

Assessing Student Viewing Behaviors for Online Lectures and its Impact on Student Examination Performance

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Background

The flipped classroom is defined as a model where typical lectures are viewed at home by students before a class, so the in-class time can be spent working on exercises, projects, or discussions.¹ Studies have shown that a flipped classroom model can positively impact student performance on assessments of knowledge not only in the pharmacy education system.² One of the key principles for an effective flipped classroom is, however, to ensure students are well prepared for the class by ensuring exposure to the course content prior to the class session. Though most studies assess the impact of the change in course design, few studies assess if students are actually presenting prepared for the class session. Previous studies have shown that students are spending less time preparing or studying than they used to.³ We aim to describe how prepared students presents for an infectious disease course in our pharmacy curriculum.

COURSE DESIGN

The Infectious Diseases Therapeutics (IDT) course is a required, 3 credit, didactic course, located in the 2nd year of the PharmD curriculum. It is a two semester (IDT 1 and 2) course following the successful completion of Biochemistry and Immunology courses in the 1st professional year of the curriculum. The course was developed to build off of Microbiology, which is a School prerequisite, and focuses on the pharmacology of anti-infectives, medical microbiology of pathogenic microorganisms, and disease state management for infections. This provides pharmacy students with the skills to assess patients presenting with an infection, identify appropriate anti-infective therapy, and the skills to monitor for both efficacy and toxicity.

IDT 1 and 2 is structured as a flipped classroom model, where lectures are prerecorded and posted to the campus Mediasite lecture portal for students to review prior to real-time, live workshop sessions. The workshops are designed to apply material presented in the prerecorded lectures to an in-class case based assignment. Though students are not given points for watching the lectures, a graded pre-workshop quiz is given to assess students' knowledge prior to the in-class assignment.

Objectives

The objectives of this study were to assess 1) the association between pre-workshop lecture viewing (pre-viewing) and examination scores and 2) change in student viewing behavior between IDT1 and IDT2.

Methods

This was a retrospective study which included students who completed IDT1 and 2 in 2015-2016. For the primary objective, lecture viewing analytics was evaluated to compare each student's percent lectures viewed before respective workshops to their examination scores on the workshop topic(s). A Pearson correlation coefficient was used to assess this objective. For the secondary objective, the overall percent of lectures viewed in IDT1 and 2 was compared using the Wilcoxon signed-rank test.

Semester	Modules	Exam #	Pearsons	Significance (two-tailed)	N
Fall	Module 1: Microbiology	Exam 1	0.07	0.39	154
Fall	Module 2: Pharmacology		0.222	0.006	154
Fall	Module 3: Respiratory	Exam 2	0.26	0.001	154
Fall	Module 4: GI/GU		0.286	0	154
Fall	Module 5: SSTI	Exam 3	0.149	0.066	152
Fall	Module 6: CNS and HCAP		0.192	0.018	152
Fall	Module 7: Endocarditis and Osteomyelitis		0.33	0	152
Spring	Module 1: Review Antibycobacterial Pharmacology	Exam 1	0.168	0.05	137
Spring	Module 2: STDs and Influenza		0.254	0.002	147
Spring	Module 3: HIV Naïve Cases	Exam 2	0.086	0.297	148
Spring	Module 4: HIV Experienced and OI Cases		0.074	0.369	148
Spring	Module 5: HCV Cases		0.181	0.028	148
Spring	Module 6: Fungal Cases	Exam 3	0.28	0.737	149
Spring	Module 7: Parasitic Cases		0.139	0.094	147

Results

In IDT1, 154 students were enrolled and 151 completed IDT2. Of the 7 workshops in IDT1 there was a moderate correlation between pre-viewing and examination scores in one workshop (Workshop # 7) ($r=.33;p<.000$). Four other workshops in IDT1 also showed a small positive correlation ($r=0.192-0.286;p<0.01$). In IDT2, 2 out of 7 workshops showed a small positive correlation between pre-viewing and examination scores ($r=0.254-0.28;p<0.05$). A significant decrease in pre-viewing over time was seen with the average pre-viewing before workshops in IDT1 and 2 being 44.6% and 37.2% respectively.

Conclusions

A flipped-classroom model has been implemented throughout pharmacy curricula. This study shows that students viewed less than 50% of the material presented in the IDT course prior to workshop sessions. The workshops are designed to help students apply the prerecorded material in hopes to better prepare them for the examination. Though some small positive correlations were seen with some pre-viewing habits and examination scores, overall the association was weak.

Further evaluation regarding the association between viewing habits prior to examination and examination scores will be done. These will be compared to the current data to assess if changes in workshop requirements are needed.

Limitations

Mediasite analytics provides incomplete detail on all possible student lecture viewing habits such as students viewing lectures in groups or using another student's login credentials. Similarly, it is impossible to determine the level of student attention and engagement associated with lecture viewing.

Lecture slides are available on the course Blackboard site. While slides are posted as a support for student note taking, some students have reported reviewing PowerPoint slides instead of watching lectures.

References

1. EDUCAUSE. (2012). 7 things you should know about flipped class rooms. Retrieved July 11, 2017, from <https://net.educause.edu/ir/library/pdf/ELI7081.pdf>.
2. Koo CI, Demps EL, Farris C, et al. Impact of flipped classroom design on student performance and perceptions in a pharmacotherapy course. *Am J Pharm Educ* 2016;80(2):Article 33.
3. Young JR. Homework? What Homework? *Chron Higher Educ* 2002;49(15):A35.