

Analysis of Challenges with Asynchronous Online Lectures in a First-Year Anatomy and Physiology Course

Ishika Tripathi¹; Jacqueline Carnegie, PhD²

¹Faculty of Science, University of Ottawa, Ottawa, ON, CA

²Faculty of Medicine, University of Ottawa, Ottawa, ON, CA

INTRODUCTION: Understanding the effects of asynchronous online learning has become increasingly important as courses resort to online learning during the COVID-19 pandemic. The goal of this project is to understand the challenges faced by students learning anatomy and physiology (ANP) online using asynchronous lecture recordings and the ability of this teaching approach to help students progress through an effective learning experience. Research has been done on online medical education in the past, which shows that asynchronous online learning environments favour students who can watch, listen, and think independently compared to face-to-face learning (Steven et. al, 2002). Research based on cognitive loading has shown no clear statistical evidence of success in online recorded lectures compared to in-person lectures (Chilton, 2008). Researching a more recent and obligatory shift to online learning may provide new insights on the challenges and benefits faced by post-secondary students using asynchronous online lecture recordings. Increasing engagement in first-year courses can help students commit to post-secondary education (Higher Education Quality Council of Ontario, 2011), so finding effective ways to engage students in a first-year ANP course using this new teaching style could help students cement their commitment to healthcare education. This research project explores the difficulties and benefits of asynchronous online lectures to understand how online learning can help or hinder students engaging themselves in post-secondary healthcare education.

CONTEXT AND METHODOLOGY

CONTEXT: Due to the COVID-19 pandemic, many courses offered at the University of Ottawa shifted online. The course studied in this research poster was a first-year ANP course offered in fall 2020 with 355 students enrolled. Students learned through asynchronous online lecture recordings. They used an online platform, Echo360, where they could access lecture recordings, note taking features, confusion flagging, and slide decks. They also had access to lectures through Brightspace and an opportunity to ask questions during office hours on Zoom once a week. This contrasts to in-person ANP lectures held prior to the pandemic, in which lectures were not recorded but students could attend lectures on campus and ask questions at that time.



Research was done on education and asynchronous online education within and outside of the healthcare field



Survey data was collected from 154 anonymous, voluntary students enrolled in a first-year ANP course during fall, 2020



Analytic data was collected from Echo360 to measure timing and frequency of student participation in recorded lectures.

METHODOLOGY: The survey provided qualitative and quantitative data on personal accounts of challenges and benefits faced by students in the course. Echo360 (echo360.org.uk) provided quantitative data on the average view time per recording, timing of attendance to recorded lectures, and the frequency of repeat viewing, especially in relation to final exams. These two methods gave insight pertaining to students' engagement level with lecture recordings as well as their ability to follow a schedule throughout the semester.

RESULTS:

"It was nice to be able to listen to the class when time was available and rewatch parts that were confusing, it was very hard to remain on schedule since I did not have to sit in the class each week which made it harder in the long run"

"I find [online lectures] much easier because I am able to pause and rewind the video until I understand what is being said. I can also rewatch the lectures whenever I need."

"I believe [online lectures have] been harder because we are not able to ask questions about the material right away"

Figure 1. Qualitative data collected from 3/154 students surveyed from a first-year anatomy and physiology course who used asynchronous online lecture recordings. Results show that students believed online lectures were useful due to their time flexibility, but more difficult due to the lack of active face-to-face engagement.

