

# Implementation of case-based learning (CBL) in laboratory practice

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## Overview

- Teacher provided the instruction manuals.
- Students did the experiments under the supervision of teachers.
- Students wrote their laboratory reports and submitted by a week.
- Teacher gave the feedbacks via laboratory reports and sent it back to student.
- All process took about 2-4 weeks since the students have done the experiments.

## Traditional laboratory practice

## Limitations/ Problems

- Students lacked of skills i.e. critical thinking, problem solving, communicating, etc.
- Teacher did not give the feedbacks (students' knowledge and professional skills) on time.
- Students could not apply their knowledge on the similar situation (assessment in paper examination).

- Learning and remembering the subject is much easier when you link it to real-life patient cases and get confidence for clinical practice [1].
- In CBL classrooms, students typically work in groups on case studies, stories involving one or more characters and/or scenarios. The cases present a disciplinary problem or problems for which students devise solutions under the guidance of the instructor [2].

## Case-based learning (CBL)

## Aims and Objectives

### Implementation of CBL in laboratory practices to

- Improve the skills of analysis, critical thinking and problem solving in their professions
- Do the formative assessments and give the feedbacks on time
- Make a small group learning, discussion, and communication

## Outcome

- CBL enhanced skill of analysis, critical thinking, and problem solving of learners as well as group learning activity (Figure 1 & 2).
- Teachers did the formative assessments and give feedbacks to students on time, so they could improve their learning/understanding during semester.
- Overall satisfaction score of CBL process evaluated by students and teachers were 4.29 and 4.67, respectively (Figure 1 & 2).

## Activity : CBL process

### Pre-analyze

- Case studies were provided by teacher and delivered to students at the beginning of the class.
- Case studies were analyzed by groups.
- All experiments were designed for laboratory investigations by groups and evaluated by teachers

### Analyze

- All experiments were done using appropriate method.
- Teachers evaluated the practice skills of students and gave their feedbacks during analytical process.
- The results were recorded and shared in groups.

### Post-analyze

- All laboratory results were integrated into clinical data and discussed within groups.
- The understanding of overall case studies were evaluated by teachers.

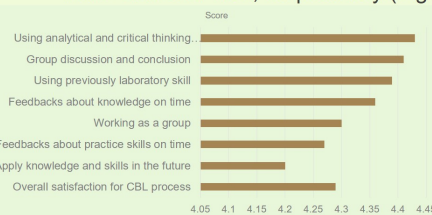


Figure 1. Evaluation of CBL process by students

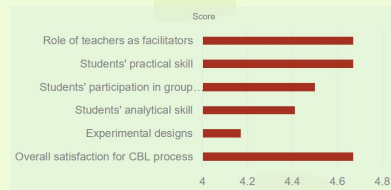


Figure 2. Evaluation of CBL process by teachers

## Impact

- Students enjoyed the method and thought it enhanced their learning
- Students improved their knowledge and skills resulting of feedbacks from teachers
- Teachers liked how CBL engaged students in learning
- CBL seemed to effective in small group learning.

## Future Development

- Implement CBL in other medical technology subjects
- Sharing the CBL process and the advantages to my colleagues

The collage includes:
 

- A photograph of a classroom where students are seated at desks, engaged in a discussion.
- A document titled 'Case study 1' with text in Thai.
- A detailed flowchart or process diagram with various steps and arrows.
- A photograph of a laboratory setting with students working at a workstation.

## References

1. Dalal EA, Kaja R. Evaluating Case-Based Learning versus Traditional Method of Teaching-Learning for Undergraduate Medical Student: A Comparative Study. Journal of Research in Medical Education & Ethics. 2019;9(1):43-50.
2. Case-Based Learning. Yale Poorvu Center for Teaching and Learning; Available from: <https://poorvucenter.yale.edu/faculty-resources/strategies-teaching/case-based-learning>.

