IMPROVING STUDENT ENGAGEMENT IN ONLINE COURSES WITH VIDEO EXERCISES: A PILOT STUDY

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ABSTRACT

Online education has grown at a rapid pace in the last few years as more universities develop programs to reach the online community and to offset declines in on-campus attendance. In some cases, this has allowed universities to reach entirely new market segments. The growth of online learning presents several challenges for educators. One of these is that the online environment has brought with it a need to achieve the same learner engagement that is available in a face-to-face or hybrid format. This research addresses the issue of increasing engagement through the use of video exercises where a video link is given to learners along with questions to answer related to the material in the video. Results from the study found that students reacted favorably to the video exercise; the implications from the findings are presented.

Keywords: *online education, technology and student engagement*

INTRODUCTION

Designing online courses to adequately engage students is a continuing problem for educators (e.g., Dixon, 2010; Martin & Bolliger, 2018; Muir, et al., 2019). With online education increasing most recently due to the Covid 19 Pandemic, the methods used to engage students to learn have changed as well and those changes have led to promising results (Zhu, et al., 2022). Lederman (2018) reported that in 2016 there were over six million students in the U.S. enrolled in at least one online course, and the proportion of students enrolled in courses has risen to over 30% (Lederman, 2018). Enhancing the student's engagement in an online format has been a challenge for educators. Methods to enhance student engagement in an online environment include peer-to-peer interactions such as discussion boards, instructor-to-student interactions such as video lectures and feedback on assignments, and digital learning tools such as videos and simulations.

This paper presents exploratory research on using subject matter videos in place of traditional discussion boards in order to enhance student engagement in an online, graduate level asynchronous management course at a small, mid-western university. The paper is organized as follows: First is a literature review of student engagement in online learning that specifically addresses discussion boards and content-based videos. Next, the methodology used to conduct

the study is explained as well as the findings. Finally, the authors discuss the implications of the findings and possible areas of future research.

LITERATURE REVIEW

There are several strategies instructors can use to enhance student engagement in online courses. This engagement is multifaceted because not all students will react in the same way to a particular engagement strategy (Fredericks, Blumenfeld, & Paris, 2004). Additionally, student engagement is not a discrete function, but rather on a continuum. (Robinson & Hullinger, 2008). Factors other than pedagogical strategies that affect student engagement include work-life balance, life commitments for online learners, and the weekly course workload (Tracey, et al. 2019). Thus, student engagement is complex and varies from student to student. With the increase in online learning, however, it is important to continue to explore ways to make the online classroom interesting and relevant to students.

Student engagement is important because it helps motivate students to learn, enhances student satisfaction, and improves student performance (Martin & Bolliger, 2018). While most researchers agree on the importance of engagement, different researchers have found conflicting results. For example, Dixson (2010) found that instructors need to use multiple strategies to engage students and that discussion boards and videos were equally valuable. On the other hand, Tracey, et al. (2019) found that peer-to-peer interaction through discussion boards was not as valued by students as instructor-student interaction which included videos. Similar results were reported by Martin and Bolliger (2018), in their study, students rated video lectures and other videos were considered more valuable to learning than discussion boards. This was particularly true when the videos were relevant and applied to the "real world." In addition, Zhu, et al. (2022) found that adding short videos to class content increased student engagement as well as final exam scores.

The goal of discussion boards is for students to co-create knowledge. Darabi & Jin (2013) found that students use discussion boards for comparing and exchanging basic facts rather than developing creative solutions to problems or engaging in critical thinking. Some discussion boards are too structured and some lead to problems causing student cognitive overload (Darabi & Jin, 2013). Many students also fail to respond to other students' posts and post opinions and facts to meet the requirement for the number of posts (Hall, 2015). Additionally, as the size of some online classes approach one hundred or more students, the logistics of grading discussion boards becomes difficult.

This paper concentrates on "learner-to-content" engagement which is defined as the process of intellectually interacting with the course content and that changes a student's understanding and perspective (Bernard, et al., 2009). Video exercises are a form of learner-to-content student engagement strategies. The video exercises were developed to address some of the challenges observed when using the traditional discussion board.

