

Active   Dialogue   Tasks
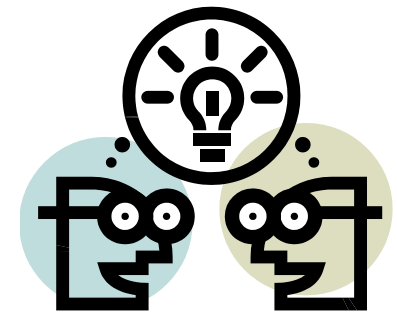Example: Journalism Program at HKU

Welcome !

Please introduce yourself to colleagues in your

Share ideas on the following question:

What do you like about PBL?

What are your challenges with PBL?

What are your goals for today's session?

Where did the idea for PBL as a pedagogical approach come from?

PBL was adopted officially at McMaster University in Canada in 1968 because students were unable to apply their substantial amount of basic scientific knowledge to clinical situations.
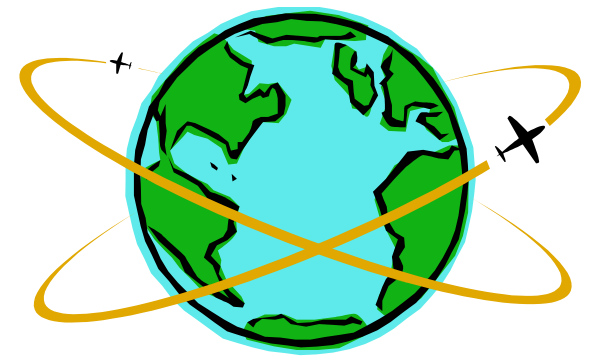
Problem-Based Learning

- Medicine: A teaching methodology in which a health issue/ clinical problem provides a stimulus for students to achieve learning outcomes in key themes related to medicine and medical practice

- Other Disciplines: A teaching methodology in which important *issues* related to social science, humanities, engineering, business, etc provide a stimulus for engaging with the content of the subject (connect content/with issues)

Changes in Higher Education

- Widening participation – student diversity

- Increased participation – larger classes

- Workplace demands – 'soft' skills

- Career demands – ongoing learning required

Activity 1

cetl

Problem based learning – stimulus for student learning

Educational goals:

