Efficacy of Pre-Class Asynchronous Recordings on Student Performance in Flipped Classroom Settings

USC Mann
Alfred E. Mann School of Pharmacy and Pharmaceutical Sciences

Project Advisor: Dr. Scott Mosley
Bahram Karparvar, Yasamin Kazemiashtiani, Sarvenaz Atighetchi, Maryam Baniaminheidarlou

Introduction

This study examined the relationship between students' performance and asynchronous videos viewed within a flipped classroom structure. It sought to assess the effectiveness of integrating asynchronous materials and their influence on student academic performance. The aim was to determine whether the average percentage of time spent watching asynchronous recordings for the GMED course among 2nd-year pharmacy students had any effect on their performance. Our study utilized students' average exam scores in the course material relative to the percentage of asynchronous lectures watched to evaluate the effectiveness of their performance. The findings can provide insights into the effectiveness of incorporating asynchronous materials and inform instructors on adapting better strategies for student learning.[1,2]

Objectives

To assess the impact of pre-class asynchronous recordings on student performance.

Methods

- The study will include students enrolled in the general medicine pharmacotherapeutics course (GMED) at their P2 year at USC Mann School of pharmacy from Fall 2021 – Fall 2023.
- The researchers will collect statistical data using class instructor's access to student's asynchronous videos, tracking the amount of time students (as a class) spent watching the recorded lectures, then analyze correlations using Pearson's correlation coefficient.[3]
- We will use Panopto viewing metrics to determine the average viewing per student, calculated as: (average minutes delivered/video duration minutes) / (number of unique viewers/total number of students).
- To analyze the data, we will compare the viewing metric to the means of the exam grades using a Pearson's correlation coefficient.
- We will report correlation coefficients using data for each module exam..