This paper does not argue that discussion boards are ineffective and should be abandoned. Rather, because of the problems of designing an effective discussion board and the increasing size of classes, this paper hypotheses that video exercises may enhance student

engagement and interest in a more efficient manner. Particularly, video engages students both emotionally and intellectually (Carmichael, Reid, & Karpicke, 2018).

METHODOLOGY

For this study, two graduate MBA elective/ required, and first/second year courses were used as the study environment; one in strategic management and one in business research. A video exercise was developed for each week of the 7-week online courses and was used to replace the weekly discussion board posts used in the course. The videos were selected from hundreds of, Americans with Disabilities Act (ADA) compliant, teaching videos related to business research and strategic management that are available on YouTube with three criteria in mind:

1. The video had to be well done and relate to a specific topic covered in the week's reading material.
2. The video had to be relatively short (5- 12 minutes) to make it manageable for the learners who may need to view them more than once.
3. The video had to lend itself to the development of questions that a learner could give a specific response to for assessment.

Learners were required to view the video and post on a Discussion Board their responses to the questions each Wednesday by 11:59 and though not required, they could post comments about other learner's responses to the video. The video exercises were related to the foundational concepts that were introduced during the week. For example, during week 1 of one of the strategic management courses, students were introduced to the steps involved in the strategic planning process. During week 2, students were introduced to how to write a vision statement. Students would use information from the video to provide a detailed analysis that could be used to help them answer the discussion question for the week. Students would also be able to corollate information from the textbook and the video to help them further develop their initial post to the discussion question. The length of the initial comments for the questions in the discussion could vary, however a 250-word answer was generally acceptable. Students were assessed by the instructor and an academic coach and scored with a maximum value of 10 points.

A survey link was sent to each student enrolled in the course after the last video assignment for the term and was asked to complete the brief survey and make any comments they wanted about the use of the video exercises in an open-ended formatted question. A 7-point Likert type scale was used for the questions rated to the efficacy of the video as a learning experience. The scale was anchored with 0 as "Strongly Disagree" and 7 as "Strongly Agree."

Of the 151 learners enrolled in the two courses, 91 responded to the survey, yielding a 60.3% response rate. The descriptive statistics for the respondents, showed 54% to be females and 43% males; also 86% or 78 respondents work full-time. The data also reported that 47% of the respondents stated that they allocate 11-15 hours per week to the sampled coursework.

SPSS software was used to analyze the resulting data. The analysis produced means, medians, and percentages where appropriate with the results shown in the tables below.

FINDINGS

A wide range of research uses various applications of data science to explore the relationships between dynamic and static variables. For this study we used a survey as our measure of examination. Our interest is using the online learning environment, a dynamic learning arena, to examine whether a graduate student could engage course content at the same level of achievement using video links with questions and answers, as was evident in a face-to-face or hybrid format. The results of our analysis are as presented.

The results from the survey are presented in a question-by-question format below in Table 1. Crosstabs were also run on the data to identify differences in response patterns.

Table 1
Questions with Likert Scale Rankings

Question 1: The video exercises aided in my understanding of the required reading material.						
Strongly Disagree	Moderately Disagree	Slightly Disagree	No	Slightly Agree	Moderately Agree	Strongly Agree
0	2	3	11	11	25	39
Weighted Average		*5.88/7.00*				
Question 2: The video exercises motivated me to look at other material related to the video exercise.						
Strongly Disagree	Moderately Disagree	Slightly Disagree	No	Slightly Agree	Moderately Agree	Strongly Agree
6	1	7	11	22	18	26
Weighted Average		*5.20/7.00*				
Question 3: The video exercises were a worthwhile learning experience.						
Strongly Disagree	Moderately Disagree	Slightly Disagree	No	Slightly Agree	Moderately Agree	Strongly Agree
1	1	8	5	12	22	41
Weighted Average		*5.84/7.00*				
Question 4: The video exercises added more depth to the material in the text.						
Strongly Disagree	Moderately Disagree	Slightly Disagree	No	Slightly Agree	Moderately Agree	Strongly Agree
5	0	6	4	11	23	40
Weighted Average		*5.75/7.00*				
Question 5: The length of the videos made the videos manageable.						
Strongly Disagree	Moderately Disagree	Slightly Disagree	No	Slightly Agree	Moderately Agree	Strongly Agree
0	0	0	1	7	17	65
Weighted Average		*6.62/7.00*				
Question 6: A larger number of video exercises for each chapter would have been beneficial.						
Strongly Disagree	Moderately Disagree	Slightly Disagree	No	Slightly Agree	Moderately Agree	Strongly Agree
9	10	9	22	19	8	12
Weighted Average		*4.17/7.00*				

