Feedback Timing: Relationship to Student Success in Online Education

Emaleia J. Anton

Nicholas A. Smith

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Feedback Timing:
Relationship to Student Success in Online Education

Emaleia A. Anton, Nicholas A. Smith

Department of Psychology, Portland State University

Abstract

It's important that researchers identify factors that support student success in online education because utilization of remote learning has increased over the years. Feedback timing is a vital factor contributing to student success in online educational environments. The purpose of this research is to experimentally examine effects of feedback timing on online student success, which this study operationalizes as student perception of self-efficacy. Conducting a between-subjects experimental design, 100 undergraduate students will participate in an online synchronous crash course and will be randomly assigned to different conditions of the independent variable where they will receive either prompt or delayed feedback after submitting an assignment. After receiving feedback, participants will be asked to complete a survey concerning their perceived self-efficacy in the online course. We hypothesize that students who receive teacher feedback after 1 day (prompt feedback) of submitting their work will be more successful than students who receive feedback after 7 days (delayed feedback). If the results of this study support our hypothesis, then greater attention should be given to improving feedback timing in online educational environments. Further research on this topic should consider applying multiple surveys in their study in order to examine different aspects of online student success.

Methods

Sample

The participants in this study will be 100 Portland State University (PSU) Undergraduates (N=100) between the ages of 18-24 who have never taken a psychology class before. Participants will be recruited by receiving an email through their PSU Gmail account.

Measures

Student Perceived Self-Efficacy: 29 items from Alqurashi's (2019) student perceptions and self-efficacy in online learning environments scale; "completed an online course with a good grade" and "understand complex concepts"

Procedures

- Using a between-subjects experimental design, participants (N=100) will be randomly split-up into two equal groups (N=50).

- Each subject will participate in a 2-hour long online synchronous crash course in introductory psychology material.

- Immediately after the crash course, participants will be asked to write and submit a 1-page essay on what they learned.

- Each group of participants will then be subjected to different conditions of the independent variable where they will receive online teacher feedback on their essay either 1 day (prompt feedback) or 7 days (delayed feedback) after submitting their work.

- Immediately after the subjects receive their feedback, they will be asked to complete an online survey in regards to their perceived self-efficacy in the online crash course

Interpretation

Literature Review

- Simons et al. (2020) conducted a study on 51 alumni who graduated from an online health and social care program in the UK. The study was carried out using the Appreciative Inquiry (AI) approach, which focuses on factors that contribute to an individual's success rather than adverse factors. This approach involved conducting telephone interviews with the participants. From their research, the authors discovered that support from family, tutors, employers, flexibility of course materials, and feedback from teachers were major contributors to student success.

- Simons and colleagues (2018) researched which factors contribute to student success in online classes. In the study, researchers interviewed 12 students participating in a distance learning module. The interviews were focused on gaining qualitative data by answering two main research questions: (1) how did students react to a grade they perceived as bad, and (2) which factors contributed to the student's resilience and continuation in the online module. This information was recorded and then analyzed by the researchers using thematic data analysis, a process which involves rereading the interviews until themes arise from the data. The results of the study revealed that receiving detailed feedback and support from tutors had a significant impact on the success of online learning students. Other factors which contributed to student success were time management, belief in one's abilities, and motivation.

- Weinberg et al. (2012) attempted to determine how the delay between a person's response and the feedback they receive regarding their response affects their feedback negativity, which according to the study is a process that occurs in the brain that differentiates rewards and loses. The participants were 20 Stony Brook University graduates. The study was an experimental design in which quantitative data was gathered by hooking up the participants to an electroencephalograph (EEG) and analyzing their brain activity as they played a simple forced gambling game in which feedback about rewards or losses were presented after either 1 second or 6 seconds. The results of the study suggest that when feedback is delayed, individuals have a difficult time associating their response to feedback received in regards to their response.

- Akizuki and colleagues (2019) conducted research in which their goal was to determine the influence feedback timing has on learning cardiopulmonary resuscitation (CPR) skills. The study was administered on 68 undergraduates from Japan. Research was conducted using a quasi-randomized experimental design in which the participants were separated into different conditions of the independent variable and were either given feedback during or after practicing CPR. The participants were also given a pre-test and post-test regarding their CPR knowledge. The results indicated that feedback plays a necessary role in helping students learn CPR; however, receiving feedback during or after practicing CPR did not alter students' success in gaining CPR skills.

