Written, Audio, and Video Feedback: Learning Outcomes and Community of Inquiry Model in Online Learning Curriculum

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ABSTRACT

Traditionally, instructors give feedback in written form, however this mode of feedback can be vague and lack clear examples. Alternative modes of feedback such as audio and video can help students achieve increased comprehension and result in greater sense of belonging in the program or class. Therefore, the aim of this study was to evaluate the various modes of feedback delivery in an online class within a hybrid-learning curriculum and the impact on learning outcomes, effectiveness, and student experience. Participants included a convenience sample of 32 students enrolled in a sixth term course delivered fully online. The Community of Inquiry (CoI) Framework survey was completed after informed consent at the end of the term. Descriptive statistics and Kruskal-Wallis tests were utilized in data analysis. No significant difference was found when comparing mode of feedback with final course and exam grade (p=0.369 and p=0.280). Total mean (SD) of the CoI was highest in the term where video feedback was utilized with a mean score of 4.45(+0.473). Future research involving the CoI and mode of feedback should include comparing differing assignments and optimal quality and quantity that is provided to students.

Keywords: community of inquiry, feedback, hybrid-learning, learning outcomes, physical therapy.

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I. INTRODUCTION

Feedback is essential to the learning process and is defined as comments on a student's work that traditionally has been used to be corrective in nature (Boud & Molloy, 2013). Effective feedback stimulates and motivates learners for improved performance (Leibold & Schwarz, 2015). As online courses and programs become more prevalent, technological advancements can provide various options in delivering feedback. Forms of feedback can include written, audio and video. Traditionally, instructors give feedback in written form, however this mode of feedback can be vague and lack clear examples (Rockinson-Szapkiw, 2012). Alternative modes of feedback such as audio and video can help students achieve increased comprehension and result in a greater sense of belongs in the program or course (Killingback *et al*., 2019). Audio feedback is used by educators an can include recording MP3 files (Leibold & Schwarz, 2015).

In a study by Rockinson-Szapkiw (2012), the author compared audio and written feedback with written only and noted that doctoral learners had better cognitive development and satisfaction with the course instructor. Video feedback can be a time saver for instructors, but also provides clear and personalized messages which include non-verbal communication (Leibold & Schwarz, 2015). Both qualitative and quantitative data suggests that video feedback can enhance student understanding (Mahoney *et al*., 2019; Matthews, 2019). Further, video feedback in higher education can be beneficial in the student-instructor relationship which can then be perceived as more personal (Mahoney *et al*., 2019; Matthews, 2019). Yet, the overall impact on learning outcomes is still unclear (Mahoney *et al*., 2019).

An additional form of measuring the effectiveness of learning and outcomes in online learning courses is the CoI (Garrison, 2016). In Fig. 1, the image displays that the CoI consists of three presences: social, cognitive and teaching, in which the integration of the three can lead to in-depth learning (Garrison *et al*., 1999). Social presence involved the student identifying with the online community, communicating in a trusted environment, and engaging in developing inter-personal relationships. Whereas the cognitive presence is vital to the critical thinking process and is where learners confront and confirm learning. Finally, teacher presence involved the design and facilitation of the course to which the teacher guides social and cognitive presences for effective learning outcomes (Garrison *et al*., 1999). The CoI has been studied in various disciplines comparing modes of feedback revealing that audio feedback, instead of written only, was more effective and resulted in increased feelings of involvement. Further, students felt that the instructors cared for them more (Arbaugh *et al*., 2008). Research involving the best mode of feedback (written, audio or video) is limited to Doctor of Physical Therapy (DPT) programs. Therefore, the aim of

this research was to evaluate the various modes of feedback delivery in an online course within a hybrid-learning curriculum and its impact on learning outcomes, effectiveness, and student experience.

II. METHODS

A. Design

This quasi-experimental study was survey based and spanned three terms. Institutional Review Board (IRB) approval was received from the University of St. Augustine for Health Sciences (USAHS) prior to data collection (IR-UR-0413-356). Participation was voluntary and informed consent prior was provided to all students. Response to survey questions were anonymous.

B. Participants

This study included a convenience sample of students enrolled in a fully online course in the sixth term within the entry-level DPT curriculum. Eligibility criteria included current enrollment in the DPT hybrid-learning curriculum during the designated term and course. Exclusion criteria included students who did not consent to participate, thus not completing the online survey.

