

The project objective is to develop micro-modules on biological electron microscopy and live cell imaging to facilitate students' out-of-class learning, as well as to reinforce students' knowledge and interest in the topics.

In the project, we have produced two sets of micro-modules. Set A contains 2 micro modules that focus on the theories of Electron Microscopy and Live Cell Imaging, with examples of research results derived from using the Microscopy techniques. Set B contains 6 micro modules, which displays the sample preparation and proper procedures for operating the Advanced 3D Tomography TEM and advanced live cell imaging system via video-taking of real-time demonstration of experienced researchers. A total of 22 videos have been produced for the 8 micro-modules. The videos are complemented with a set of questions including multiple choice, true or false and short discussion questions.

The videos and the related question sets have been uploaded into the CUHK Blackboard online platform. Students taking the course LSCI5012 Using Flipped Classroom To Enhance Interactive Teaching and Learning in Cell and Molecular Biology are required to watch the required videos before classes, so as to reinforce students' knowledge and interest in the topics. They were also required to answer the questions after watching the videos and prior to the lectures. Subsequently, the lecture period can be more focused on discussion among students and presentations. The videos were also uploaded to a public-accessible website to share the eLearning resource to other students in CUHK or from other institutions, who are interested in the topics but are not taking the LSCI5012 course.

We have distributed surveys to the students during the lectures of LSCI5012 Using Flipped Classroom To Enhance Interactive Teaching and Learning in Cell and Molecular Biology. Students reflected that online learning allowed more time for discussion in lecture. They also suggested that the micro modules served as a good learning tool for illustrating the theories and the experimental procedures as they could be watched repeatedly and in flexible time. The evaluation indicated that the project has achieved its objectives effectively and completely.