

Teaching Academy Innovation Award Application: March 5, 2012

Section 1: Contact Information

Dr. Kenneth Martin, Department of Finance, MSC 3FIN

Phone: 646-1236, Email: kjmartin@nmsu.edu

Section 2: What is the innovation and how was it applied in class?

The teaching innovation that I am using is called a “flipped” classroom model. I use this approach for teaching Finance using Microsoft Excel. The genesis for this technique dates back several years when several trends in technology converged to bring together cheap networked computers and the development of the World Wide Web leading to widespread free access to financial data.

A “flipped” classroom is one in which the traditional paradigm of in-class lectures by the professor followed by homework by students is turned around, or flipped. Instead, “lectures” are conducted outside of class using online tools, while the classroom becomes the time and space for students to do daily activities and exercises. As a result, students have more control over when they learn (via the online lectures) and the pace of their learning. The demonstration of their learning occurs in class each day.

This concept is particularly well-suited for teaching Excel and Finance together. Finance is a profession with extremely widespread use of spreadsheet software, and Microsoft has estimated that, in total, there are over 400 million users of Excel in the world. Furthermore, Excel has advanced to the point where it has many powerful features useful for analytical tasks that are common in Finance such that we can use it together with information from the Web so that we can actually “do” Finance, not just “tell” or even “show” students what is possible. Therefore, my approach to teaching Finance has been transformed to the point where I not only teach Finance using Excel, but then students can use this tool to help make real-time, real-life financial decisions.

Here’s how my version of a flipped classroom works. Each day in class, a different exercise is assigned. Excluding the 3 exam days and the opening day of the semester, in the current semester I have 26 different exercises assigned. Each exercise includes step-by-step written instructions that are contained in a packet that students can buy at the beginning of the semester. Each exercise looks at a different problem or situation in Finance and uses Excel to solve the problem or provide insight into an economic relationship of interest in Finance. Many exercises culminate in students drawing a chart to illustrate the relationships involved in the exercise.

As mentioned, students have the exercises before class but they do not have the specific assumptions that will be used in their solutions, which are worked start to finish in class. One very useful tool that helps to flip the classroom even better is the use of Camtasia software. Camtasia is a screen capture product so that I can video record in my office how to do the exercise. The “lecture” then is typically a

shorter version of the actual exercise using different assumptions than students will be using in class. Therefore, before class, students are expected to have read through the exercise and watched the video. Then, when they come to class, I give them the assumptions for that day's exercise, and they complete it from start to finish in class. Students are graded each day on whether they finish the exercise or not. This gives them incentive to be in class and be engaged. During class, my role is the "guide on the side". I roam the classroom answering questions about either Finance or Excel.

Section 3: Evidence that the innovation positively affected student learning

I provide several pieces of evidence that my flipped classroom pedagogy has positively affected student learning. The first measure is from student evaluations. I have recorded the numerical ratings on several questions that are asked of students going back over the past few years. On questions relating to instructor knowledge, clarity of presentation, instructor enthusiasm, rapport with students, course organization, the overall instructor, and the overall course, more than 95% of each of these characteristics were rated either Excellent (or Strongly Agree) or Very Good. Because this class was designed as a flipped classroom from the outset, there is no set of "before the innovation" student ratings. Clearly students respond favorably to characteristics that are associated with positive student learning outcomes.

Student ratings are not the only means to assess effectiveness. Here is a sampling of student comments that were made on the Spring 2010 and 2011 semester evaluation forms.

- "I really like the setup of the class. and I loved learning new tools in excel."
- "Daily exercises were very well organized and it helped for us to learn the information while completing the exercises."
- "I like how he put instructional videos for each exercise. I really feel that by doing so, that helped me learn the material in a better way, and I feel like I know so much more about how to navigate around Excel than before I took this course."
- "I love that all the work is done in class. I feel that I am learning a lot, but at the same time I'm not working too hard and it isn't bogging me down."
- "The exercise videos posted beforehand are terrific. I like that Dr. Martin provides a brief explanation about the exercise and its real world application. I felt the class was very informative, particularly in Excel but also in understanding how to navigate a few financial websites' data."
- "I like the format of the class, it really helps you get a firm understanding of how to use the tools of excel."

Section 4: The relationship between the teaching innovation and the Teaching Academy

I have been attending Teaching Academy workshops for many years. Several of these have been influential on me and the flipped classroom teaching innovation. In particular, the following workshops have been instrumental in forming and refining my thoughts.

1. “Backwards Course Design” by L. Dee Fink, Director, Instructional Development Program, University of Oklahoma. In this workshop, Dr. Fink promoted a methodology to designing courses so that faculty would think about what they wanted students to be able to do at the end of the course. This process involved thinking about setting learning objectives and active learning strategies to achieve those objectives. In my case, this approach is applicable across courses I was teaching. In my 400-level Finance courses (FIN466 – Financial Policy Decisions and FIN435 – Investment Analysis) I realized that in order for students to be able to accomplish the learning objectives in those courses, they needed to be competent with Microsoft Excel. True to the concept of backwards course design, it made even more sense to me to teach FIN360 in a flipped classroom format to ensure that students would build stronger capabilities in working with Excel.
2. “How Students Learn: Strategies for Teaching from the Psychology of Learning” by Todd Zakrajsek, University of North Carolina at Chapel Hill. In this engaging workshop, Dr. Zakrajsek shared his principles for good practice in undergraduate education. These include (1) contact between students and faculty, (2) developing cooperation among students, (3) using active learning techniques, (4) providing prompt feedback, (5) increasing time on task, and (6) communicating high expectations. These principles are all designed into my flipped classroom. Because I roam the classroom during class, I have frequent contact with students. Students help other students with the daily exercises. Working spreadsheets daily is an active learning technique. I grade each day’s assignment in class thus providing prompt feedback. I have never had a class where students are so intent on their work during class. No one sleeps! Students understand and accept the expectations I have for them.
3. “How to Beat the Lecture/Textbook Trap” by David Pengelley, New Mexico State University. This workshop served as confirmation that the approach I have taken in FIN 360 is a valid and worthwhile approach. Although Dr. Pengelley’s implementation in math classes differed slightly from mine, I learned different techniques that I plan to apply in my quest to add “flipped” features to my other courses.

Section 5: Letters of support from students

The attached letters of support from students support my nomination for the Teaching Academy Innovation Award. Please note that two of the letters were from former students who no longer live in Las Cruces and sent their letters by email.