
Increasing Active Learning in Accounting and Finance by Flipping the Classroom

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This paper describes how three faculty members, in Accounting and Finance, transitioned from traditional lecture-based teaching to “flipping the classroom,” using prerecorded lectures that their students watched before coming to class. This allowed each instructor to increase the use of active learning activities in the classroom. The paper is intended to provide a roadmap for colleagues who are considering trying this pedagogy and contains several lessons learned by the authors that should serve to lessen the challenges for others.

Keywords: Lecture-Based Classes, Flipping the Classroom, Active Learning, Accounting, Finance, Pedagogy

Disciplines of Interest: Undergraduate Teaching and Learning, College Accounting, College Finance, Business Schools

INTRODUCTION

For most faculty members in accounting in finance, the lecture is a key part of their classroom pedagogy. While the traditional lecture is often supplemented with problems, cases, and discussions, a significant portion, or even the majority of class time is devoted to the instructor lecturing while students passively take notes. This paper is about an experiment, by three faculty members in accounting and finance, to incorporate the active learning pedagogy known as “flipping the classroom” in their undergraduate classes. In our flipped classrooms, lectures were recorded and reviewed by students before coming to class, freeing up valuable class time for a variety of interactive activities. While approaches differed across instructors, the freed-up class time was used to reinforce prerecorded lecture material using hands-on and interactive pedagogies.

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While a recent innovation in most business schools, flipping the classroom is not new. Kachka [2012] notes that the term was likely coined by two Colorado high school teachers, Jonathan Bergman and Aaron Sams, in 2007. However, she also notes that Harvard physicist Eric Mazur began using similar techniques more than two decades ago. In its essence, flipping the classroom is about relegating passive learning techniques such as lectures to preclass preparation and using class time for more active learning pedagogies. While not described as such, case teachers in law and business have long flipped their classroom as have humanities teachers who have their students read assigned books before class and devote class to engaging discussions.

This paper is organized as follows. In the next section we discuss the literature about flipping the classroom and the evidence of its effectiveness. We then describe how we flipped our classrooms. Our goal in this section is to provide a road map to colleagues who wish to adopt or experiment with the pedagogy. The next section describes the results of our attempts to measure the effectiveness of our change in pedagogy. We then incorporate lessons learned, including a discussion of the changes in the role of the instructor in a flipped classroom, the technology used, other challenges, and advice for those interested in trying this pedagogy. We conclude with a summary and discussion of next steps.

THE LITERATURE

There is a building volume of literature on flipping the classroom although most of it is about the application of the technique outside of the business school and much is related to high school education. For example, Alvarez [2012] writes about how teacher Rob Townsend began to record his lectures in response to high rates of absenteeism in his high school located in the working class community of Clinton Township, Michigan. While initiated so students who missed class could catch up, he was surprised to learn that other students were using the recorded lectures to better prepare for exams and even parents were reviewing the material so they could be better informed about their children's education. As part of her master's thesis, Snowden [2012] interviewed teachers at a Texas high school about their perceptions of using the flipped classroom technique. She reported that the perceived benefits included increased student-teacher interaction, ease for students to make up missed material, and greater opportunity for teacher guidance of the learning process. The reported negatives were challenges in having students consistently watch videos before class, and increased preparation time to create the recorded lectures. While her focus was on high school education, her reported teacher perceptions very much mirror our experiences.

The Flipped Learning Network (FLN) has recently documented the growing interest in "Flipped Learning," a term they defined as "a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic,

interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter” [FLN, 2014]. A survey of over 2,300 educators, mostly at the high school level, conducted jointly by the FLN and Sophia Learning provided evidence that 96 percent of those surveyed were familiar with the term, close to half of the teachers that are using a flipped pedagogy are experienced teachers with greater than sixteen years of experience, and 96 percent of the teachers that had a flipped lesson would recommend it as a method of instruction. Additionally, teachers that don’t flip have a growing interest in learning more about it [FLN, Sophia, 2014].