Self directed, motivated, life long learners

Critical thinkers

Integrate knowledge across subjects/disciplines

Work collaboratively with others

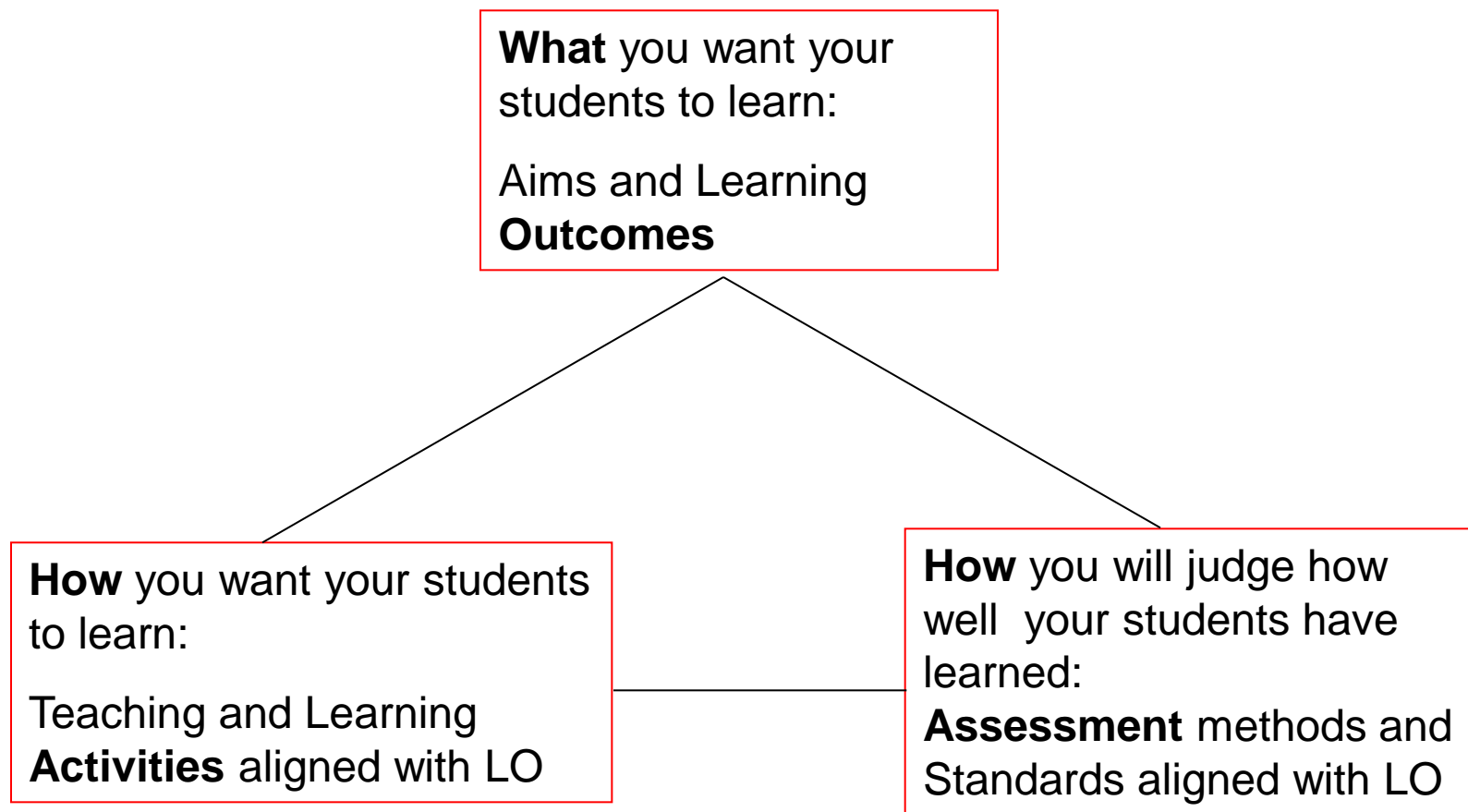
Barrows HS 1986: A taxonomy of PBL Methods. Medical Education;

Barrows HS 1996: Bringing PBL to Higher Education and Practice. New Directions for Teaching and Learning. Jossey-Bass

Model of OBASL

What you want your students to learn:

Aims and Learning **Outcomes**

How you want your students to learn:

Teaching and Learning **Activities** aligned with LO

How you will judge how well your students have learned:
Assessment methods and Standards aligned with LO

cetl

Outcomes-based Approach

Intended outcomes

What do we expect our students to be able to do or demonstrate as a result of the learning?

