

GOOD Flipped Classroom CASE

Flipped Learning
and Teaching
Initiative



12

Instructors

Prof. LAW Ka Wai, Helen & Ms SO Kit Ming, Moon

Department

Department of Health Technology and Informatics (HTI)

HTI17102

Imaging Anatomy

Class size

Lecture: 126

Practical: 32 x 4

Students

Year 2 students from BSc (Hons) Radiography

Details of Flipped Classroom IMPLEMENTATION

Why did the instructor use the flipped classroom approach?

In the beginning, Helen and Moon noticed a significant decline in their Year 2 students' understanding of human anatomy after the summer break. To address this issue and to optimise class time, they decided to implement the flipped classroom model. This approach required students to watch instructional videos or visit relevant websites before attending class, ensuring they arrived with a refreshed understanding

of the material. Additionally, students could participate in Metaverse activities to consolidate their knowledge and explore new topics after class. This method not only helps students regain their knowledge but also facilitates more interactive and engaging post-class activities, fostering a deeper comprehension of human anatomy.

How was the flipped teaching approach implemented?

Preparation of materials

➤ Helen prepared six 5-minute videos on human anatomy for students to watch during the first six weeks. She recorded these videos herself, referring to them as revision lectures, with the aim of refreshing students' knowledge from the previous year. Starting from the seventh week, she provided websites from the library (such as Anatomy TV and StatDx) to help students to prepare for lectures. Additionally, she developed Metaverse activities for students to participate in, as after-class activities, further consolidating their understanding and allowing them to explore new topics in the subject. Meanwhile, Moon uploaded medical images to Conceptboard, a free online platform, for use in in-class activities. This flipped approach ensured that students were well-prepared, and engaged, both before and during class.

Pre-class activity

➤ Before the lecture, students were encouraged to watch revision videos or explore relevant websites. These videos and websites offer a concise review, enabling students to revisit and reinforce the knowledge and skills acquired in previous human anatomy courses. The students are also encouraged to work on past exam papers from the library to better prepare for their upcoming classes, and improve their understanding of the subject matter. By refreshing their understanding, students became better prepared for the class, enabling them to engage more effectively with the new material.

In-class activity

➤ After the lectures, students will move to practical classes where Moon incorporates various active learning activities, such as clinical case sharing, the use of real objects - like dried bones, and group discussions. She utilised an online whiteboard called Conceptboard, which allowed her to upload images and enabled students to write and draw on them. During the discussion activities, students were divided into teams and logged onto Conceptboard to annotate a medical image uploaded by the teacher. Their individual drawings were displayed simultaneously on Conceptboard, allowing both peers and the teacher to provide immediate feedback.

Post-class activity

➤ With assistance from her colleagues, Helen established a Metaverse that enables students to participate in virtual 3D tours related to imaging anatomy after class. Within this Metaverse, students can interact with various facilities, including skull X-rays, computed tomography (CT) scans, and magnetic resonance imaging (MRI). At the end of the virtual tour, students are encouraged to complete a questionnaire, which serves as an assessment tool to evaluate their learning and consolidate their understanding of the material.

In addition to virtual laboratories, Helen offers virtual games designed to reinforce students' understanding, and evaluate their grasp of class material. Within this captivating digital realm, students embark on thrilling quests, exploring intricate 3D models of organs and bones. Through this hands-on interaction, they gain a profound appreciation for the form and function of these anatomical structures. This immersive approach not only enhances their learning experience but also makes the study of anatomy more engaging and enjoyable.

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

Utilising pre-class videos for revision purposes

- After the summer holiday break, students often face the common challenge of forgetting what they have learned in the previous academic year. To address this, Helen strategically incorporates pre-class videos as memory refreshers. She created six concise videos, each lasting just five minutes, to recap the essential concepts taught last year. This repetition enhances memory retention, prepares students to actively engage in class discussions, ask questions, and contribute valuable insights. By reinforcing their prior knowledge, Helen ensures that students are better equipped to participate meaningfully in the learning process.

Choosing the right technology to suit a variety of learning activities

- Integrating technology in the classroom creates diverse learning opportunities for students. Conceptboard, with its real-time visual collaboration features, not only enhances student engagement but also facilitates a deeper understanding of the material through collaborative learning. Meanwhile, the Metaverse offers a platform for lifelike simulations, which is particularly valuable for disciplines requiring medical training. These technological tools make learning more interactive and help students develop practical skills in a dynamic and immersive environment. By incorporating these innovative approaches, students can enjoy a more engaging and effective learning experience.

Motivating Students in multifaceted ways

- To inspire and engage students, Moon and Helen employed a dynamic blend of innovative approaches. By leveraging metaverse technology and game-based learning, they transported students beyond traditional classroom boundaries, allowing them to explore virtual realms and interact with clinical facilities. Moon curated a stimulating learning environment by sharing intriguing clinical experiences and using Conceptboard to foster interactivity, peer teaching and peer learning. This combination of cutting-edge technology and real-world applications created an immersive and engaging educational experience for the students.

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

Maintaining student interest

While students dedicate most of their time to acquiring fundamental knowledge, they occasionally experience moments of boredom and waning interest. To address this, Helen and Moon have integrated technology into their classroom, sharing captivating clinical experiences and designing task-based activities beyond the traditional classroom setting. By immersing students in real-world scenarios, this approach effectively bridges the gap between theoretical concepts learned in class and their practical application. As a result, students' interests and motivation are significantly enhanced. This dynamic method not only keeps students engaged, but also helps them see the relevance of their studies in real-world contexts.

Time Management for teachers

When teachers embrace the flipped classroom approach, they face the significant challenge of time-consuming preparation. Creating high-quality video lectures and other pre-class materials requires meticulous effort. Helen independently creates revision lectures, delivering them in a clear English accent. Meanwhile, Moon diligently prepares teaching tools, such as X-rays, and ensures they are uploaded to Conceptboard before class. Balancing these tasks with traditional teaching responsibilities can be overwhelming.

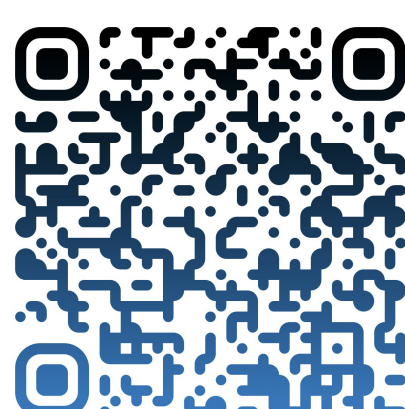
Fortunately, Helen efficiently crafts her educational videos using simple, readily available materials like modelling dough and A3 paper, which conserves her valuable time. Additionally, the abundance of specialised resources and expert staff at PolyU helps her bypass time-consuming technical hurdles. This support network not only streamlines the creation process but also elevates the quality and effectiveness of her teaching materials.

What was the impact on student learning?

The implementation of various educational tools had a notable impact on student learning. The 5-minute revision lectures were particularly well-received, with students expressing their appreciation and requesting more videos. This positive feedback indicates that these concise lectures effectively reinforced the students' understanding, and were a valuable resource. In tutorial classes, the use of Conceptboard significantly increased student engagement, as it allowed for interactive and collaborative learning experiences. However, the introduction of the Metaverse saw a low participation rate in its first run, making it too early to draw definitive conclusions about its effectiveness. Despite this, the innovative approach holds potential for future iterations as students become more familiar with the technology.



IA Gallery
Metaverse



IA Game
Metaverse