Numerous authors have written about flipping the classroom in university education. Enfield [2013] detailed how he flipped his web design course at California State University Northridge. A large majority of his students (88.5 percent) reported that the use of prerecorded videos was very effective or somewhat effective in helping them learn the material. Enfield noted that he used regular quizzes to motivate students to watch the assigned lectures before coming to class. He noted a number of challenges including the additional time required to prepare professional quality videos and the need to carefully plan class time in the absence of in-class lectures. Butt [2014] experimented with the flipped classroom model in his senior level actuarial math course. He surveyed students early in the semester and again at the end and found that while only 50 percent of students expected to like the model early in the semester, by the end, 75 percent believed that their learning had been enhanced by the learning process. It is important to note, however, that like other studies [e.g. Bates and Galloway [2012] and Schullery et al. [2011]], a significant portion of his students (25 percent) did not perceive that the flipped classroom improved their learning. In the graduate school setting, Dr. Mumper at the University of North Carolina’s Eshelman School of Pharmacy evaluated the impact of using the flipped model in a Basic Pharmaceuticals II course over a three year period. He went from a traditional lecture style class to having graduate students watch video-recorded lectures outside of class in order to work on applied problems and make presentations to peers in class, resulting in a 2.8 percent increase in final exam scores [McLaughlin et al., 2014]. In contrast, Lape, Levy, and Yong found no significant differences in student learning between their flipped classes and their traditional, yet interactive, lecture classes in the sciences. These authors highlighted the need for future research to focus on what conditions might make this model more effective, specifically student, teacher, and institutional factors [Lape et al., 2014].

There are also precedents for use of the flipped model within business classrooms. Findlay-Thompson and Mombourquette [2014] detailed their use of the pedagogy in their Introduction to Business Administration course. They attempted to measure whether use of the flipping model improved student performance by comparing the results across three sections of the course, with identical course requirements. Two of the sections were taught using the lecture method and the third using the flipped classroom model. They found no grade

differences across the sections but did report higher levels of student satisfaction in the section using the flipped pedagogy. While Findlay-Thompson and Mombourquette did not find evidence of a change in student performance, Freeman et al. [2014] did find evidence of enhanced student performance in a much larger study. These authors performed a meta-analysis of 225 studies of student performance in science, technology, engineering, and math courses and found that active learning pedagogies improve the performance of students by an average of one half a letter grade. Furthermore, they noted that “students in traditional lecture courses are 1.5 times more likely to fail than students in courses with active learning.” [Freeman et al., p. 1].

Businesses and professional organizations are increasingly researching the merits of Flipped Learning. For example, “An Extension of a Review of Flipped Learning” was jointly researched and written by Pearson and George Mason University, and provided many of the resources for this paper. Tagoras, a consulting firm specializing in the global market for lifelong learning, surveyed trade and professional organizations about learning trends. Of the 157 respondents, 5.3 percent indicated they were currently providing Flipped Learning for continuing education and professional development, and 10 percent said they planned to offer this in the next twelve months [Yarbro et al., 2014; Taragos et al., 2014].

While most of the incidents of flipping the classroom reported in the literature seemed to have been with relatively small sized classes, the technique can be applied to large enrollment sections as well. Schullery et al. examined the impact of using a hybrid flipping model in a foundations of business course that had been taught using the traditional lecture format in a 300 seat classroom. In the redesigned format, students viewed lectures online outside of class and weekly face-to-face classes were conducted using part-time faculty from the business community. These sessions focused on real-world applications of material covered in the online lectures. The authors reported increased student engagement and satisfaction levels.

USING A FLIPPED CLASSROOM PEDAGOGY

Our university is a midsized (about 3,000 undergraduate students) private institution located in the northeastern United States. Our undergraduate business major is a four year program and students typically declare their business major in their applications to the university. As a result, some students take their first accounting course as early as in the spring of their first year. Since the introductory courses in financial and managerial accounting are both prerequisites for the introductory finance course, most of the finance students are at least second semester sophomores. Students receive a laptop computer as part of their tuition when they enroll and trade for a new model at the beginning of their junior year. The fact that every student has access to the same up-to-date technology elimi-