Content

What specific knowledge, skills and attitude do they need to learn to achieve the outcomes?
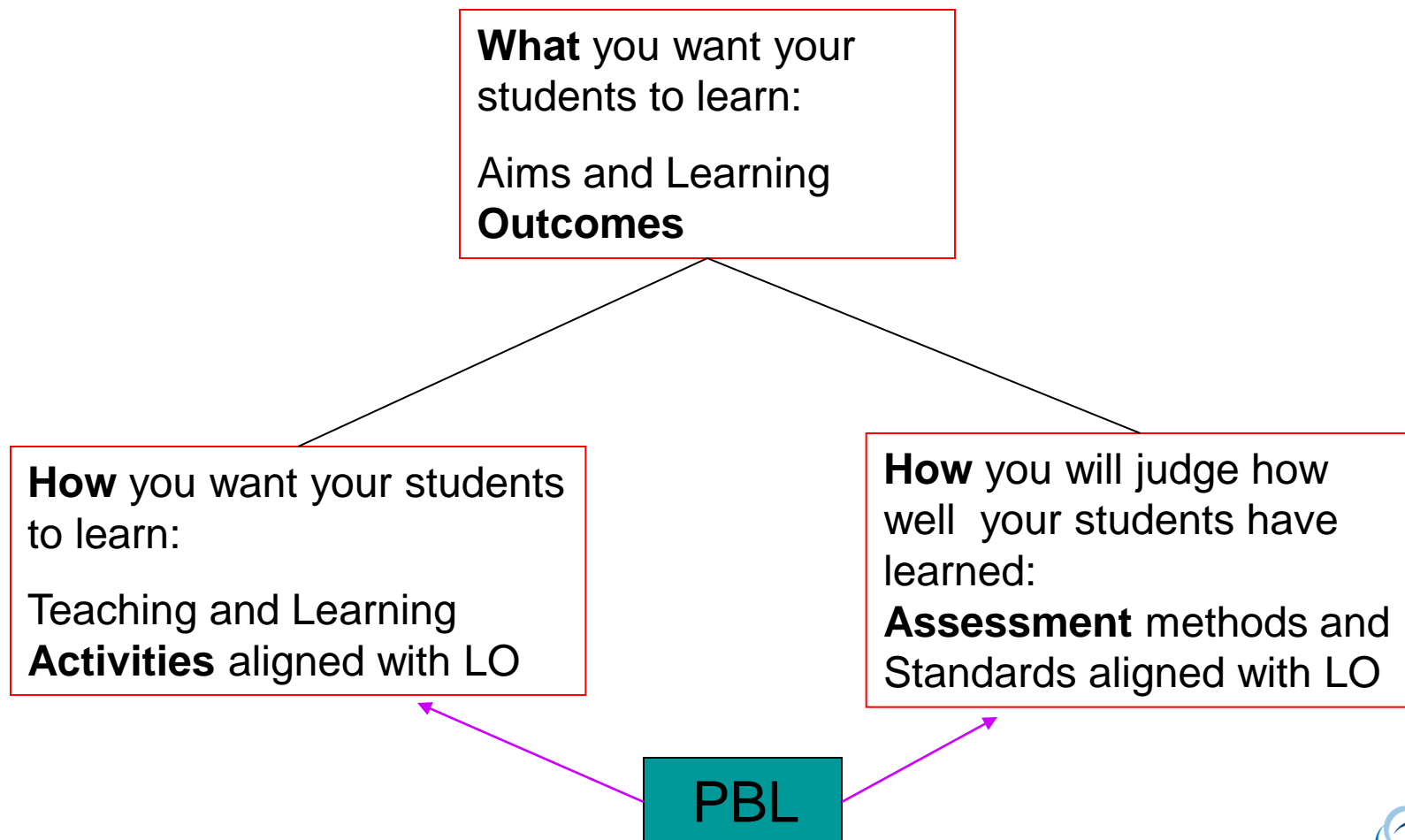
Teaching & Learning

What are the most appropriate teaching and learning method for helping students to achieve the outcomes?

Assessment

What methods of assessment are most suitable for measuring students' attainment of the outcomes?

cetl

Model of OBASL

What you want your students to learn:

Aims and Learning **Outcomes**

How you want your students to learn:

Teaching and Learning **Activities** aligned with LO

How you will judge how well your students have learned:
Assessment methods and Standards aligned with LO

