Reflection on Course Delivery Reversal

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November 3, 2010

1 Workshop Description

I attended the two hour workshop, "Why Relying Solely on the Lecture Method Can Diminish Learning", on Wednesday, November 3rd from 10:00 PM - 12:00 PM in Bldg 1911, Room 129. This workshop was presented as part of the Fall Faculty Workshops by the Campus Writing and Speaking Program (CWSP). The lead presenter was Dr. Dana Gierdowski. Approximately 15 people attended the workshop, most of them faculty in Liberals Arts or a related field. I believe that I was the only attendee from the Computer Science department.

The purpose of this workshop was to explain the relatively new topic of course delivery reversal (CDR), sometimes called "course flipping". The format of the workshop involved an initial hands-on activity, where we watched a short video and then performed a class exercise. The workshop was then followed by a lecture on the concept of course delivery reversal, and the benefits of using it as an alternative to the current standard lecturing approach most of us use in our classes.

The final portion of the workshop involved a brief demonstration on how to record and make lectures using Camtasia.

2 Workshop Details and Analysis

The crux of course delivery reversal involves transferring lectures to an online environment, such as Podcasts or downloadable video, and using the class time sessions to instead focus on active engagement, hands-on-application, and interactive discussion. As one individual put it, "flipping the course so that the lecture is done at the home, and the homework is done in class".

I was interested in this particular workshop, because I had recently seen a presentation by Salman Khan (of Khan Academy[1]) at Good Experience Live 2010. Khan has developed a series of 10-20 minute short presentations on a variety of topics and placed them online. The concept of course delivery reversal appeared to have a lot of similarities to this, and I was curious to learn more.

[1] http://www.youtube.com/watch?v=yTXKCzrFh3c

2.1 Classic Approach

Like most students, I have always had courses that were delivered in the traditional, or conventional lecture style. In this style, the lectures are teacher-focused. There is little or no monitoring of learning, and it is very easy (from experience) to have students become disengaged. Often, it is quite difficult to interact, even if the student would like to do so.

Then, we turn around and give them homework at home. The students are then placed in a situation where they again have no monitoring of learning, and no interactive ability to ask questions when solving problems.

Instead, they turn to their peers for help, and sometimes the teaching assistant. When explained is this way, I immediately began to wonder why college courses use this approach. As a student, I have often been frustrated with not being able to solve or understand homework, feeling stuck with the lack of ability to get help. I have at times also felt "lost" in lecture, to where I felt that the lecture time was not helping me understand the material; with each additional lecture, I was getting only more confused.

As an instructor, I wondered how effective it is to have to deliver the same material every semester (which can be incredibly tedious), when I could simply record it once and have the students watch it. Then, I could actually spend class time helping students, rather than regurgitating material that they could mostly get from a book. Is is not as though the course content in most classes changes from year to year. I also considered how difficult it must be to engage students for an entire hour and a half. It seems far better to have students who absorb such material in small chunks, and then ask questions and get issues resolved before moving on to the next set of material.

2.2 Course Flipping Approach

Course flipping, as the name implies, takes the conventional model and flips it on its head. Lectures are now student-focused, and plenty of monitoring opportunities are available for learning. Since the student is an active participant, it is very hard for the student to become disengaged. Since lectures are now watched at home, class time can be used for follow-up, interactive discussion, and focusing on student understanding of the material. In a way, the lecture now becomes more like a recitation.

By putting the lectures online, students can view lectures in more comfortable conditions. I remember very distinctly that as an undergraduate student I had to sit in large lecture halls, often too hot or too cold, while squinting to try and see the board. I remember that when I did my Master's degree online at NC State, the lectures were in my own home, at my computer. I found that I actually learned better than in a lecture hall environment. I was able to rewind content when needed, and I could turn up the volume or enlarge the graphics when I had trouble hearing or seeing. Instead of sitting in a cramped seat, I instead was able to sit in my comfortable office chair, without distractions from other students.

The primary downside to online lectures were that I had no way to interact directly with the professor in a real-time way. But course flipping changes that by combing the advantages of online courses and coupling it with an actual interactive real-time session with

the professor. I can already see great benefits of this approach, particularly in courses that are technically intensive (such as math or engineering), because the class section can be used to work actual problems alongside a mentor. Currently, I have only experienced this when meeting with a teaching assistant during his or her office hours.

2.3 Examples of Course Flipping

Naturally, I was still skeptical coming into the workshop as to how this implementation would work in practice. The workshop presented several examples of colleges and high schools that are currently experimenting with course flipping.

One example was that of Dr. Robert Talbert, an Associate Professor at Franklin College. He uses the course reversal technique for teaching CMP 150 (a course in MATLAB), and blogs about his experiences.[2] Students are assigned readings and a MATLAB video tutorial prior to class. He uses an in-class lab as a followup, as well as quizzes to hold students accountable for in-class activity.

Unfortunately, Dr. Talbert encountered some issues in actual implementation. They will be described in the next section.

3 Issues

There are still some issues with course flipping that I haven't quite figured out how to tackle. The first is the issue of attendance, since most course in the department don't require attendance.

The second issue is psychological. From Dr. Talbert's experiences, many students appear not to be able to understand the idea behind course reversal. They therefore do not study the lecture materials beforehand, or wait until the last minute and therefore don't have time to absorb the material fully. Other students are simply uncomfortable with the idea. They are, simply put, used to the lecture environment, even if it is less than ideal. There is also the issue that for some concepts, students actually do have to spend time at home struggling with problems before gaining understanding in the subject matter. It is simply not possible to fit such problems into a single, easy classroom session.

The final issue is that of assessment. I still need to investigate ways in which I can assess students, especially when they are completing their work in a group within a class. I intend on following Dr. Talbert's blog for the results of his experiments in this matter.

4 Conclusion

While I don't believe that I can fully implement course reversal, there are elements that I would like to incorporate into my curriculum. For instance, having prerecorded mini-lectures could be used to free up class time for the more difficult topics. It could also free up time

[2] `http://tinyurl.com/2cv95zx`

for having more interaction, such as through class discussions. For a few of the lectures, I may try to use the lecture from a previous semester and have the student watch it outside of class. Then the lecture can be spent entirely on examples or discussions.

Another innovate approach was suggested by one of the faculty members. For large classes, they can watch the lecture offline. Then, the class can be broken down into 15-20 minute time slots. A fraction of the students can come in the first time slot, some in the second time slot, and so on. In this way, the student get less class time overall, but more individual attention from the instructor.