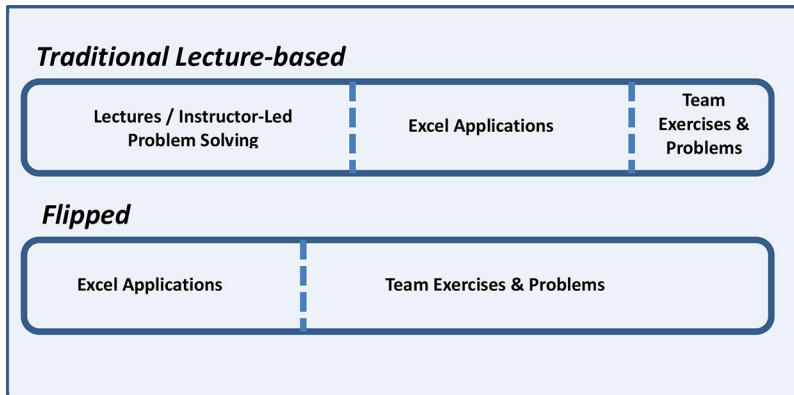
nates some of the problems others may have where access to technology is a problem.

In the fall of 2013, we began to experiment with flipping the classroom in our introductory courses. Each of us, two faculty members in accounting and one in finance, began to experiment independently. Only later in the semester when we became aware of each other's activities did we begin to compare methodologies and results (and collaborate on this article). The courses involved were Principles of Managerial Accounting, Principles of Financial Accounting, and Financial Management (hereafter referred to as Managerial Accounting, Financial Accounting, and Finance). As we will discuss, the degree to which each of us flipped our classroom varied by instructor. The Managerial Accounting instructor recorded all of her lectures and required students to watch them in advance but continued to use most class time to demonstrate and discuss the solutions to problems with her leading the discussion from the front of the class. The Financial Accounting instructor experimented with having some lectures recorded and viewed before class while others were delivered in the traditional lecture format. The Finance instructor utilized the flipping pedagogy to the greatest extent and we begin our summary of the three variations with that course.

The course that employed the flipping methodology to the greatest extent was Finance. This is the first course in finance and is required of all business students, not just those concentrating in finance. This course is typical of that found in most business schools and focuses on the basic tools of finance including time value of money, stock and bond valuation, risk and return, cost of capital, and capital budgeting. Much of the material focuses on problem solving and students are expected to use Excel. Our curriculum includes an introduction to business technology course where students are taught Excel. However, by the time students arrive in Finance, many have forgotten most of the details so the early parts of the course include refreshers in Excel.

Figure 1 shows how the Finance course was structured before and after the adoption of the flipped pedagogy. In the lecture-based format, the largest block of class time was used for lectures with the instructor at the front of the class most often using PowerPoint slides. While students were encouraged to ask questions and were sometimes queried about class material, the process was very much one directional, the so-called "sage on the stage." Following the lecture on the day's material, students were shown how to use Excel to model typical applications. In this portion of the class, the instructor would lead the discussion from the computer at the front of the room and students would replicate the Excel work in the template provided by the instructor. While this part of the class is still led by the instructor from the front of the class, students are more engaged as they are actively working on their computers. On a typical day, the combined lecture and Excel applications would use most, if not all of the class time. Students would then be given a series of problems on the material and asked to complete their solutions before the next class. If time remained before the end of class, students

Figure 1. Use of Class Time in Financial Management: Traditional Lecture-based versus the Flipped Classroom

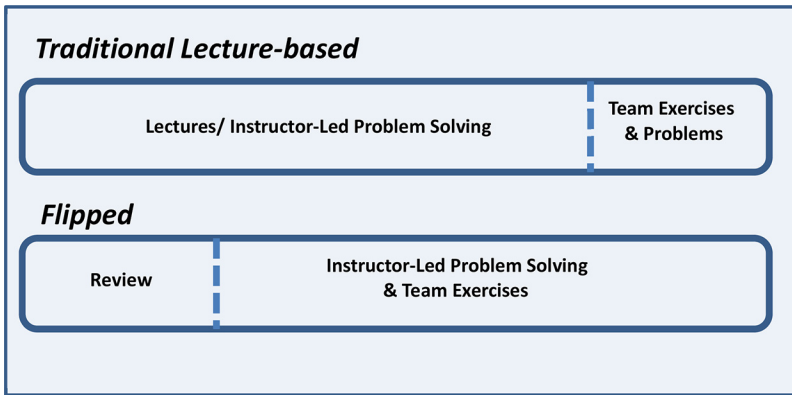


might begin their work but on most days, this signaled the end of class. The next class day would begin with a quick review of the solutions before beginning that day's lecture.