Results

Fig 1) Average Score vs. % Viewer Fall 2021

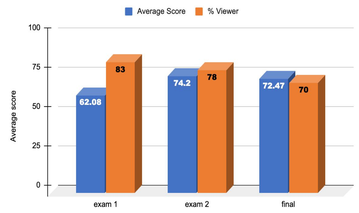


Fig 2) Average Score vs. % Viewer Fall 2022

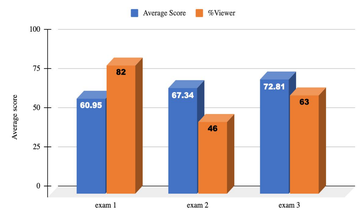


Fig 3) Average Score vs. % Viewer Fall 2023

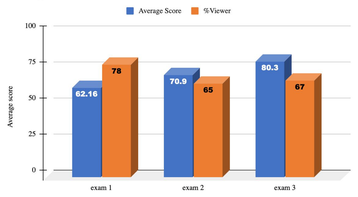


Fig 4) Comparison of % of Viewer over 3 Years

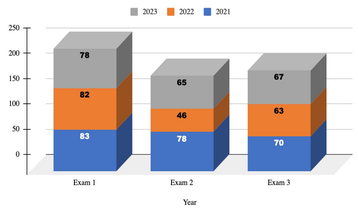


Fig 5) Comparison of Average Test Score Over 3 Years

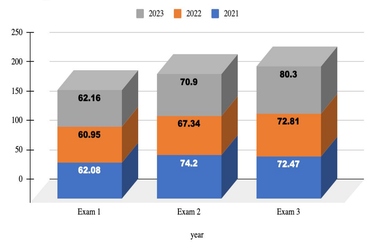


Fig 6) Class of 2021

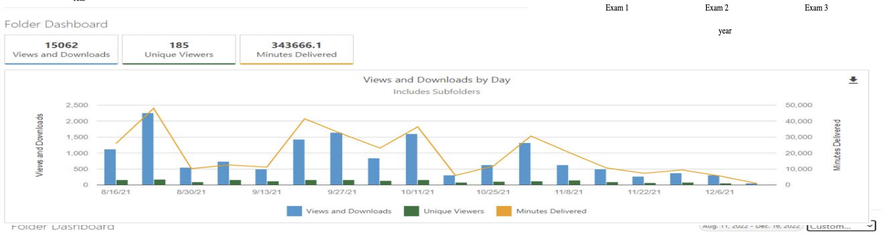


Fig 7) Class of 2022

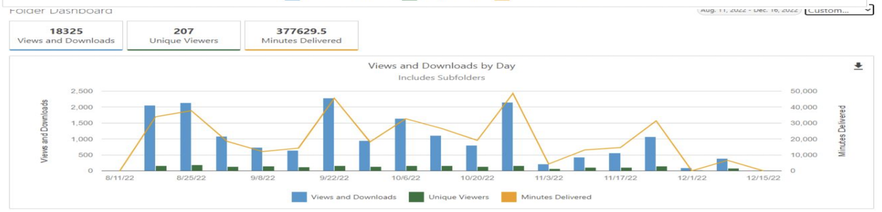
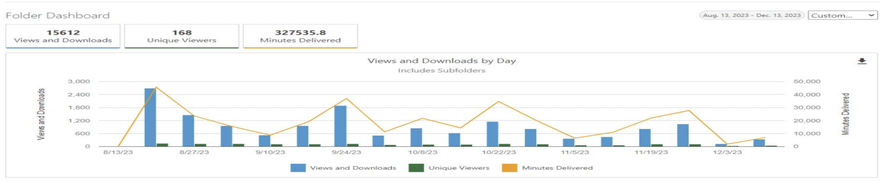


Fig 8) Class of 2023



- Data collected over three years of student performance displayed a class average of 62% for Exam 1, 75% for Exam 2, and 79% for Exam 3. (Fig 5)
- Retrospectively, the average percentage of asynchronous videos watched correlating to Exam 1 was 81%, 63% for Exam 2, and 67% for Exam 3. (Fig 4)
- Results displayed a consistent improvement in class performance from Exam 1 (62%) to Exam 3 (79%). However, the average percentage of asynchronous videos watched exhibited a negative correlation, declining from 81% for Exam 1 to the low-mid 60s for the next two exams.
  - Note: Class of 2021 had 2 midterm exams, 1 final. Classes of 2022 and 2023 had 3 midterm exams and 1 final which did not have any asynchronous videos. Hence, for consistency our results used the final exam of class 2021 to compare to the midterm exam 3 of classes 2022, and 2023. Omitting 2022 and 2023 class finals.)

Conclusion

- The Institutional Review Board (IRB) confirmed that access to individual student data, even if anonymized, was not permissible under the Family Educational Rights and Privacy Act (FERPA). However, approval was granted to utilize class performance data and course viewing data from Panopto under an exempt protocol.
- Following IRB approval, an analysis of the collected data was conducted. It revealed a noteworthy increase in the average exam score, alongside a significant decrease in the number of students watching asynchronous videos after Exam 1. Although certain variables such as students' exam learning or study habits were not considered in the study, a negative correlation was observed between student performance and the viewing of asynchronous videos on exam topics. [4]
- Ultimately, the study found no significant enhancement in students' performance in GMED concerning the watching of asynchronous video topics for each exam.

References

1. PhD CD PhD, and Zachary Taylor. The Importance of Listening to Student Learning | Faculty Focus. Faculty Focus | Higher Ed Teaching & Learning. Published August 23, 2021. Accessed February 15, 2023. https://www.facultyfocus.com/articles/online-education/online-course-delivery-and-instruction/the-importance-of-listening-to-student-learning/

2. Stacy A. Voils, Lindsey M. Childs-Kean, Aaron Thomas / Relationship Between Pharmacy Students' Use of Self-Regulated Learning Strategies and Course Outcomes /American Journal of Pharmaceutical Education Dec 2019, 83 (10) 7566

3. David Schnee, PharmD, Tucker Ward, PharmD, etc./Effect of Live Attendance and Video Capture Viewing on Student Examination Performance./ American Journal of Pharmaceutical Education 2019; 83 (6) Article 6897.

4. Kimberly C. McKeirnan, PharmD,a Karen Colorafi, PhD, MBA, etc./ Study Behaviors Associated with Student Pharmacists' Academic Success in an Active Classroom Pharmacy Curriculum./ American Journal of Pharmaceutical Education 2020; 84 (7) Article 7695.

Acknowledgement

Special thanks to Dr. Scott Mosley as our project advisor for his insightful guidance and expertise throughout the research process.