PBL

Problem Based Learning Applications

University Level

Program Level

Subject Level

Class Level

YOUR SUBJECT
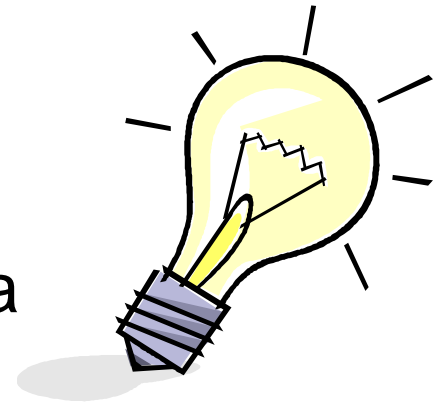
cetl
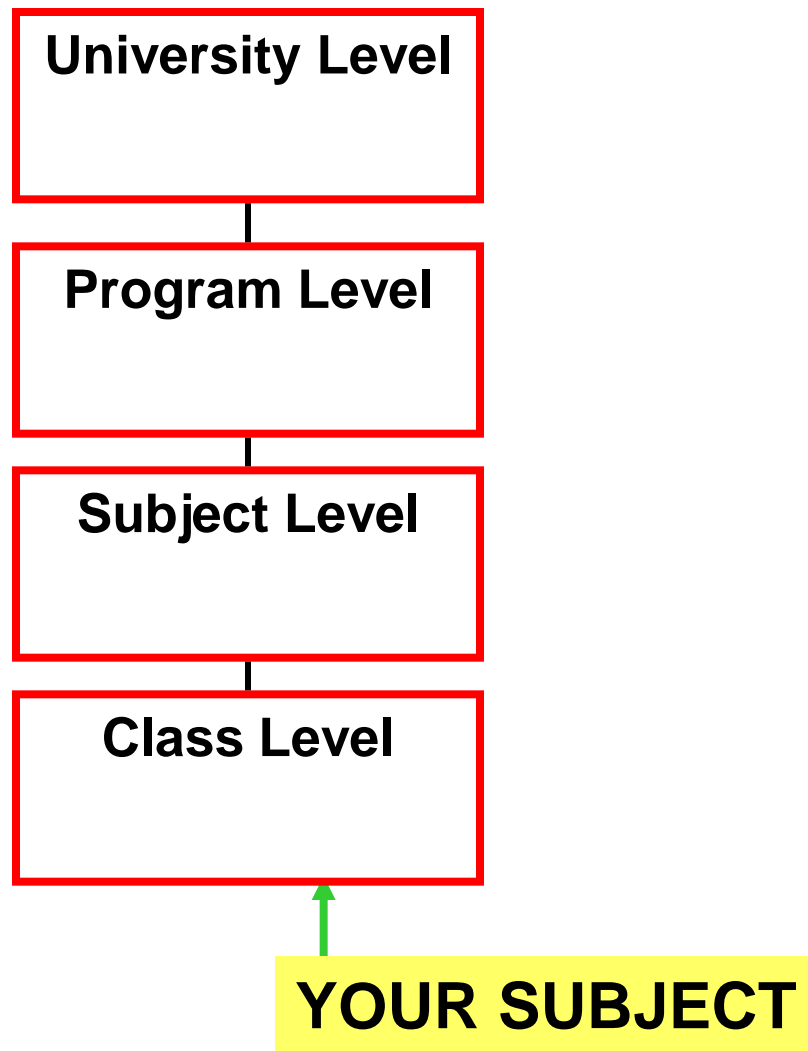
Think – Pair – Share

What would you identify as 3 key attributes for today's graduates for successful employability in YOUR SUBJECT?

Consider both aspects of:

Knowledge of content area

Competencies

So called 'soft skills'

Model of OBASL

Consider issues
of alignment to PBL

What you want your students to learn:

Aims and Learning **Outcomes**

As well as 'content'
Team skills
Problem solving
Process skills
Independent thinking
Critical thinking
Creative thinking
Other

How you want your students to learn:

Teaching and Learning **Activities** aligned with LO

How you will judge how well your students have learned:
Assessment methods and Standards aligned with LO

PBL

Example: PBL in a First Year Journalism Course

Issues identified by this teacher:

- Large class size - 110 students

- Little chance for interactivity during typical lecture classes

- Students need to develop competencies such as communications skills in oral and written language, critical thinking skills, teamwork skills (to be on teams and lead teams), as well as content knowledge

Communicating to learn

- Learning is best achieved by **getting students to actively speak, read and write about new knowledge.** It aids memory recall and helps students to reach a deeper level of understanding.