In the flipped version of the course, all lectures were prerecorded, using Blackboard Collaborate™, and students were required to watch the lectures before coming to class. To increase the likelihood that students would watch the lectures, the recordings were integrated with Blackboard's grade center and students received 10 percent of their course grade for watching each lecture before its assigned class. The prerecorded lectures freed up at least half the typical class for other activities. The Excel applications continued much as with the lecture-based class but now these activities began immediately and were complete before the midpoint of the class. More than half the typical class could now be devoted to in-class work on in-class exercises and problems. Problems were distributed and students were encouraged to work in teams of two or three to solve them. The instructor's role was to wander the classroom, observing progress, and helping students with their problems. In this process, the instructor's role changes to that of the so-called "guide on the side."

Managerial Accounting, a course that is required of both accounting and nonaccounting business majors, is where the second variation of a flipped methodology was employed. The main course objective is to understand how accounting information is used by management to plan operations, control activities, evaluate results, and make business decisions. In order for students to achieve this overarching objective, they must first understand basic concepts such as product costing, cost behavior, break-even and cost-volume-profit analysis, budgeting, and performance evaluation. At its rudimentary level, this course introduces a significant amount of business-related vocabulary, associated numerical calcula-

Figure 2. Use of Class Time in Managerial Accounting: Traditional Lecture-based versus the Flipped Classroom



tions, mechanical procedures, and use of formulas. Ideally, the professor is expected to guide the student toward “acquiring” knowledge about these fundamental concepts, and then toward “applying” this knowledge to the managerial process: planning operations, controlling activities, evaluating results, and making decisions.

The top panel in Figure 2 shows how Managerial Accounting was structured using the traditional lecture-based approach, prior to employing the flipped methodology. Class time was primarily dedicated to alternating between traditional lecture and instructor-led problem solving, with students taking notes and writing down solutions to the problems. Students would sometimes be called upon to answer questions like “What is the next step?” or “What does this mean?,” but the flow of information was primarily one-way, from professor to student. The lecture material and problem solving focused on conveying the fundamental concepts, definitions, and business-related vocabulary. Ultimately, this portion of the class was dedicated to “knowledge acquisition” of vocabulary, numerical calculations, and mechanical procedures, leaving little time for students to “apply” their newfound knowledge to the main course objective of understanding how accounting information can be used within the managerial process.

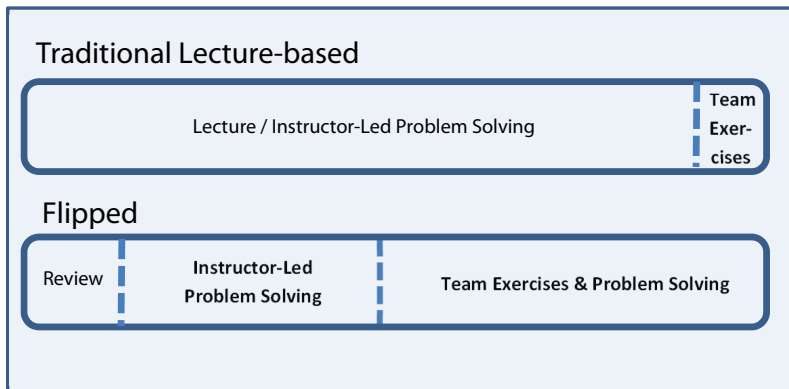
Using the flipped methodology, much of the material formerly covered during in-class lectures was now recorded in videos created by the professor. As was the case in finance, these videos were prepared using Blackboard Collaborate and were accessible by students from their Blackboard account. However, rather than give students credit for simply watching the videos, students were required to complete a fairly simple assignment after watching the assigned video, using Connect™, the online homework management system from McGraw-Hill. These assignments represented 5 percent of the

final grade in the course. Since students had watched the videos and completed a reinforcing assignment before coming to class, this flipped methodology allowed the professor to shift learning of rudimentary concepts, “knowledge acquisition,” to activities outside of class, leaving more classroom time for “knowledge application” activities. The first part of the flipped class would be devoted to activities reinforcing the knowledge that students had acquired by watching the video and completing the related Connect prework. The professor would ask for students to provide a review of key concepts presented in the video. At this point, the professor assumed that the students had acquired the appropriate knowledge to proceed to the next level of learning. At the same time, the professor was careful to reinforce the key concepts in the video as the class proceeded through the “knowledge application” portion of the class. The remaining class time was devoted to interactive problem solving, sometimes with the professor leading the discussion by posing questions to the class and stimulating discussion, and sometimes by having the class work in small groups, discuss and create possible answers to the questions, and accordingly report back to the class. Using this flipped methodology, significantly more classroom time was focused on activities that promoted discussion of possible answers to these “knowledge application” questions.

