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A case study on using instructor-recorded videos in an upper level economics course[☆]

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ABSTRACT

We adopted a version of the flipped classroom concept, defined as delivering some course material via short video lectures to be watched in advance of attending class, for an upper-level undergraduate economics course. Using a survey administered to both flipped and non-flipped sections of the course, we find modest evidence of either short term or long term benefits to students in terms of improving understanding of course material, effective use of time in class, and retention of course material.

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1. Introduction

In recent years, there has been a great deal of interest at both the K-12 and college levels in using various types of media in conjunction with (or sometimes in place of) more traditional teaching methods. One common type of media is the use of audio or video recordings of relevant course material. For example, in the “flipped” classroom, delivery of at least some course material in the form of video or similar audio/visual media in advance of attending class. In the most common form, flipped classes have new material assigned outside class time, with quizzes or assignments given to ensure basic comprehension of key concepts. In-class activities are then designed to make use of the fact that students have already encountered course material.

We recorded a series of videos covering a variety of course material, however we do not “flip”¹ our class in the traditional sense. We discuss our experience in using the instructor-recorded videos, to be watched outside of class time, in support of a senior-level undergraduate course in monetary economics, as well as the results of a survey administered to students in both the video and non-video supported sections of the same course. Our overall experience has been very positive despite the relatively high startup costs. However, based on our survey, while students in the video-supported classroom place value on the videos, there is little statistical evidence that the use of videos may contribute to the learning process.

[☆] We thank Emily Gehley and Gabrielle Williams for assistance with the data. All errors remain our own. We also thank the instructors who graciously allowed us to administer the survey and the students who took the surveys. Finally, we thank Stephen Morris for very helpful discussions regarding the flipped classroom concept and for encouraging us to try it out

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¹ Bishop and Verleger's (2013) define the flipped classroom “... as an educational technique that consists of two parts: interactive group learning activities in the classroom, and direct computer-based individual instruction outside the classroom.” We did not require students to watch videos paired up with a graded exercise. We also did not fully do away with in class lectures.

2. Literature review

The use of media and other alternative pedagogical aids are rooted in the idea that students have a variety of learning styles that may or may not be most in tune with the traditional chalk and talk lecture style. In their survey of the literature on flipped classrooms, [Bishop and Verleger \(2013\)](#) discuss a variety of student centered learning styles, including cooperative learning, problem based learning, and active learning.² The flipped classroom concept enables these styles because students are somehow made responsible for outside class material and are engaged inside the classroom in something other than a standard lecture. [Herreid and Schiller \(2013\)](#) review the literature on how the flipped classroom affects STEM courses. They conclude that there is a “positive impact” of the podcasts on student attitudes, behavior, and performance. Note that the use of podcasts is somewhat more limited than a true flipped classroom. [Day and Foley \(2006\)](#) taught flipped and non-flipped sections of a computer science course and found that students in the flipped sections performed substantially better on a variety of course assignments. [Moravec et al. \(2010\)](#) flipped a portion of an introductory biology class and reported a material improvement in performance on questions associated with video lecture content. [He et al. \(2012\)](#) report on their efforts to flip an undergraduate chemistry course and find improvement in student performance relative to previous, non-flipped sections of the same course. They also find that students liked the flipped approach.

While much of the literature discusses the use of flipped classroom in STEM courses, [Lage et al. \(2000\)](#) discuss their experience at flipping a principles of microeconomics course. The authors also conducted a survey of their students and found that their overall perceptions were positive toward the flipped classroom experience. There was no control group of non-flipped sections. They point out that their own perceptions of the class were positive as well because students “appeared to be more motivated in the inverted [flipped] classroom.” While this does not directly correlate with improved learning outcomes, a more positive experience on the part of the instructor will, at the very least, motivate the instructor not to abandon the flipped classroom.

Even without flipping the classroom, the use of videos can improve student outcomes. [Carlisle \(2010\)](#) created a series of instructor narrated videos in an introductory JAVA programming course. He found that students surveyed in the course reported that the videos helped them learn and increased enjoyment in the class. [He et al. \(2012\)](#) used video tutorials for specific concepts in an upper level undergraduate chemistry course and found that the tutorials improved performance on exam questions relative to a control group without access to the tutorials and that students reacted very positively to the videos based on a survey.

Much of the empirical evidence is based on simple student surveys and does not employ pre- and post-testing, control groups in non-video supported sections, etc.³ However, strong evidence is found by the above authors and others that students have a positive attitude toward the use of various types of videos. That aspect alone, even if it is not correlated with improved learning outcomes, is nonetheless valuable and useful.

3. Background, motivation, our experience

Our school, Bentley University, is relatively selective at the undergraduate level: ACT composite scores are 26 and 30 at the 25th and 75th percentiles. The school enrolls approximately 4200 undergraduate students with about a 60–40% male/female split. The vast majority of students major in a business-related field. We teach an upper-level undergraduate class in monetary economics that serves as a capstone course for a combination economics and finance oriented major. All students in the course were seniors in this particular major. The course uses the Miskhin *Economics of Money, Banking, and Financial Markets* text, along with a variety of supplemental readings. Unlike a standard money and banking course, our course places less emphasis on financial institutions and more on monetary theory and policy.⁴ Class size is typically capped at about 25 students.

We were motivated to try out the video-supported concept for a number of reasons. First, our university has smartboard equipped (Centra) classrooms that allow us to record videos of instructors, along with any media (PowerPoint, web pages, etc.) that they wish to use. Many, or even most, of the videos produced in the literature referenced above involve simple voiceover narrations of PowerPoint, or similar type media. Second, we had become frustrated by having to re-teach some basic economic/finance concepts (such as the loanable funds market, for example) before we could move on to more advanced (and interesting) concepts. Attempts to get students to read sections of the textbook or to review online resources proved of relatively little use. Thus, some of our videos cover review material. Third, we wanted to increase in-class activities without sacrificing coverage of relevant material. Therefore, we also recorded videos on topics that are new to students in addition to videos on review material. Fourth, and related to the second and third points, we always felt pressed for time at the end of the semester making sure that we covered relevant course topics. Putting some course content in video allowed us to cover more material and focus on difficult and complex subjects. Finally, off-loading some content allowed for more flexibility in the classroom by creating additional time for interactive activities.

² See also [Lage et al. \(2000\)](#) and [Herreid and Schiller \(2013\)](#).

³ [Bishop and Verleger \(2013\)](#) make this point.

⁴ See Appendix A (see Supplementary data) for the course learning goals.

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