

# Flipping Higher Education: Using Video Prep Lessons to Change the Classroom Learning Experience

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**Abstract:** Recent studies have suggested students need to be actively engaged to assist in the learning process. However many educators are concerned about how to cover a wide curriculum while incorporating engaging activities. This practice session will focus on one method used to address this challenge: the flipped classroom. In a flipped classroom, teachers create brief video lessons students watch prior to class. The material from each lesson is then applied in class through practice and various collaborative activities. During this session, participants will learn the foundations of the flipped classroom, participate in creating a brief video lecture, and discuss methods for actively engaging students in flipped classroom activities.

## Literature Review

Within the college classroom, lecturing serves as a predominate instructional method. However, studies have proposed that this may not be the optimal instructional method for helping students learn. Lang and McBeath (1992) suggested that people retain only 5% of a lecture and 30% of demonstrations. In contrast, retention is significantly greater when classroom instruction includes group discussion (50%), individual practice (75%), and opportunities to teach others (90%). At MIT, Dr. Walter Lewin provided well-renowned eccentric demonstrations and lectures, yet attendance rates averaged only 50% and the courses had a failure rate over 10% (Dori & Belcher, 2005). This led to the creation of a learner-centered instructional approach called TEAL (Technology Enhanced Active Learning). TEAL classes provided interactive, inquiry-based classes where students worked with the professor to solve complex real-world problems. During the first three years of the program, student achievement and attendance were significantly greater in TEAL classes than in the corresponding traditional lecture classes. In addition, research has supported this emphasis on increasing learner-centered practices in mathematics instruction. Lawson et al. (2002) found a strong significant positive correlation between professors who used learner-centered practices in teaching an undergraduate mathematics class and student achievement ( $r = .92, p < .001$ ). More importantly for reform in K-12 education, Judson and Sawada (2001) found that teachers who participated in a greater number of classes as an undergraduate in which the professors used learner-centered practices were significantly more likely to use learner-centered practices in their teaching of middle and high school mathematics.

Flipping the classroom provides an opportunity to integrate learner-centered practices while still providing an outlet for educators to guarantee all material is obtained by students. In a flipped classroom, teachers create video lessons that students watch outside of the classroom. Inside the classroom, teachers are able to help students practice and apply the knowledge from the videos in engaging and meaningful ways such as experiments and projects. Yoon and Sneedon (2011) found that availability of video lectures in mathematics college courses provided significant increases in final grades. At the K-12 level, Clintondale High School in Detroit, Michigan significantly decreased their failure rate and number of discipline referrals after teachers shifted their classroom instruction to the flipped method (Roscorla, 2011). Potential reasons for success when teaching using the flipped classroom method include: transparency of material and in-class opportunities for students and teachers to build meaningful relationships (Goddard, Tschannen-Moran, & Hoy, 2001); removal of classroom distractors since videos are watched individually (Rosengrant et al., 2011); and the access and availability of the lecture videos when they are most needed (Yoon & Sneedon, 2011).

## Goals and Objectives for the Practice Session

The purpose of this session is to examine and experience a flipped classroom. Participants will learn about the origins, reasoning, advantages, and challenges of creating a flipped classroom. Participants will explore the components of a flipped Introductory Statistics course and consider how these components could be transferred to other courses. Participants will also learn two methods for creating, uploading, and sharing online video prep lessons. Finally, participants will discuss methods for creating engaging and collaborative activities within the classroom setting.

## Description of the Practice to be Modeled

First, this session will be created on a Google Site. This will allow participants to access and review all materials before, during, and after the session. To begin, participants will watch a brief video lesson on the history, success, and setup of a flipped classroom. This video lesson will employ the same techniques I use for my classroom video prep lessons. Next, participants will examine online the structure of a successful flipped Introductory Statistics course that I taught. Discussion will include how the course was created, how videos were shared, the types of activities that occurred in place of lectures, and the preparation time need for creation. I will also share end-of-course survey results about students' attitudes and beliefs of both the flipped classroom experience and mathematics. Finally, participants will create as a group two video prep lessons. The participants will upload and share the videos to the session's Google Site so that they can experience the entire process of the video lesson creation.

## Discussion

As an educator, I recognize the difficulty that many students have in being successful in the mathematics classroom. Too often I sent students home to figure out problems only to have them return frustrated and still not comprehending the concepts. The flipped classroom changed that pattern. Now my students are asking questions, engaging other students in class, and completing activities that I never had time to even consider prior to flipping my classes. While students still struggle with mathematical concepts, they now have an opportunity to get the help they need while they are in class. For this reason, I have seen an increase in student achievement and confidence in their mathematics skills by the end of each semester. With the success I have had flipping my classes, I feel it is important to share the flipped classroom model with other professors in hopes that it may provide the opportunity needed to spark change in their classrooms as well.

## References

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