The third course that instituted the flipped classroom format was Financial Accounting. The content of this course is theoretical and procedural based; introducing students to the language of accounting and Generally Accepted Accounting Principles. There are three components of the course; content delivery via lecture, instructor-led problem solving, and student reinforcement. Using the traditional lecture-based approach, the first two components are part of class time with student reinforcement taking place outside of the classroom. As shown in Figure 3, the traditional lecture-based approach in delivering the course mirrored that of the Managerial Accounting course previously discussed. The instructor would alternate between lecture and instructor-led problem solving, occasionally ending the class period with small group problem solving. Time constraints often eliminated the opportunity for small group problem solving even though, in the instructor’s view, it was most effective in reinforcing the concepts delivered during the earlier part of class.

Flipping the class in Financial Accounting enabled the instructor to allocate much more class time to small group problem solving sessions. Shifting a substantial part of content delivery outside the classroom ensured time was available for small group problem solving each class period. At the start of each class, the instructor would begin with a short review of the content delivered in the video which enabled students to ask questions. Instructor-led problem solving would follow the review, similar to the process followed in the traditional classroom approach. Finally, student groups were formed, a more complex problem was assigned, and the instructor would move from group to group, guiding their progress. Using the flipped classroom approach, approximately 10

Figure 3. Use of Class Time in Financial Accounting: Traditional Lecture-based versus the Flipped Classroom



percent of class time was allocated to review, 40 percent was allocated to instructor-led problems solving, and 50 percent was allocated to small group problem solving.

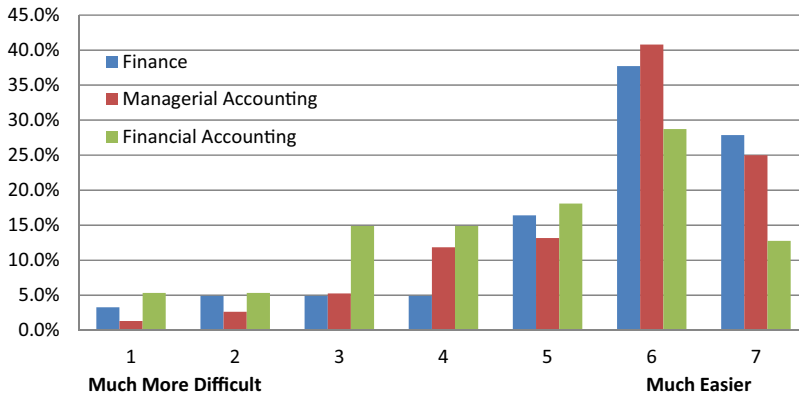
EFFECTIVENESS

Measuring the effectiveness of our changes in pedagogy is challenging since our changes occurred over time and there is no systematic way to measure performance differences against a control sample of students who went through our courses in circumstances that were identical with the exception of our change in pedagogy. However, we did attempt to measure effectiveness indirectly by surveying students about their satisfaction with the methodology.¹

We attempted to measure student satisfaction with a survey of students that was done at the same time as the required teaching evaluations at the end of the semester. We included the following question: “Compared to courses where the instructor primarily lectures, how did the structure of this course affect your learning of the course material?” On a seven point scale, students were asked to circle the number that corresponded to their perceptions with seven indicating that they found it “much easier” to learn the material, one indicating that they found it “much more difficult,” and four indicating that their ability to learn the material was “about the same.” A total of 231 students completed the surveys, 61 in

¹We also attempted to measure whether grades were affected by the methodology but the results were inconclusive. The average grade in the finance class did increase by a statistically significant amount between the last semester using the traditional lecture method and the second semester using the flipped methodology, but grades in the two accounting courses did not change by a statistically significant amount. This is consistent with the literature which shows some instructors finding significant improvements in grades and others not.

Figure 4. Student Perceptions of Learning



finance (2 sections), 76 in managerial accounting (3 sections), and 94 in financial accounting (3 sections). Figure 4 shows the results.

