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Synchronous Online Learning: How do We Measure Engagement?

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Introduction

On March of 2020, in response to the increasing global numbers of the viral disease caused by Severe Acute Respiratory Syndrome (SARS) Coronavirus 2 (COVID-19) many local, state, and federal authorities issued a stay-at-home order to limit further contagion (Nicola et al., 2020; Schuchat, 2020). Educators and students had to learn how to navigate the use of technology, as more than 80% of the global pre-K-12 and college student population shifted to remote, online classes (Sahu, 2020). The empirical literature concerning remote and online learning efficacy largely focuses on the students and their education instead of the *method* of learning (O'Shea et al., 2015). If the teaching method is inadequate, then any content, no matter how important, is not encoded. Pursuant to the COVID-19 remote mandate for learning, there were three options for online education: synchronous, asynchronous, and hybrid learning. Hybrid learning is synchronous, both on-campus and remote students in various locations attend class concurrently. According to the National Survey of Student Engagement (NSSE, 2017) student engagement refers to collaborative learning, the interaction between peers and professors, and access to a supportive learning environment (Kahn et al., 2017). Engaged students participate, attend, and interact with others and the course content. Disengagement may occur as the result of poor motivation, poor instruction, disorganization, anxiety, or poor perceived self-efficacy (Cocea & Weibelzahl, 2011). Behavioral engagement tools for online learners such as, discussion boards, live conversations, and peer collaboration may facilitate engagement (Christenson et al., 2012).

The goal of the proposed research is to compare and define the ways in which college student engagement differs in synchronous online learning relative to in-residence class behavior.

Predictions

It is predicted that, 1.) there will be observable differences in student engagement between synchronous and in-residence learning. 2.) In comparable activities, online-learning classes will have less observable engagement than in-residence; however,

Proposed Method

Participants

We will convenience sample from Pacific University professors within the College of Arts and Sciences to participate in this observational study. The average age of PUO undergraduate college students is 20.5 years. We anticipate sample size variability by approved class.

Materials

The materials for this study included an *Online Engagement Ethogram* and a SPSS statistical software for interpretation of all data. Laptops will be used as a medium for the observers to observe Zoom class sessions. An "Online Engagement Ethogram" we will be used for coding student engagement, noting class time, daily instructor style (i.e., formal, informal), class activity (i.e., discussion, lecture, breakout room collaboration), and attendance. Cohen's kappa for interrater reliability will also be calculated because there will be multiple observers for each class. Zoom software will be used for the online courses, and SPSS version 7 Statistical software will be used for data interpretation and Qualtrics will be used for the post-class self-reported engagement rating.

Design and Procedure

This descriptive study involves zero-one, scan sampling of student class behavior, as it relates to engagement. We will observe behaviors within the *Online Engagement Ethogram* with five variables: Time of Day, Class Size (small, medium, large), Course Modality, Activity, and Instructor Style. Behavioral engagement will fall under two categories, behavioral engagement and social collaborative, with a total score. Before conducting any observation, professors will provide a statement on the class syllabus notifying students of the purpose and possibility of online observation. Assuring any students observed will be documented anonymously with consent provided with the student's agreement to the class project. Each participating professor will record the class session, with the students' consent. Reliability will be achieved using two coders, with their cameras off and mics muted, for each class. Scan sampling of the class will involve counting the number of students engaging in any focal behavior within five-minute increments. At the conclusion of each observed class, students will be emailed a link to provide an engagement rating for the class that day (quantitative), and to explain their ascribed rating (qualitative).

Proposed Results

To assess the first prediction, that students in remote classes will display more disengaging behaviors than students in in-person classes, we conducted an ANOVA. Our hypothesis will be confirmed; an ANOVA will be conducted which will result in a statistically significant difference in the means of the online and in-person groups. To assess our prediction that in comparable activities, online-learning classes will have less observable engagement than in-residence we conducted a 3 Course Modality (i.e., Social Science, Natural Science, and Humanities) x 2 Format (i.e., Remote, In-Residence) Analysis of Variance
A Bonferroni post-hoc test will also be calculated to limit the possibility of getting a statistically significant result, as there are multiple hypotheses due to the nature of the study. An effect estimate for any significant main effects or interactions will also be calculated.

Conclusion

We anticipate the results will demonstrate that disengagement behaviors are more prevalent in remote classes. Reliance to technology is continually growing through its advancement and the demand for students' online resources, and gradually straying away from traditional paper formatted work and resources. The unpredictability of how long the pandemic will force educators to rely heavily on online teaching increases the comfort for students utilizing technology as a crucial part of their learning experience. Our study will provide empirical evidence as to why online learning, focusing on higher education, what variables (e.g., Time of Day, Course Modality, Video) interacting with external distractions can affect a student's ability to stay consistently engaged.

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