- Coll et al. (2014) attempted to determine how the type of feedback teachers provide contributes to the success of students participating in an online educational course. The participants in the study were the teacher and her 23 students who were part of a postgraduate program at the National Autonomous University of Mexico. The method used in this study was a case study where data regarding teacher feedback was gathered and analyzed. The analysis involved identifying the type of feedback, and how the feedback was distributed. The results of the study indicated that teachers provide feedback in regards to three main dimensions of learning, which were educational content, social participation, and academic tasks (Coll et al., 2014). Results also revealed that teachers provide feedback which cater to the personal needs of the student.

Culture

- Online education has increased rapidly over the years, especially since the global covid-19 pandemic which began in 2020 and is still having a dramatic impact across the world.

- Online educational mediums are a new concept for many students and teachers alike, and both students and teachers are currently being expected to tackle this new concept head on with little prior experience.

- Many studies pertaining to online education have discovered what feedback plays an important role in student success; therefore, it is important to determine how to efficaciously deliver feedback in order to promote student success and self-efficacy in their online courses.
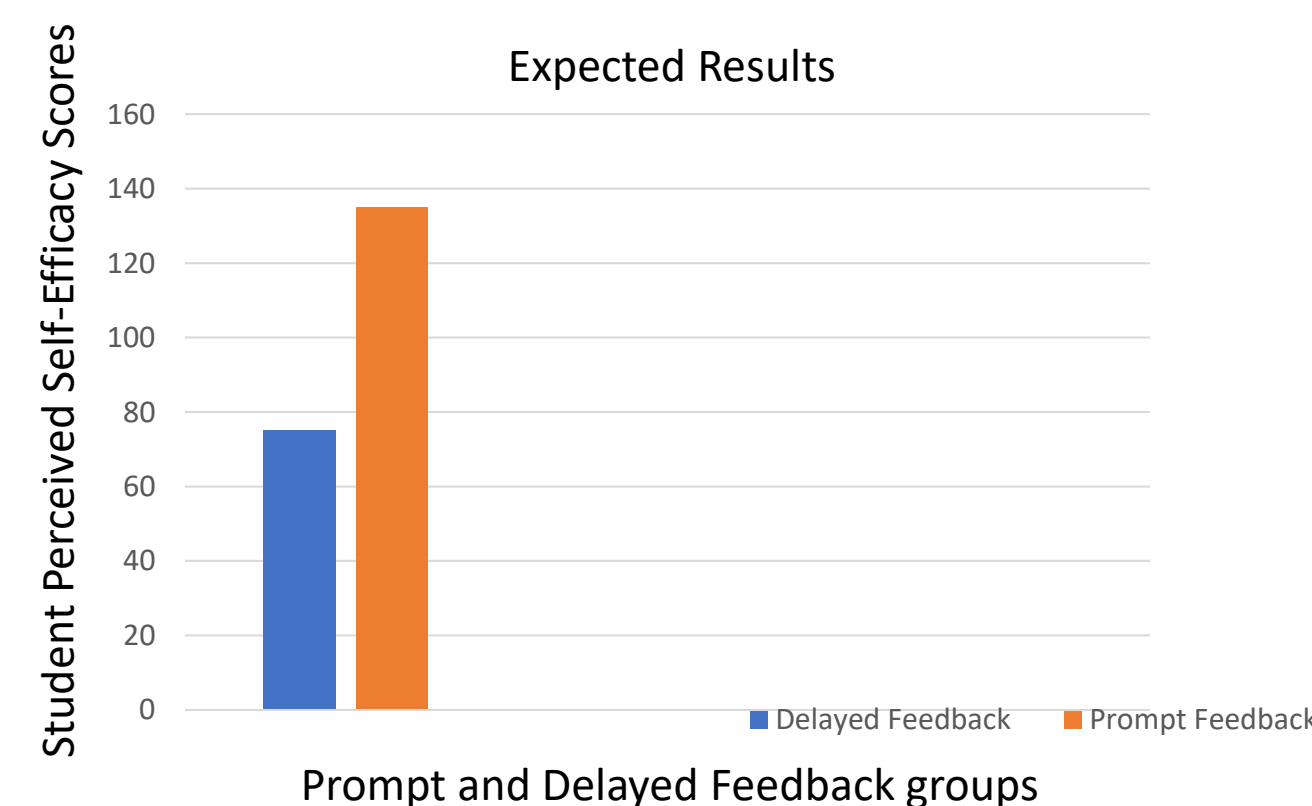
Hypotheses

Hypothesis: Students (ages 18-24) participating in an online educational course who receive teacher feedback after 1 day (prompt feedback) of submitting their work will be more successful, or will have greater self-efficacy, than students who receive feedback after 7 days (delayed feedback).

