ENHANCING ENGAGEMENT IN FLIPPED LEARNING ACROSS UNDERGRADUATE SCIENCE USING THE FLIPPED TEACHER AND FLIPPED LEARNER FRAMEWORK

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Background

The flipped classroom describes one approach to blended learning in which new instructional content is delivered online prior to class, making time for more student-centred active learning during the face-to-face class. Despite the advantages of a flipped classroom approach, such as flexibility, more time for students to consolidate ideas, and more opportunities for collaborative learning and reflection (Kim, Kim, Khera & Getman, 2014), flipped classrooms are still under-researched and under-evaluated (Abeysekera & Dawson, 2015). Many academics are unsure of how to implement flipped classrooms and students often have difficulty adopting this approach to learning because they are used to traditional transmission approaches (Chen, Wang & Chen, 2014).

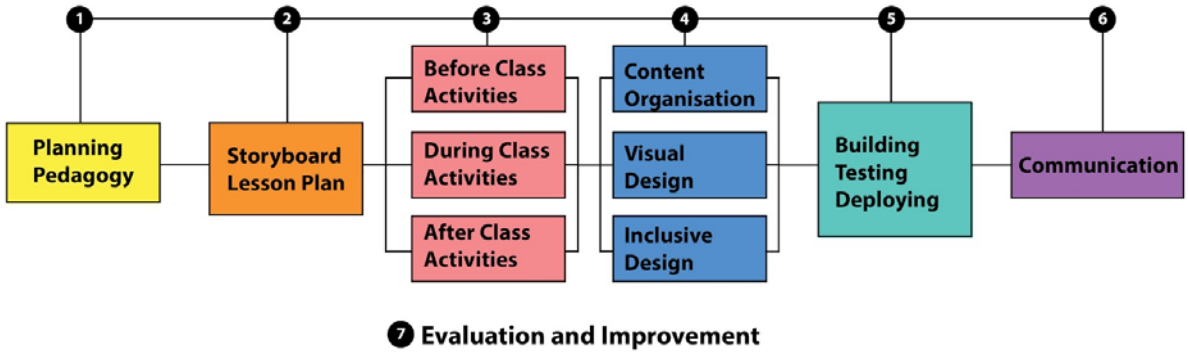
Aims

To facilitate more student-centred blended learning in our faculty, we aimed to:

1. Use the "Flipped Teacher and Flipped Learner Framework" (Reyna, Huber & Davila, 2015) to design, implement, communicate and evaluate flipped learning activities in undergraduate Science subjects; and
2. Build students' understanding of the advantages of the flipped classroom model in order to improve their overall engagement and approach to learning.

Description of intervention

The Flipped Teacher and Flipped Learner Framework (Reyna et al., 2015; illustrated below) identifies seven elements that are influential to implementing a flipped learning activity. Using this framework, flipped learning activities have been integrated into the Science curricula.



Design and methods

In 2016, the Framework was applied in a first year and a second year subject. A mixed methods approach (Creswell & Plano-Clark, 2011) was used to evaluate the efficacy of the Framework, particularly the role of communication (element 6) of the benefits of flipped learning to students and

academics. Student completion of pre-class online tasks was tracked through the learning management system. Within each subject, questionnaires were used to evaluate student experiences of flipped learning. Where applicable, student academic performance relating to flipped activities was evaluated.

Results

Preliminary data analyses indicate that the majority of students completed their online pre-class activities (e.g. >90% in the first year subject, n = 751 students). In the questionnaires, the majority of students in both subjects reported that they understood the benefits for their learning of completing online pre-work prior to face-to-face classes. Furthermore, the majority of students in the second year subject reported that the flipped classroom approach enhanced their learning.

Conclusions

Our early results indicate that communicating to students and academics the rationale for using a flipped classroom approach is key to successful implementation of the flipped classroom model. Further testing of the framework in other subjects across the science degree will advance our understanding of the impacts of and best practice for flipped classrooms in Science higher education.

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