Learning to communicate

- Students need to be **taught how to speak, read and write in a new discipline**. This will be an ongoing process of socialization into a new **discourse community.**

Using PBL to Promote Effective Communication Skills

- Communication promotes learning
- Communication is the responsibility of the entire academic community
- Only by practicing the conventions of an academic discipline will students begin to communicate effectively within that discipline
- Communication instruction must be continuous during all years of undergraduate education

Large and Larger……
50… 100 ….500…..1000…
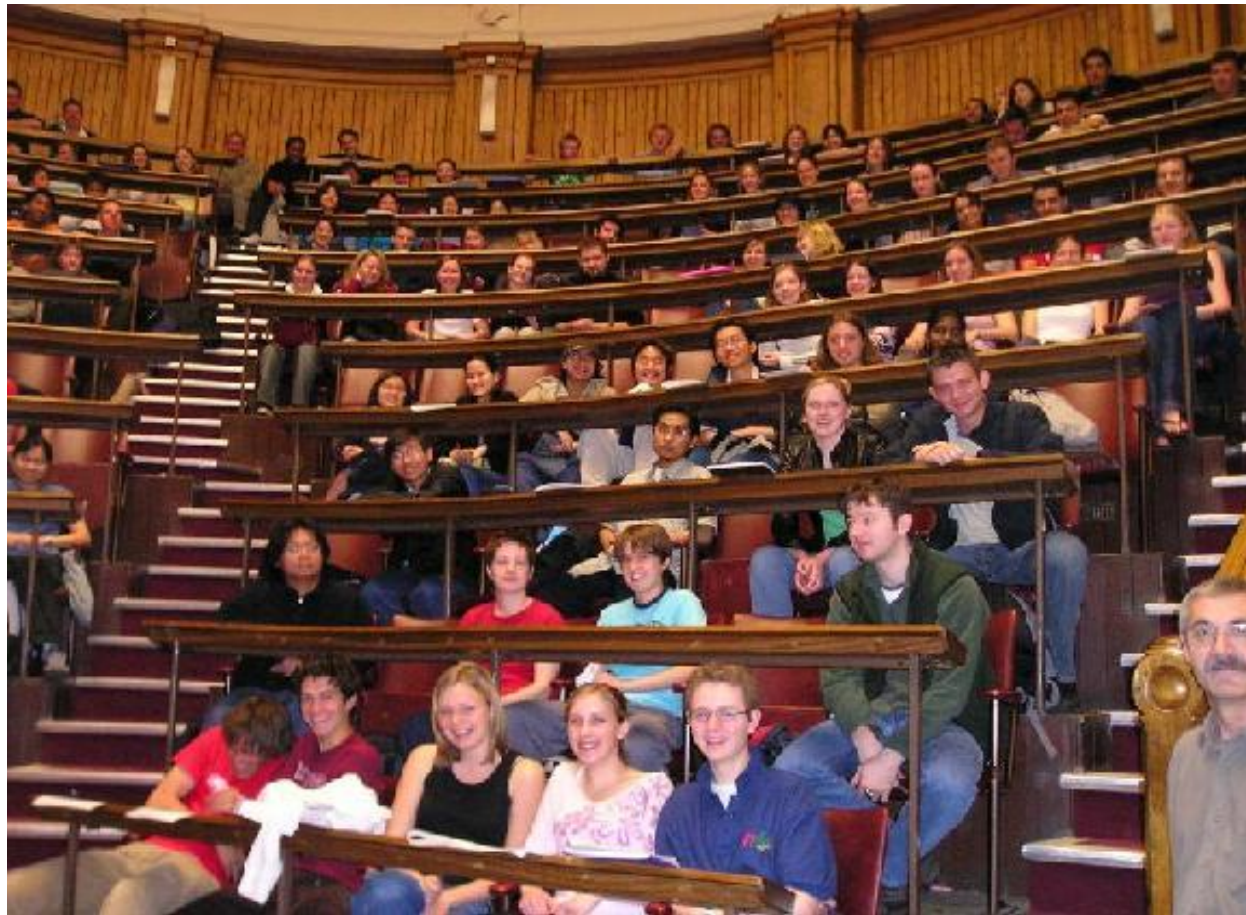
**How
To create
Interaction?**