C. Interventions and Procedures

The research study spanned three terms in which different modes of feedback were given the same assignment. During the Summer 2020 term, students received written only feedback which would be the control or standard intervention. During the Fall 2020 term students received written and audio feedback. Finally, during the Summer 2021term students a combination of written, audio and video feedback. Feedback, epistemic and suggestive in nature, was given for five consistent discussion posts within the class and completed within a week of completion through technology resources within the Learning Management System (LMS). All feedback was text-based to ensure differences in the dependent variable were due to mode of feedback and consistent. For example, for audio and video feedback, the instructor typed the feedback and read the feedback via the designated mode of delivery. The outcome measure was placed within the LMS two weeks prior to finals.

Fig. 1. Community of Inquiry Model (CoI) Framework (Garrison, 1999).

E. Outcomes Measures

Final exam scores and course grade were collected for each participant from the LMS gradebook at the end of the designated term in the form of percentages. The CoI survey instrument is a 34-item self-report that evaluates the learners' views on three subscales which include social, cognitive and teacher presences. The survey utilizes a 5-point Likert scale (i.e., 5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree). Students responded to which best reflects their feelings regarding a particular statement. Social presence scores range from 0-36, 0-48 for cognitive presences and 0-52 for teacher presence. Higher scores reflect higher student perceived social, cognitive or teacher presences. The CoI survey instrument has good construct validity with a Cronbach's coefficient of 0.91, 0.95 and 0.95, respectively for social, cognitive and teacher presences (Arbaugh *et al.*, 2008; Heilporn & Lakhal, 2020).

F. Statistical Analysis

IBM SPSS version 28.0 (IBM Corp., Armonk, NY, USA) was used for statistical analysis. Data analysis included descriptive and non-parametric tests (Kruskal-Wallis) to compare differences in the final exam score, course grade, total CoI and isolated presences when comparing mode of feedback. P-values < 0.05 were considered to indicate statistical significance.

III. RESULTS

A total of 32 students, out of 34, completed the survey across the three terms resulting in a completion rate of 59.26%. Of the 32 participants, 19 females (58.38%) and 13 males (40.63%) completed the CoI survey. Of those students that participated, a total of 16 students were enrolled in Summer 2020, ten in Fall 2020 and six in Summer 2021.

Average final exam score and course grade in percentage are displayed in Fig. 2 with respect to the mode of feedback provided to the students. No significant difference was found when comparing mode of feedback with the final course and exam grade (p=0.369 and p=0.280). Table I presents the overall mean (SD) CoI scores by mode of feedback. The mean CoI scores by presence for each mode of feedback are displayed in Fig. 3. Total mean (SD) of the CoI was highest in the term where video feedback was utilized with a mean score of 4.45($\pm$0.473). In all three presences of the CoI, the video feedback mean scores were the highest. Total teaching mean score was 4.6($\pm$0.470), social mean scores 4.12($\pm$0.601) and cognitive mean score 4.56($\pm$0.413). The largest difference when comparing mean differences in scores of the CoI presences was noted when comparing written to video feedback within the cognitive (0.26) and social (0.22) scores. The lowest mean CoI presence score was the social presence, 3.90 ($\pm$0.840) which was associated with the term that received written feedback only.

TABLE I: MEAN (SD) CoI SCORE BY FEEDBACK

Mode of Feedback	Mean (SD) Total CoI Score
Written	4.28 (0.93)
Written and Audio	4.33 (0.47)
Written, Audio/Video	4.43 (0.47)

Learning Outcomes and Mode of Feedback
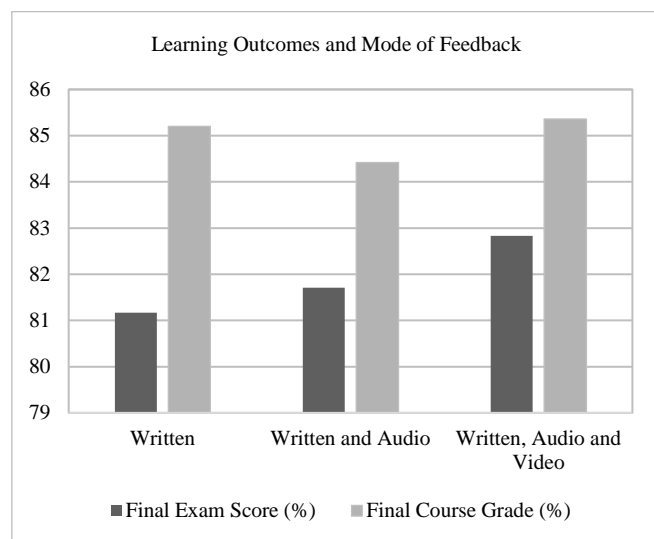
Fig. 2. Learning Outcomes (Final Exam and Course Grade) and Mode of Feedback.
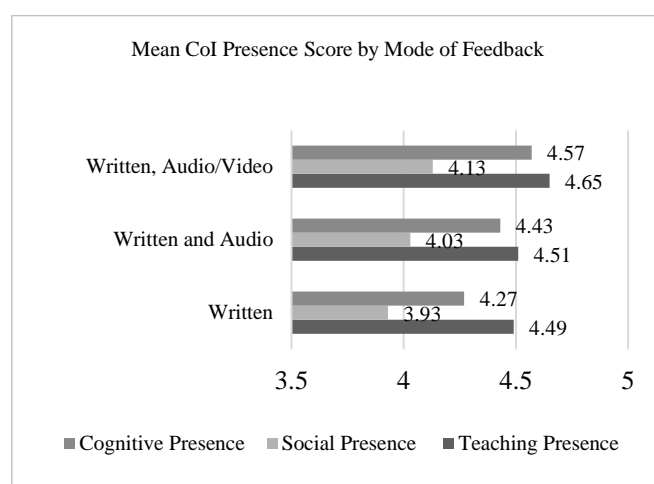
Mean CoI Presence Score by Mode of Feedback