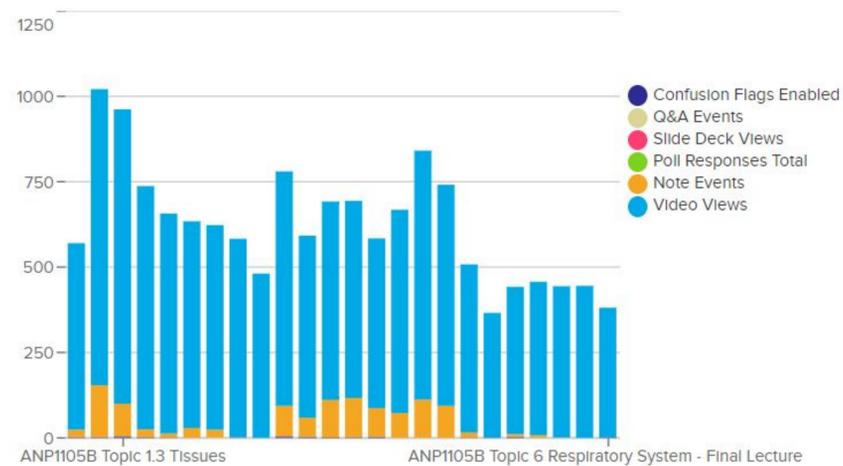


Figure 2. Echo360 quantitative results for total views and engagements for 24 asynchronous recorded lectures in a first-year anatomy and physiology course. Students primarily utilised the Note Events function. Many lectures were viewed more than once, and higher views correlated positively with notes, suggesting that students re-watched and engaged more when faced with specific topics.

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CONTACT INFORMATION: Email: itrip078@uottawa.ca

RESULTS (Cont.): Survey results showed that more students found asynchronous online lectures difficult (44.2%) rather than easy (37.7%) compared to synchronous in-person lectures. Most students were not affected by significant extrinsic or intrinsic cognitive load (90.0%). 58.5% of students rewatched lectures at least partially, and 90.9% found lectures easier to understand after watching recordings. The average number of total views per lecture was 575. The average number of unique views was 270, meaning that 70.9% of students watched recorded lectures at least once.

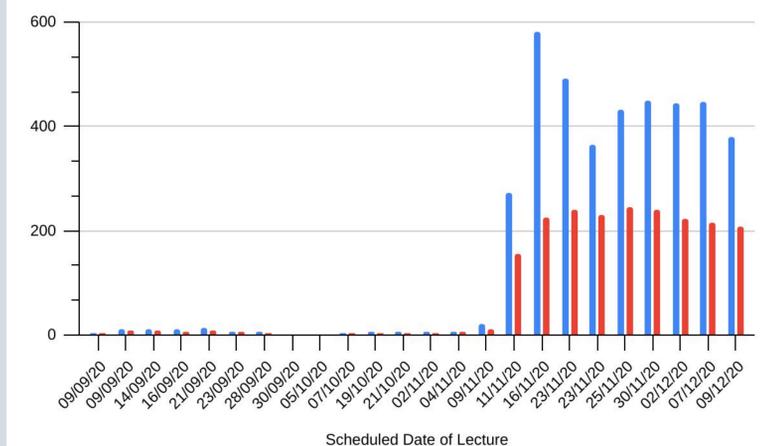


Figure 3. Number of total views (blue) and unique views (red) of 24 recorded first-year anatomy and physiology lecture recordings between November 19th-December 26th, 2020 (with a 15% cumulative final exam on December 22nd, 2020). Some students rewatched part or all of earlier recording to study for the exam. More students watched lectures given after November 19 since course content from the last 8 lectures featured strongly in the final exam.

CONCLUSION: This study showed that a significant number of students benefited from asynchronous online lectures due to their flexibility and minimal extrinsic and intrinsic cognitive load, but some students also had difficulty with the independence required for online learning and could not stay on schedule or ask questions effectively without in-person lectures. These findings are in line with past research (Steven et. al, 2002). Research also showed that using online tools like note taking and tagging can be slightly beneficial for academic success (Gorissen et. al, 2015). Encouraging independent learning and using new online tools could help students benefit more from asynchronous online lectures in future ANP courses. This study has highlighted some challenges and benefits of asynchronous online learning for a first-year ANP course, but more research should be done to enhance effectiveness in ANP education through the use of online tools.

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Scan for survey questions