Problem Based Learning

> *Encourages 'learning **for meaning'***
> *Vs 'learning for replication'*

Scenarios (learning activities) are open questions which students respond by engaging with the content.

◀

Content resources to help the student to resolve the task.

Applying PBL to *Your Subject*

Teacher – generates questions, **at the beginning**, related to the content the students need to learn.

In PBL – the problem comes **BEFORE** the learning. The solving of the problem engages the student with the content so that they can learn.

Students need to have **problem solving skills rather than content** at the beginning of the task.

Teachers can **scaffold** the development of problem solving skills by using the **guided design approach**.

cetl

What 'competencies' do students need to achieve these attributes?

- To be 'self-directed
- To think critically
- To be reflective practitioners
- To be able to function as members of teams
- Good communication skills
- Adaptability to change
- Willingness to be learners throughout their professional lives

Competencies developed 'around' content

Applications of PBL for Learning

Research – starts with the dilemma. *How do we enhance student learning?*

Case Study – a situation or case is posed – the task is to resolve it *Consider the balance sheet for the XYZ company. Should Mrs. X invest? Will the company prosper or go bankrupt?*

Engineering design project – given a product to build or create. *Design a factory to produce 20,000 garments for distribution internationally each month.*

Applications of PBL for Learning (cont.)

Medical model – health situation is posed. Make a diagnosis and treatment plan for Mr. X. *Mr. X is a 25 year old unemployed truck driver who complains of a recent onset of double vision and headaches.*

Guided design – a case/scenario is posed – small groups work cooperatively to work through a structured problem solving strategy to decide a course of action The activities are structured ahead of time. The instructor gives feedback to each group for each segment prior to proceeding to the next activity.

cetl

PBL *requires* Active Learning

If students are to learn **desired outcomes** in a reasonably effective manner, then the teacher's fundamental task is to get students to **engage in learning activities** that are likely to result in their **achieving** those outcomes.

It is helpful to remember that **what the student does** is actually **more important** in determining what is learned than what the teacher does.

📖 Shuell, Thomas J. (1986)

Applying PBL to *Your* Subject

Teacher – generates questions, **at the beginning**, related to the content the students need to learn.

In PBL – the problem comes **BEFORE** the learning. The solving of the problem engages the student with the content so that they can learn.

Students need to have **problem solving skills rather than content** at the beginning of the task.