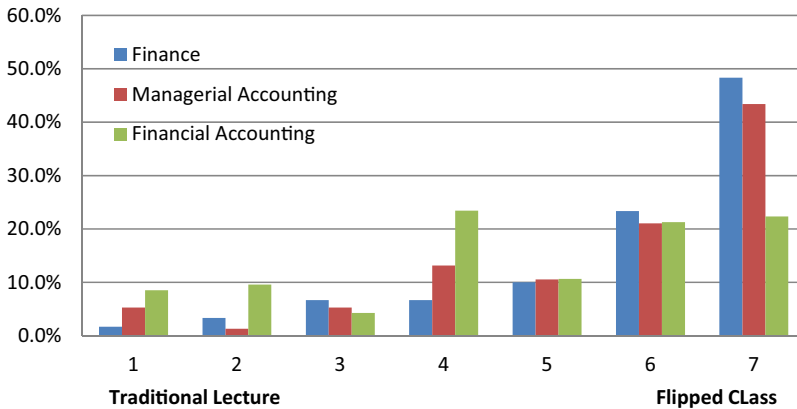
While the responses between the three subjects differed, more students felt the flipped classroom approach made it easier for them to learn the material. The result is more pronounced in finance and managerial accounting where 65.6 percent and 65.8 percent, respectively, scored the question as a 6 or 7, compared to a total of 41.5 percent of financial accounting students. We can only speculate whether these differences result from differences in the subject matter or in how the instructors implemented the pedagogy.

We also asked students directly about their preference for the flipped approach compared to the traditional lecture approach. Specifically, we asked to “suppose that you had the opportunity to take another course and there are two available sections, one taught using the format we used in this class and the other a traditional lecture format. In which section would you likely choose to enroll?” Figure 5 shows the results.

Students showed a strong preference for the flipped classroom methodology. As with their perceptions of learning, students in finance and managerial accounting showed the greatest likelihood to select a future course based on its flipped methodology with 71.7 percent and 64.5 percent, respectively, scoring the question with either a 6 or a 7. In contrast, only 43.6 percent of student in financial accounting scored the question with a 6 or 7 and 38.3 percent of these students recorded a 3, 4, or 5, indicating either only a slight preference or indifference.

While we found that the majority of students believe that the flipped pedagogy improved their learning and that they would be likely to seek out classes with this methodology in the future, both Figures 4 and 5 show that there were students who preferred the lecture format and felt that it was better suited for their learning style. This is consistent with studies in other disciplines that found that, while a

Figure 5. Preference for Style of Future Classes



majority of students preferred the flipped methodology, there was a small portion of students who prefer traditional lectures.

We also asked students to give us written feedback about the course format and the results were very positive, but not exclusively so. For example, one student wrote “the format of this class is far better for understanding the material. If I need help, it is easier to seek out the professor in class than out of class.” Another said “I think watching the lectures outside allowed us to a lot more practice in class.” Another noted that the format “kept the class interesting and engaging” and that they “paid better attention to a format like this than just a lecture.” One student said that they preferred the flipped methodology “because working on your own can be frustrating and stressful.” Some students felt that the methodology fit their learning style with one noting that “I am someone who needs to be guided through steps and problems to learn rather than listen to lectures.” Finally, some students noted the advantage of being able to rewatch lectures noting that “I can pause, take notes, and rewind if I’m confused. I can rewatch them before the exam.”

A minority of students did not prefer the flipped approach. One wrote that “doing problems on my own is much easier to do when I can go at my own pace than in a classroom where everyone has to go at the same rate.” One student found that doing problems in small groups to be “challenging and intimidating.” Another notes that when “watching the videos, I cannot ask questions and I forget by the next time we have class.”

We are among a very few number of colleagues who flip our classes in our institution and, for many students, our classes have been their first experience with the pedagogy. One student notes that “it took a while to get used to,” and another said that “it took some adjusting but it works.” Another student confessed that “I

am not a very responsible person so it was kind of a struggle to see the lectures before class.”

LESSONS LEARNED

After three semesters of using the flipped pedagogy, we have learned many things about the process that can be helpful to other instructors embarking on a change in how they teach. Our lessons learned are numbered below.