Expected Results

Because the topic of interest in this study will be the difference of means between the two groups under the different conditions of the independent variable, the independent t-test is best for testing this study's hypothesis. Overall, this study will analyze the data using an independent t-test tested at an α=0.05 in order to compare the mean student perceived self-efficacy of the group of participants who receive the prompt feedback versus the group that receives the delayed feedback. To support my hypothesis, I expect that the t-test will be significant, such that online students who receive the prompt feedback will have greater perceived self-efficacy then those who receive the delayed feedback.

Citations

Akizuki, K., Yamamoto, R., Yamaguchi, K., Yabuki, J., & Ohashi, Y. (2019). The effects of feedback timing and frequency on the acquisition of cardiopulmonary resuscitation skills of health sciences undergraduate students: A 2 x 2 factorial quasi randomized study. *PloS ONE, 14*(7), 13. http://dx.doi.org.proxy.lib.pdx.edu/10.1371/journal.pone.0220004

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Weinberg, A., Luhmann, C. C., Bress, J. N., & Hajcak, G. (2012). Better late than never? The effect of feedback delay on ERP indices of reward processing. *Cognitive, Affective, & Behavioral Neuroscience*., 12(4), 671–677. https://doi.org/10.3758/s13415-012-0104-z

Tables and Figures

Procedures:	Date:
• Subjects randomly assigned to independent variable (prompt or delayed feedback) • Subjects participate in 2-hour long synchronous crash-course • Subjects complete an assignment in regards to the crash-course	Day 1
• Subjects assigned to the prompt feedback group receive feedback • Prompt feedback group completes student self-efficacy survey	Day 2
• Subjects assigned to the delayed feedback group await feedback	Day 3
• Subjects assigned to the delayed feedback group await feedback	Day 4
• Subjects assigned to the delayed feedback group await feedback	Day 5
• Subjects assigned to the delayed feedback group await feedback	Day 6
• Subjects assigned to the delayed feedback group await feedback	Day 7
• Subjects assigned to the delayed feedback group receive feedback • Delayed feedback group completes student self-efficacy survey	Day 8

Expected Results

Student Perceived Self-Efficacy Scores (y-axis): 0, 20, 40, 60, 80, 100, 120, 140, 160

Prompt and Delayed Feedback groups (x-axis)

Legend: ■ Delayed Feedback ■ Prompt Feedback

Discussion

Conclusion

- Online educational mediums are a new concept for many students and teachers alike, and both students and teachers are currently being expected to tackle this new concept head on with little prior experience.

- As the use of online education continues to grow, it is important that adjustments are made in order to provide students with a proper educational experience and greater self-efficacy in their online courses.

- The anticipated results of this study provide strong support for the vital role feedback timing has in contributing to student success in an online educational environment.

Implications

- This study expects to discover that prompt feedback helps students achieve greater success in their online course because they feel they have a greater ability to make adjustments in response to the feedback. These results support the findings in Weinberg and colleagues' (2012) study, which suggest that prompt feedback increases the likelihood that an individual will change their actions in response to the feedback they received.

- The results of the present study should help spur inventive ways in which teachers can provide prompt feedback to their students in order to promote online student self-efficacy.

- This study implies that instructors should strengthen and develop interactive online learning communities in which feedback is given to students in regards to their coursework.

Future Directions

- Future researchers can improve this current study by conducting a case study rather than an experiment in order to gain greater external validity. With greater external validity, researchers will be better able to generalize their findings to the real world.

- Future studies on this topic should consider conducting a longitudinal study in order to better simulate the length of a traditional online course.

- Researchers should consider implementing multiple surveys in their study in order to measure different aspects of student success.