



Using interactive multimedia for “flipped lecture” preparation: does it make a difference to student learning?

Michelle Moscova

School of Medicine
University of Wollongong

Tracey Kuit

School of Biological Sciences
University of Wollongong

Karen Fildes

School of Medicine
University of Wollongong

Kate Schreiber

School of Medicine
University of Wollongong

Teresa Treweek

School of Medicine
University of Wollongong

Traditional lecture format is largely based on a passive “stand and deliver” model. In this model, students’ first exposure to new material occurs in the lecture. The more challenging aspects of learning – development of critical thinking and application of the content typically occur after the lecture, when the students have less opportunities to discuss content with peers and educators and clarify any misconceptions. “Flipped” or active lecture model reverses this process, with the students being asked to prepare before coming to class. In this model lecture time is utilised as a platform for student discussion and deep engagement with the key concepts. Although teaching methods based on active learning have been well described, they can be perceived as logistically difficult to apply. As described in the literature, some barriers to implementation of active learning lecture models are time required for academics to prepare pre-lecture materials and poor student engagement with the pre-lecture materials. To address this, we have developed an alternative model of multi-disciplinary content delivery through the use of interactive technology for pre-lecture preparation. It consists of a multimedia module designed to prepare students from two different programs – science and medicine – for a “flipped” biochemistry lectures. This allowed academics from different disciplines to collaborate and share the workload, reducing time required to prepare pre-lecture materials. The design of the module allows sections or entire module to be adapted in the future by different academics. The module provided background content for face-to-face lectures using active inquiry-based learning, creating space for discussion to build on core concepts previously explored online. While the content of the module was mostly the same for science and medical students, the “flipped” lectures were specifically developed for each cohort based on the learning objectives for each program. Student acceptance and effectiveness of our model of content delivery was evaluated. Fifty-two second-year medical and 291 first-year science students were surveyed to evaluate students’ perception of the module and the “flipped” lecture. A knowledge-based quiz was also given to the 291 science students one week after the lecture to assess short-term knowledge retention. Results show 75-100% of students felt that the module was easy to understand and 60-89% found it engaging and wanted similar modules available across a variety of topics. However, less than 30% of science students felt that the “flipped” lecture format helped them learn effectively. Science students who did the module and attended the lecture did significantly better on the knowledge quiz compared to students who either attended the lecture or completed the online module. Medical students who completed the module before the lecture were more likely to report feeling prepared for the class discussion and to prefer “flipped” lecture format to traditional lecture compared to students who did not complete the module. In our example, the model combining interactive multimedia module and “flipped lecture” was successfully used across two disciplines to prepare students for active learning lectures. Work is underway to expand and further evaluate this model of content delivery.

Moscova, M., Kuit, T., Fildes, K., Schreiber, K., & Treweek, T. (2015). Using interactive multimedia for “flipped lecture” preparation: does it make a difference to student learning? In T. Reiners, B.R. von Konsky, D. Gibson, V. Chang, L. Irving, & K. Clarke (Eds.), *Globally connected, digitally enabled*. Proceedings ascilite 2015 in Perth (p. 723). <https://doi.org/10.14742/apubs.2015.1034>

Note: All published papers are refereed, having undergone a double-blind peer-review process.



The author(s) assign a Creative Commons by attribution licence enabling others to distribute, remix, tweak, and build upon their work, even commercially, as long as credit is given to the author(s) for the original creation.