Teachers can **scaffold** the development of problem solving skills by using the **guided design approach**.
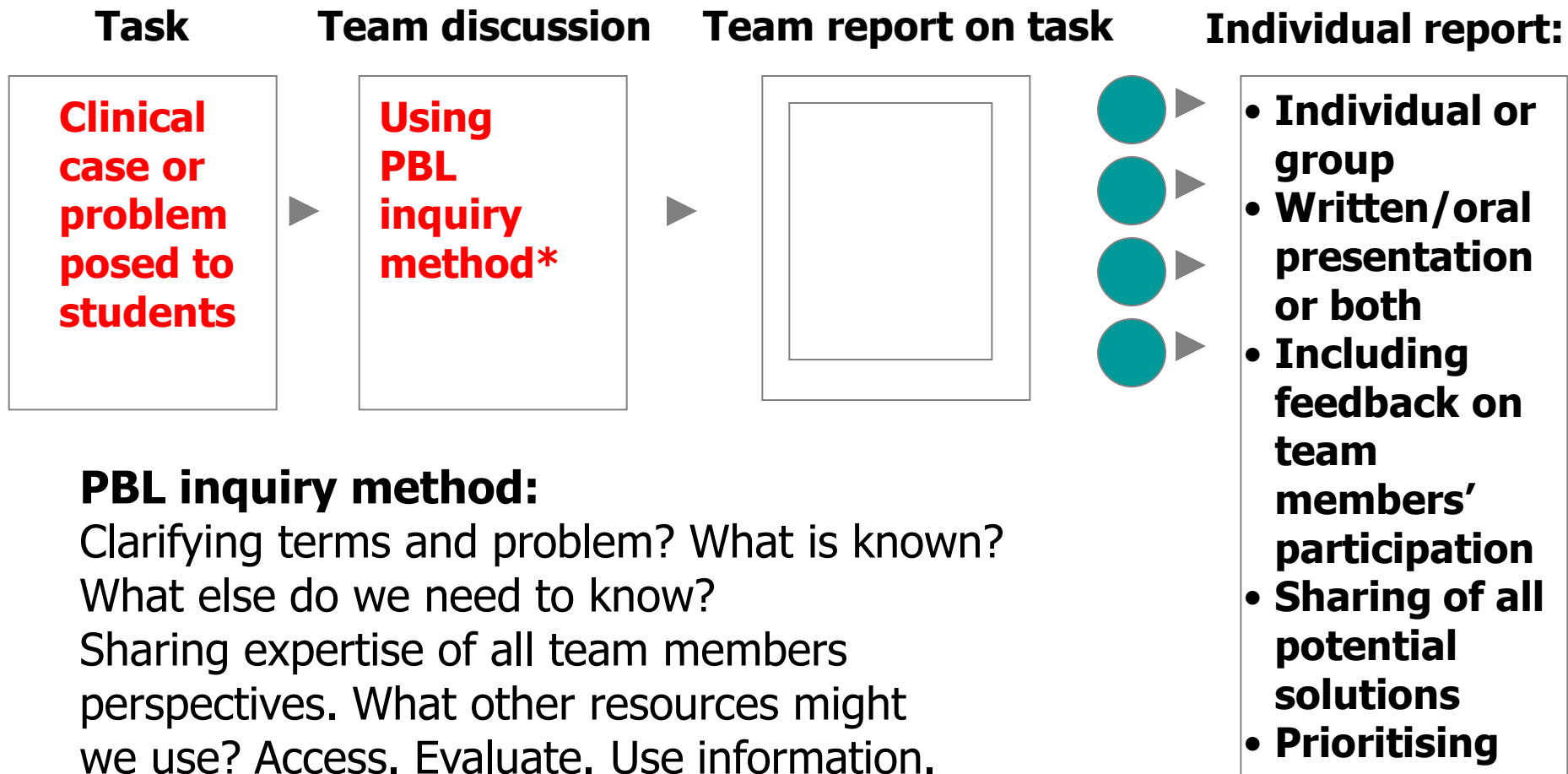
Applying PBL to *Your* Subject (cont.)

PBL – The principle idea behind PBL is … that the starting point for learning should be a problem, a query or a puzzle that the learner wishes to solve. Boud. (1985)

In PBL – the problem comes **BEFORE** the learning. The solving of the problem engages the student with the content so that they can learn.

PBL example

Task	Team discussion	Team report on task	Individual report:

Clinical case or problem posed to students

▶

Using PBL inquiry method*

▶

- **Individual or group**
- **Written/oral presentation or both**
- **Including feedback on team members' participation**
- **Sharing of all potential solutions**
- **Prioritising**

PBL inquiry method:
Clarifying terms and problem? What is known?
What else do we need to know?
Sharing expertise of all team members
perspectives. What other resources might
we use? Access. Evaluate. Use information.

