EXPERIMENTING WITH A FLIPPED CLASSROOM IN INTRODUCTORY GEOLOGY
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Abstract
In the fall of 2014 I experimented with a flipped classroom in my general education introductory geology course. I asked online lecture videos as homework, along with online quizzes to encourage students to explore the videos. In lieu of many lectures, class time was devoted to discussions, interactive quizzes, and activities similar to lab. My intention was to create a challenging and fun course, while still maintaining the coverage of content that I expect to be found in a foundational course. To evaluate these changes, I compared four quarters of data from previous classes to the fall 2014 class. The data include former exams which were similar between classes, an concept inventory survey results, Likert-style student evaluations, and student feedback on the course design and implementation. The results show that there was no measurable increase in student performance on the exams and other learning assessments. The standard course evaluations by students do not indicate any significant changes in the class compared to prior years. When surveyed specifically about the flipped classroom experience, most students support a hybrid model with both traditional lectures and flipped classroom activities.

STUDENT COMMENTS & SURVEYS

Pre Flipped
“LOVED! No need to memorize and quiz. I felt like I was able to go at my own pace and I was able to articulate what I understood in a different way. I also got to watch videos on complex material better than in class.”

“I liked the video lectures, homework assignments, and quizzes. I was better able to do it on my own and on my own schedule.”

“Video lectures were a good way to learn new material and concepts I usually watched the videos multiple times.”

Watching the video lectures was a better way to learn material and concepts than in class lectures.

I would rather have no video lectures.

I would rather have no in class activities.

A better class would have no lecture, only activities. The material delivered during lectures would be completed by watching videos.

The Youtube video lectures were a useful way to learn information and concepts.

I usually watched the videos multiple times.

DISCUSSION & CONCLUSIONS

• I am a little surprised I could find no metric that suggested this flipped class was different than previous years. It is possible that student responses to the flipped experience would become more positive as I improved my technique.

• I think I am a better lecturer than video producer - if my videos were professionally produced, perhaps they would be more effective. There is a lot of time that needs to be invested in making (and improving) these videos.

• The large lecture halls available on our campus are poorly designed for incorporating activities. Classroom need to have a lot of room, and be modular (without fixed desks). It can also be challenging to keep everyone on task in a large classroom.

• I am sure my exams can be improved so that they better assess student learning. I might experiment with no more open ended sections (tell me what you learned about...). Sometimes students value different aspects of what they learn than what I value.

• I have no plans to totally invert this class - I didn’t notice any improvement in learning and lectures can be fun (both for me and the students). So far I have kept some of the videos and in class activities, dropped a few and have ideas for new activities. My opinion is that the movement to flipped learning sometimes overvalues or underestimates the learning that can take place during a good lecture.

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