Fig. 3. Mean CoI Score by Presence and Mode of Feedback.

IV. DISCUSSION

In this study, a comparison of the student's final exam and course grades were compared when different modes of feedback were provided to students. Modes of feedback included written, audio and video. Additionally, the CoI survey was completed by participants to explore the impact of feedback on social, cognitive, and teaching presences. The mode of feedback did not result in a significant difference on final exam or course grade. However, video feedback resulted in higher mean scores on the CoI and all individual presences.

Findings of this study are consistent with studies that reveal increased satisfaction, enhanced interactions, retention and feelings of instructor involvement when students are given audio versus text feedback (Carruthers *et al.*, 2015; Race & Williams, 2018). This is in contrast to a study by London (2019) in which audio feedback in discussion boards in an online nursing course revealed a decrease in teaching presence and no effect on the social and cognitive presences of the CoI. Yet, text only feedback revealed a strong relationship with teaching presence, but not social or cognitive presences. Finally, the current study is similar to the aforementioned study in which there was not an impact on course grade when comparing text or audio

feedback. Specific to video feedback, these findings are not consistent with Borup *et al.* (2014) in which asynchronous feedback via video revealed no significant difference in the social presence of the CoI. Yet, qualitatively, instructors felt video was an easier approach to express nuance, was conversational in nature, interactive and provided a connection with students.

As online learning becomes a more predominant environment for learning, faculty should consider the impact of the CoI on course design. Exploring effective strategies in providing feedback in one approach to impacting the social, cognitive, and teaching presences. CoI presences scored higher in the group that received video feedback. Further, all mean CoI presence scores in the video feedback group scored higher those that have been reported prior (Al-Saggaf & Rosli, 2021). Consequently, it may be an optimal form of feedback for purely online courses. Despite emerging technology allowing for greater ease in providing audio and video feedback, careful evaluation and implementation should be taken by faculty when designing courses.

This study is not without limitations such as the small sample size which can result in lack of power in the results. Further, in the current study, the instructor provided feedback for only one type of assignment which was a discussion. External validity is limited as the findings of this study are limited to only one entry-level DPT curriculum and course. Although the CoI is often utilized in online learning, results may not transfer to courses that are not delivered in this format.

Future research in feedback and CoI should include application to varying assignments, courses, and delivery formats. Peer feedback could be included as an independent variable to explore the impact on CoI results, in particular the social presence. Examining other correlations to the CoI in online courses and feedback may give further insight in optimal utilization of feedback. Finally, examining the quality and quantity of feedback could be beneficial to optimize outcomes and the learning environment.

V. CONCLUSION

Effective feedback is an important aspect of the learning experience and of high value particularly in the online environment where students are self-reliant and self-guided. The CoI Framework has been utilized in designing and assessing the quality of online courses and can give meaningful insight for instructions and institutions. Mode of feedback did not have a significant impact on final exam score or course grade. Yet, video feedback did result in a higher mean CoI score. Further, video feedback resulting in higher mean scores on all three presences within the CoI. Therefore, the mode of feedback given by instructors may be a key factor for online course design, facilitation, and experience. However, feedback can take various forms and is dependent on instructor's technology self-efficacy, LMS and time limitations. Future research involving the CoI and mode of feedback should including comparing impact on different assignments, but also the quality and quantity that is optimal.

CONFLICT OF INTEREST

The author declares that they do not have any conflict of interest.

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