cetl

Your Group Challenge

A. Consider a course that you teach.

B. What kind of PBL problem might you pose to your students? Write a 'scenario'.
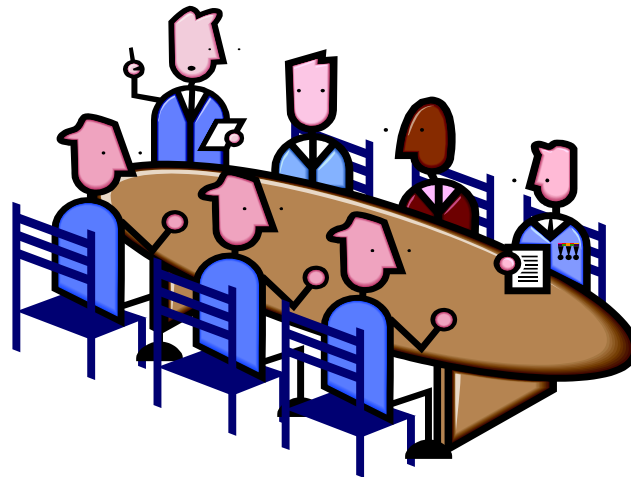
PBL Small group activity

Creating Scenarios

Build in scaffolded support:

- Scenarios should contain cues to stimulate discussion and encourage students to seek explanations/solutions

- Scenarios should promote participation among the students in seeking information from various learning resources.

- You may want to use a 'guided design' and use a template to help guide their thinking – especially if students are unfamiliar with the PBL approach.

- You may want to provide some guidelines on working in a group if you are combining group and individual work.

Steps for the Teacher in Designing a PBL

Ask yourself questions on how you will use the approach:

1. Is the PBL approach going to be used at the program, course, or class level?

2. How skilled are your students in problem solving? How will you scaffold their competence?

3. How skilled are your students in group work? How will you scaffold their competence?

4. How will you form the groups?

cetl

Steps for the Teacher in Designing a PBL (cont.)

Design the task:

1. What is the content area/areas that students need to know about?

2. Prepare a question to begin the PBL approach.

3. Describe the PBL approach to students and identify the steps in PBL.

4. Make sure they understand that an important part of their task is to find out what they know, and where to find what they don't know and that you will not be 'giving them' the content in the form of a lecture ie you will not be solving the problem for them ahead of time.

cetl

Introducing PBL to Students

Explain the Steps in PBL

1. Encounter the problem: **Clarify the terms and concepts.**
   What is the problem – what do you need to do?

2. **Define and analyse** the problem:
   - What do I already know?
     - What don't I know? (learning issues)
     - What information do I have that is relevant/irrelevant? What   resources can I use?

3. **Make a plan**: Formulate learning issues/goals/activities

.. Cont……

cetl

教與學促進中心   Centre for the Enhancement of Teaching and Learning

Steps in PBL

4. **Access** Information

5. **Compile** Information (May involve group brainstorm – all ideas put forward) (Fill in gaps in your knowledge)

6. **Evaluate** the information – Choose the best solution – Check if you know enough.

7. **Execute** the plan: Try out the solution

8. **Evaluate** outcome and methods

cetl

Scaffolding Teamwork for PBL

Team resource was provided to allocate roles of team members and assess input from team members

Assign team roles for group work

1. Project leader
2. Facilitator
3. Recorder
4. Reporter
5. Team members
6. Decide: Will your team be 'vertically organized'?

cetl

Assessing Teamwork (PBL or other group projects – self-assessment)

How effective will your team be?

Scaffolding students in team work.

cetl

Applying PBL to Your Scenario

Choose one of the scenarios developed by your group.

Use the PBL process to form a team and respond to the PBL question.

(some of) Today's questions?

- Isn't PBL the same as case-based learning?

- Is PBL for use at Program, Course or Class Level?

- How can PBL be used in your subject?

- How does PBL help students to develop lifelong skills?

Others?

cetl

Final thoughts?

Other questions / comments?

Thank you for sharing your ideas today!

And good luck with applying PBL in your subject.

Diane.