

Effective Implementation of the **Flipped Classroom** Approach

in Hong Kong Higher Education for Enhanced Learning Outcomes

Make Good Use of Classroom Time for Science Experiments

A Case Study of the Use of Flipped Classroom Approach in the Laboratory Session of Microbiology

“ WHY FLIP?
Generally, the time for laboratory session is very tight in my course, Cell and Microbiology. There are so many things that need to be covered (e.g., the introduction and explanation of technical terms, experiment procedures, experiment demos by the teacher, and experiment(s) conducted by the students, etc.) within the limited classroom time. In order to make good use of the classroom time for consolidating students’ understanding of the experiments and laboratory skills, I have employed the flipped classroom approach in particular for the laboratory portion in this course, starting from the 1st semester of academic year 2018-19.

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Flipped Classroom Design Laboratory Session

Topic: Serial Dilution: Calculation, Method and Technique

- 01 Learning Objectives for topic:
Remember and understand the succession of step dilutions.
- 02 Explain the step wise of serial dilution method.
- 03 Calculate the dilution factors.
- 04 Apply the knowledge to different scenarios.



Results

By using the flipped classroom approach, at least 30 minutes’ classroom time can be saved in the laboratory session. So acting as a facilitator, I was able to clarify

difficult concepts and clear up misconceptions for students, and students had, as expected, adequate time to understand the concept, experiment procedures, pitfalls and related laboratory skills. Meanwhile, peer instruction can be commonly seen among student groups in conducting the experiment in class, which is beneficial to the buildup of learning community.

Since the flipped classroom approach has been particularly helpful in the laboratory session of this course, I am planning to use this approach in other courses as well, such as Human Health and Pollution, in the coming semester.