PROBLEM-BASED LEARNING

1. What is Problem-Based Learning?

Problem-based learning (PBL) is a student-centered pedagogy in which students learn about a subject through the experience of solving an open-ended problem given as a trigger.

2. Why Problem-Based Learning?

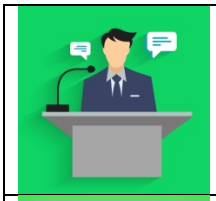
In problem-based learning (PBL) courses, students work with classmates to solve complex and authentic problems that help develop content knowledge as well as problem-solving, reasoning, communication, and self-assessment skills. These problems also help to maintain student interest in course material because students realize that they are learning the skills needed to be successful in the field.

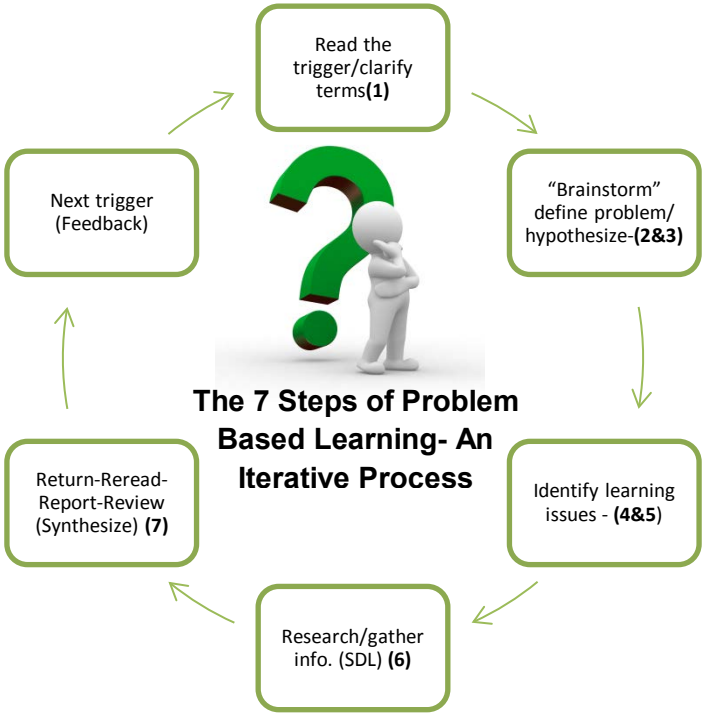
3. How Problem-Based Learning Implement?

3 Key Principle of PBL

- **Active Learning**: Learners are free to control their own learning process and are actively engaged in finding answers to their questions.
- **Authentic Learning:** Learning focuses on real life problems and experiences.
- **Reflective Learning:** Both teaching and learning focuses on process and outcomes. Students need to think about how they are learning what they are learning. Teachers need to think about how they are teaching.

4. Roles

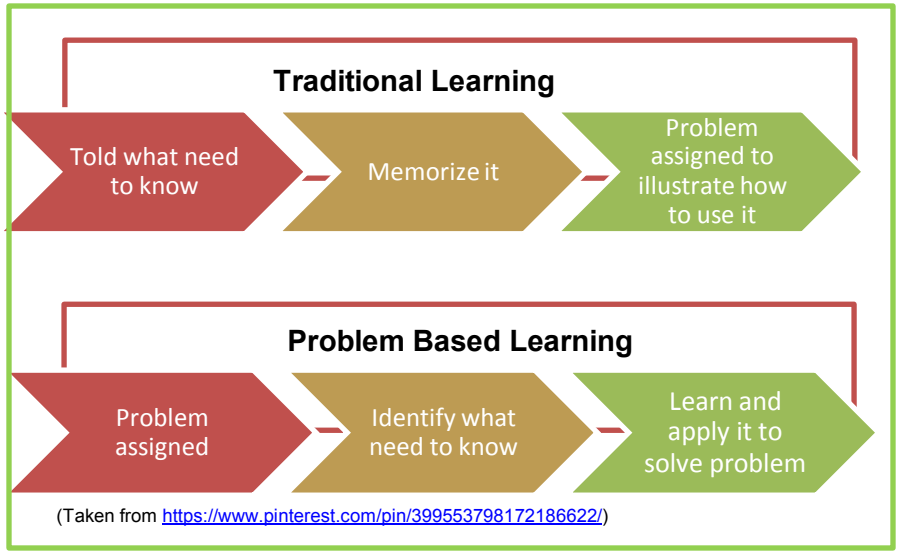
	**Lecturer/Teachers** • Guide/coach • Facilitate • Model • Observer
	**Student** • Problem solver • Take ownership on learning
	**Groups (Student role)** • Project leader • Facilitator • Recorder • Team members



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.

Taken from
http://www.uonbi.ac.ke/sites/default/files/chs/chs/PROBLEM%20BASED%20LEARNING_0.pdf

5. Instructional Material



(Taken from https://www.pinterest.com/pin/399553798172186622/)

Project Based Learning VS Problem Based Learning

Project Based Learning	Problem Based Learning
Often multidisciplinary	Normally single subject
Often long projects (weeks or months)	Often short term projects
Includes creation of product or performances	Product might only be a proposed solution or presentation of finding
Based on real world task and settings.	Case studies, scenarios and ill-structured problems.

(Taken from: http://www.simplek12.com/learning-theories-strategies/project-vs-problem-based-learning/)

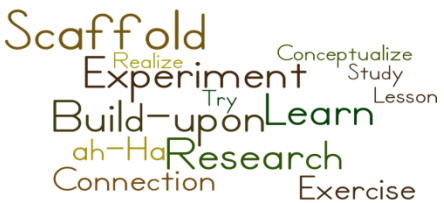
6. Assessment

- Process-oriented objectives.
- Assessment must be authentic~ students may able display their understanding of problems and solutions contextually.
- Feedback
  - Peer evaluations - attendance, degree of preparation for class, listening and communication skills, ability to bring new and relevant information to the group, ability to support and improve the functioning of the group as a whole.
  - Lecturer feedback – Provide detail about student's strength

Set Goals

1. Set parameters of when the problem is solved.
2. Create learning goals for the solution.
3. Set goals for the journey.
4. Create time to celebrate reaching a goal.
5. Plan a problem solution via announcement

Creating Learning Moments



Implicit Outcomes

- Development of higher order thinking skills.
- Improvement of written and verbal communication.
- Refine interpersonal skills.

7. References

- Hung, W., Jonassen, D., & Liu, R. (2008). Problem-Based Learning. Handbook of research on educational communications and technology, 485-506.
- Kosuri, V. (2015, October 31). Problem-Based Learning What Makes It Effective [Infographic]. Retrieved August 25, 2017, from Commlab India-Global Learning Solution: http://blog.commlabindia.com/elearning-design/elearning-design-problem-based-learning-infographic
- Metta. (2015, August 25). Problem based learning. Retrieved August 8, 2017, from Center for Effective Learning and Teaching (CELT @ KMUTT): http://celt.li.kmutt.ac.th/wp/index.php/2015/08/25/problem-based-learning/

LEARNING SCIENCES LAB
OFFICE OF EDUCATION

Materials prepared by:
Clement Lim Jun Hiung
Nachamma Sockalingam