1. Communicate exactly what you want students to do before, during, and after class

The flipped classroom methodology requires a revised structure of expectations for both faculty and students. For both faculty and students, preparation for class is different, class time itself is conducted in a different way, and expectations for after class might be different as well. Consequently, this methodology represents a learning process for both faculty and students. Additionally, communication about these revised roles is imperative for this process to work.

Most faculty members equate teaching with lecturing and most students do as well. As a result, faculty members have to think about and plan how their roles in the classroom will change and they need to communicate these revised roles to their students along with their expectations for the students. If you, like us, are among the first faculty members in your business school to flip the classroom, your students may be initially confused. For example, in the first semester that the financial management class adopted the flipping methodology, attendance rates dropped significantly. In retrospect, this likely occurred because the new format was not well explained and expectations about attendance were not well communicated. Since many students are conditioned to believe that going to class is about hearing the lecture, too many concluded that the availability of recorded lectures meant that there was little value to going to class. In the second semester, attendance in the finance class was addressed in two ways. First, on day one, the instructor took time to explain how the class was structured, what activities would happen in class, and the benefits students would see from being present. This enhanced communication was further reinforced with the addition of near daily quizzes on prior material. With these changes, attendance levels returned to levels typical of lecture format classes.

2. Students need to be told that they are responsible for their learning

This is one of the most important pieces of information to be communicated as part of lessons-learned #1, but due to its importance, the authors decided to assign it a separate number. The flipped methodology transforms students from passive learners to active learners, acquiring knowledge by watching video

lectures and applying that knowledge by actively participating in classroom activities. As Freeman et al. [2014] notes, active learning has been found to be more effective than passive learning. However, students cannot be forced to actively learn; they must make a conscious decision to do so. They must understand that the flipped classroom format is a learner-centered strategy for empowering students to become active, responsible, and successful learners; consequently, students must make the conscious decision to be responsible for their learning.

3. Faculty need to become more comfortable with being “the guide on the side”

Faculty members need to reconsider their role in the classroom and become more comfortable with the less structured classroom environment. As we noted before, the switch to flipping the classroom is often characterized as moving from being the “sage on the stage” to being the “guide on the side.” For faculty members who are accustomed to being the focal point of an orderly and quiet classroom, flipping the classroom may be a shock. In our classrooms, we are more often found sitting beside one or more students tutoring on an individual or small group basis while the rest of the class works on the same material, often with numerous simultaneous discussions underway. As our students became accustomed to this style of learning, they increasingly sought out the instructor during class and, as a result, we became increasingly busy. We discovered that flipping the classroom even blurred the beginning and ending times of classes. Toward the end of the semester as students were more comfortable with the flipped class, some began coming early to begin work. Similarly, groups of students often remained after class continuing to seek instructor guidance.

4. Think about the length, content, and possible learning tools to be provided with video lectures

One of the most important lessons-learned is the importance of keeping video lectures short. In one early case, one of us recorded a one-hour lecture for students to watch. Students universally hated it and there is probably a high probability that students did not watch more than 15 minutes of it. Most of our lectures now run no more than 15 minutes with the occasional video approaching 20 minutes, still longer than the typical YouTube[™] video our students are used to. This short time frame required us to carefully think about how to communicate the most important material as succinctly as possible.

We found it is very helpful to determine the learning objective(s) of each video lecture prior to recording. Learning objectives can then be further broken down into key concepts. By focusing video content on these key concepts for that learning objective, we were able to easily shorten the length and prevent the student from being inundated with too much detail. In addition, one instructor

provided students with the PowerPoint slides used within the video. Students could print out the slides ahead of time in order to take notes on the slides as they watched the video lecture and related annotation of solutions and concepts. One instructor noted that approximately 60 percent of students indicated they took notes while watching the video lectures. In fact, some students noted that the process was easier and they appreciated the ability to pause the video while finishing their thought or idea. Students could then easily refer to these notes while completing subsequent in-class activities. This was found to be an effective learning tool for students; future PowerPoints provided will also include the learning objective(s) for the video session as well.

