

Enhancing student success by providing video recordings of traditional lectures

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Abstract

In this study, we explored if there was a difference in the success of students who attended lecture and/or watched videos of the same lecture. Study habits of 27 students were analyzed and their performance on 7 quizzes was recorded. Students who attended all lectures but watched no videos scored an average of 8.73 +/- 1.16 (n=67) on the quizzes, while students who attended no lectures but watched all videos scored 9.20 +/- 1.24 (n=20).

Keywords

Video lectures, online education, traditional lectures.

Background

An ongoing question is the comparison between traditional lectures and online videos of lectures and the effectiveness of both. Video lectures are used in a variety of ways such as fully online courses, blended courses, and flipped classroom. A number of studies¹⁻³ have been conducted on this topic, but most of them focus on the satisfaction of the student with the delivery method. Students still prefer the in-person delivery method above a video delivery, but the benefits of video (the ability to rewind, speed up, and slow down the playback) are noted.

Methods

In the J. Crayton Pruitt Family Department of Biomedical Engineering at the University of Florida, the Quantitative Physiology undergraduate junior-level course was transformed into a flipped classroom format. During the transition, traditional lectures were recorded in a classroom studio. To study the effect that watching videos had on student quiz scores, we included a question in each quiz regarding how the student prepared for the quiz: by attending all the lectures, by attending some lectures, by watching all the videos, by watching some of the videos, or a combination of the above. There were 27 students in the course and they took 7 quizzes in all. The quizzes were 10 multiple choice questions pertaining to the previous two lectures in the course. The quizzes were timed with a time limit of 15 minutes to prevent student from doing the quiz while watching the videos and/or reading the textbook.

Results

Because we continue to analyze our data, these results are preliminary. Seven quizzes for 27 students resulted in 189 data points. Of those, for 110 measurements, students attended all the lectures, and 55 watched all the videos. Most students watched some of the videos and attended some of the lectures. There were 20 measurements where students attended no lectures, but

watched some or all of the lectures, and 67 measurements where students attended all of the lectures but watched no videos.

Our initial hypothesis was that the addition of videos would enhance students grades on the quizzes. So we compared the students who attended all lectures but watched no videos (quiz score 8.73 +/- 1.16, n=67) with those who attended all lectures and watched all or some of the videos (8.24 +/- 1.39, n=49). This hypothesis was invalidated, and actually puzzling. Why would students who add video watching reduce their score?

Our second approach was to compare just the measurements for which students attended no lectures but watched all or some of the videos (9.20 +/- 1.24, n=20), with those who attended all lectures and watched none of the videos (8.73 +/- 1.16, n=67).

Discussion

Other studies have suggested that the students who view videos in conjunction with a traditional lecture are those who have trouble with the material. This could explain the results of our initial comparison. If this were true, it would mean that studies which do not carefully control for the understanding of prerequisite knowledge, would likely show no improvement when additional materials are provided to the students. As shown by our initial results, this is caused by the high performing students not watching the videos.

To further answer the question if video recordings in conjunction with traditional lectures enhances student learning, we need to differentiate students in groups to separate out the high performing students, for whom it does not matter if they have additional (video) materials. The current plan is to use the student's GPA (in this case students are part of a lock-step program and take many of the same courses), or to compare their grade in a prerequisite course

From our second results, we show that watching traditional lectures on video is more effective than attending lecture alone. This is likely caused by the student's ability to view the lectures at a student's own pace, and to have the ability to pause and rewind to take detailed notes.

Further data collection and analysis are needed to answer these questions.

References

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