

GOOD Flipped Classroom CASE



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Instructor
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Department
Department of Building Environment and Energy Engineering (BEEE)

BSE551

Facility Management Professional Practice

Class size

40-70 (BSE 551)

Students

Master level students

Details of Flipped Classroom IMPLEMENTATION

Why did the instructor use the flipped classroom approach?

In 2020, upon joining PolyU, Cynthia developed the flipped classroom framework, recognizing its potential to significantly enhance student learning experiences. Motivated by its innovative approach, she secured funding in 2021 from PolyU's "Projects for Strategic Plan Initiatives on Learning and Teaching" to implement this model in two specific courses: the undergraduate subject "Engineering Management and Decision Making in Construction" and the master's level course "Facility Management Professional Practice." The decision to adopt the flipped classroom method for

these subjects was influenced by alumni feedback, which pointed to a gap in hands-on practical experience, as traditional teaching methods primarily focused on theoretical content. This pedagogical shift allowed students to engage with theoretical concepts outside of class, thereby freeing up classroom time for more hands-on practice and deeper discussion of pre-learned materials, enhancing the practical application of knowledge and student engagement in the learning process. This case sharing will focus on the master's level course.

How was the flipped teaching approach implemented?

Preparation of materials

→ Cynthia incorporated three micro-modules into her flipped classroom curriculum, each designed to optimize student engagement and self-assessment. These micro-modules comprise a pre-test, three video lectures, and a post-test. Created by her project assistant using the AI-based platform Vyond, the videos last between 5-8 minutes and focus on fundamental principles and case studies. The pre-tests and post-tests are strategically designed to facilitate student self-evaluation, incorporating open-ended questions that prompt deep reflection on their learning experiences. These assessments not only gauge students' understanding before and after the videos but also encourage them to articulate their insights and areas for improvement, enhancing their engagement with the material.

These micro-modules are made available to students via Padlet. Cynthia introduces this flipped classroom framework during the initial class session, where she shares the schedule and the access link to the micro-modules. She emphasizes the importance of timely completion of these modules, noting that the access link will deactivate after the set deadline.

Pre-class activity

→ Students are encouraged to complete particular micro-modules before they attend the lecture. Their participation is marked, and all three micro-module completions mark 10% of the students' final score of the course.

In-class activity

→ Due to the different levels of the courses, the undergraduate class focuses more on reviewing theories and case studies in micro-modules, while the master's class allocates more time for practical exercises. During class, students engage in various hands-on activities: group discussion, use of padlet, and presentation.

Group Discussions: Students form groups randomly to foster diverse perspectives and ideas. They discuss specific topics or case studies, which encourages critical thinking and collaborative problem-solving. The discussions are dynamic, allowing students to challenge and learn from each other.

Use of Padlet: This digital platform is utilized to facilitate sharing and interaction among students. After group discussions, students upload their notes and insights to Padlet, where they can view, comment, and build on each other's contributions. This not only enhances their understanding of the material but also promotes a collaborative learning environment.

Presentations: Another key component of the hands-on practices involves students presenting their findings to the class. This activity is crucial as it helps students improve their communication and presentation skills, and enables them to engage more deeply with the content by teaching it to their peers.

Post-class activity

→ Students are encouraged to participate in a survey after they complete all three micro-modules, in which they are asked about their opinions on the micro-modules, including the quality of the videos, the structure of the micro-modules, and their overall learning experience.

What are the good practices that can be learnt from this case?

Using micro-module to support flipped-classroom approach

- Cynthia integrated micro-modules into her flipped classroom approach, enhancing the overall learning experience. Micro-modules are an effective teaching practice because they embody the principles of microlearning, which focus on delivering content in small, manageable chunks. This approach enhances student engagement and retention by breaking down complex topics into concise, focused segments. Each micro-module allows students to learn at their own pace, providing flexibility and accommodating different learning styles. The inclusion of pre-tests and post-tests helps students assess their understanding and track their progress, fostering a sense of accountability. Additionally, the use of interactive videos and case studies within micro-modules makes learning more engaging and practical, allowing students to apply theoretical knowledge to real-world scenarios.

Micro-modules are particularly beneficial in a flipped classroom setting, where students review instructional content at home and engage in interactive activities in class. By providing essential content through micro-modules, students come to class prepared, enabling more meaningful discussions and hands-on activities. This structure maximises classroom time for collaborative learning and problem-solving. Feedback gathered through open-ended questions and surveys further enriches the learning experience by providing insights for continuous improvement.

Making use of Padlet in pre- and in-class activity to foster an collaborative learning environment

- Cynthia's approach to integrating Padlet in pre- and in-class activities fosters a convenient and collaborative learning environment. Thanks to its intuitive and straightforward interface, students can access Padlet from multiple devices, including smartphones, tablets, and computers, ensuring they can complete pre-class activities from anywhere. By allowing students to upload discussion notes during in-class activities, they can share ideas and feedback in real time. This encourages active participation from all students, including those who might be shy or reluctant to speak up in class. Overall, this makes the learning experience more dynamic, interactive, and inclusive, enhancing the overall educational experience.

Randomly organizing students into groups to enhance their dynamics

- To vary group composition and increase diversity within groups, Cynthia assigns students to groups randomly in the discussion section. This approach ensures that students interact with different peers each time, fostering a more inclusive and dynamic learning environment. Given that most of the master's students have jobs, this practice allows them to share their professional experiences and insights during discussions. By bringing diverse perspectives to the table, students can engage in more meaningful and enriching conversations, enhancing their overall learning experience. This method not only broadens their understanding of the subject matter but also helps them develop valuable networking and collaboration skills.

What were the challenges encountered during the implementation and what solutions were used?

Increased teacher's workload

One of the challenges Cynthia faced with integrating micro-modules into her flipped classroom approach was the significant increase in her workload, particularly in creating the videos. To address this issue, she hired a project assistant to handle the video production using the AI Video Creation Platform Vyond, with Cynthia only needing to provide the scripts. This solution allowed Cynthia to focus on other aspects of her teaching while ensuring that the videos were well-designed, engaging, and professionally produced. By delegating the video creation task, Cynthia was able to maintain the quality of her teaching without becoming overwhelmed by the additional workload.

Challenges in sustaining micro-modules

Maintaining the sustainability of the micro-modules has been challenging for Cynthia, primarily because she relies on project funds to hire a research assistant for video creation. Without this financial support, Cynthia would struggle to produce the videos on her own, as the process is time-consuming and requires specific skills. This dependency on external funding makes it difficult to ensure the long-term viability of the micro-modules, highlighting the need for a more sustainable solution to continue providing high-quality educational content.

Furthermore, the co-teaching practice in Cynthia's department, where different instructors are responsible for different parts of a subject, poses another challenge. Since Cynthia cannot ensure which part of the subject she will teach in the following year, her micro-modules may become irrelevant or unusable. This uncertainty makes it difficult to plan and create content that will be consistently useful, adding another layer of complexity to maintaining the micro-modules.

What was the impact on student learning?

Most students find the micro-module practices engaging. After watching the case studies, some students shared their own experiences through open-ended questions directed to Cynthia. This feedback provides valuable insights and helps enhance the learning process.

For each course, approximately 98% of students participated in the innovative teaching and learning activities initiated by Cynthia. Through feedback surveys, students revealed very satisfactory feedback regarding Cynthia's innovative pedagogical design, revealing that they have demonstrated more interest in the course contents. In specific, in the past three years, over 300 students participated in the flipped micro-module pedagogy, and 136 students provided feedback through a survey. 95% of them revealed their satisfaction with the pedagogical activities in which they participated.