5. There was (and continues to be) a learning curve with the technology involved

We began this process with little knowledge about the technology required to prerecord lectures. We were fortunate to have good technical support from a dedicated educational support specialist who works in our Center for Teaching and Learning. Without this level of support, the technical challenges would have been a major hurdle, especially early in the learning process. From our perspective, there is a trade-off that faculty must consider. While we wanted to create lectures that were as professional looking as possible, we wanted to do so with as little time commitment as possible. We recorded our lectures using Blackboard Collaborate, a recording module within the Blackboard learning management system. We found that the system has its strengths and weaknesses. Its strengths include being integrated with the overall Blackboard system and thus familiar to students. It is also quite easy to use once one learns the less-than-intuitive set up process. Collaborate allows the use of PowerPoint slides and annotation, although as we will discuss, this is dependent on the hardware employed. Collaborate's main weakness is in its complete lack of editing capability. Faculty members cannot edit mistakes (or coughing bouts) from the recording. On a couple of occasions, this meant that entire lectures had to be rerecorded. In general, though, it took only a few minutes more to record a lecture than it does to deliver it live. We initially recorded our lectures using our note-book computers, a process that made annotations on the slides difficult and often only marginally legible. In the second semester, two of us participated in a pilot program and were given Lenovo tablet computers (windows based). These tablets use a pen for writing and annotations and did improve our ability to annotate slides somewhat.

6. Ensuring that students watch the videos before coming to class is critically important

As Snowden [2012] noted, some instructors have had issues with student accountability for watching lectures before class. Clearly, students need to come

to class having watched the lectures if flipping the classroom is to work. We each used different approaches to ensuring student preparation. In the fall 2013 Managerial Accounting sections, each lecture included a required Connect pre-work assignment that had to be completed before class, with the grades for these assignments representing 5 percent of the course grade. In the spring 2014 Managerial Accounting section, the instructor experimented with excluding the Connect prework as a requirement. She found that students' level of preparedness for in-class activities had significantly declined. They were not knowledgeable about basic concepts presented in the required video, could not answer review questions that were posed to them, and came to class with the attitude that the professor was going to lecture on these topics. It became apparent to the instructor that the requirement for Connect prework needed to be reinstated in order to ensure proper student preparation for class. Once this requirement was reinstated, students were more prepared for class activities.

The instructor in the finance and the financial accounting instructor class took another approach and awarded ten percent of the overall course grade for watching the lectures before coming to class. This was monitored by integrating the prerecorded lectures to Blackboard's grade center. Lectures were set up on Blackboard so that they could be viewed for credit up to class time. While the lectures remained available in another section of Blackboard after the due date, students could not receive credit for late viewings. Clearly, students responded better in preparing for class when incentives were offered.

7. Flipping the classroom can mean different things to different instructors

The three instructors writing this paper took different approaches to flipping the classroom, each with varying types of activities in class. The common thread was that the video lecture was used as the primary vehicle for the student to acquire some basic knowledge about the course content. Although each of us approached flipping the classroom in a different way, we each are convinced that this pedagogy has improved both our teaching and student learning of our subjects.

SUMMARY AND NEXT STEPS

In this paper we have described a three-semester experiment in which three experienced college instructors changed their long-practiced approach of using lecturing as their main teaching method. Using prerecorded videos of their lectures, each instructor changed how they used class time to focus on activities that promote active learning. While the in-class activities of these three instructors varied, each instructor saw an increase in student satisfaction.

While we have learned a great deal over the past year, our transition to flipping the classroom continues to be a "work in progress." Along with col-

leagues who are joining us in this transition, we continue to think about and experiment with the following:

1. Technology

While our ability to create good quality lectures in a limited amount of time has increased with experience, work remains to be done. We are experimenting with different hardware including the iPad, Surface, and Yoga tablets and digitizing pads with the goal of finding the best method of creating legible drawing and annotations in our lectures. We are also experimenting with different software including packages such as Camtasia for tablet computers and apps such as Explain Everything for the iPad. There are many options to explore and the ideal combination will depend both on individual preference and what is supported at your institution.

2. Classrooms

This new (to us) pedagogy creates the need for a different style of classroom. The traditional classroom designed for lectures with students in rows is not conducive to facilitating iterations between students. The ideal classroom is one where students can work together in small groups with sufficient room for the instructor to move freely around the room.

3. Definition of Teaching

Perhaps most fundamentally, our experiment has caused us to consider the very definition of teaching. Two years ago we might have quickly asserted that teaching is what we do in our classrooms during class. Today, the answer would be quite different. Our roles have expanded to consider the activities of both ourselves and our students both in and out of class. The definition of a teacher is now one who manages this process in a way to maximize student learning.

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