Question 7. I like the video exercises better than the usual discussion board posts.						
Strongly Disagree	Moderately Disagree	Slightly Disagree	No	Slightly Agree	Moderately Agree	Strongly Agree
2	0	1	6	10	26	45
Weighted Average		*6.11/7.00*				
Question 8: I would like to see more courses use video exercises in their course material.						
Strongly Disagree	Moderately Disagree	Slightly Disagree	No	Slightly Agree	Moderately Agree	Strongly Agree
0	1	2	8	14	22	44
Weighted Average		*6.04/7.00*				
Question 9: I think the video exercises should have been assigned more points per exercise.						
Strongly Disagree	Moderately Disagree	Slightly Disagree	No	Slightly Agree	Moderately Agree	Strongly Agree
3	3	5	28	13	22	17
Weighted Average		*4.97/7.00*				

Table 2 gives descriptive statistics for the sample size of 91 respondents.

Table 2
Descriptive Statistics

Gender	Male	Female	Prefer not to answer
	43% (39)	54% (49)	3% (3)
Which statement best describes your current work situation?			
Full-time student	Work part-time	Work full-time	
12%	2%	86%	
11	2	78	
During a typical week, about how many hours did you spend per week on course work for this course?			
Less than 10 hours per week	33%	31	
11-15 hours per week	47%	44	
16-20 hours per week	16%	15	
Over 20 hours per week	4%	4	

The analysis of the findings from using the Likert Scale are noted in Table 3. The learners were split into two groups with Favorable" having a sum of 51 or above and "Unfavorable" with a sum of 51 or below. The sum was taken from the 9 Likert scale questions. There were 51 in the "Favorable" group and 40 in the "Unfavorable" group.

Table 3 **Analysis of Total Scores**		
		Frequency
Valid	*More Favorable*	*51*
	Less Favorable	*40*
	Total	*91*
Missing	*System*	*1*
Total		*92*

A chi-square test was performed on the data with results in Table 4 below. The only significance found with the relationship between "Favorable/Unfavorable" and Time Spent on Coursework. Those who spent more time on course work had more favorable attitudes toward the video exercises.

Table 4
Analysis of Results using a Chi-square Test

Chi Square Test Favorable/Unfavorable Based On:	Pearson Chi-Square Value/df/Sig	Likelihood Ratio Value/df/Sig	Linear-by-Linear Association Value/df/Sig	N of Valid Cases
Gender	4.023/2/.134	5.131/2/.077	.481/1/.488	91
Work Situation	4.023/2/.134	5.131/2/.077	.481/1/.488	91
Time spent on Coursework	12.666/3/.005	13.149/3/.004	1.569/1/.210	89
Watching Television	1.406/2/.495	.1780/2/.411	.316/1/.574	90
Time spent on Social Media	.265/2/.876	.71/2/.876	.112/1/.738	85
Time spent on Video Games	1.296/2/.523	1.667/2/.434	1.181/1/.277	90

STUDENT COMMENTS ON THE VIDEO EXERCISES

The questions associated with the video exercise need more depth. The grading required students to go well beyond just answering the questions and having questions that asked for more depth would have made that easier.

The question about rhetorical questions seemed unrelated to the week 7 exercise. I also thought the video was much vaguer than the rest.

I have never liked discussions until this class. I was able to apply what I learned in the video and did not have to come up with a repetitive response to my classmates.

I appreciated the video exercises because it was the only thing, besides us, that taught the material. With no actual teaching from Professor's, videos like these are helpful. They were short and sweet and taught the concepts very well.

Great material, loved the setup of this course, aside from weight of quizzes and only one attempt.

Over the course of the last 6 weeks, I have continuously commented on how much the video assignments have been an exceptional element in further learning the weekly concepts.

Videos would be better if they were the professor and not just randomness off the internet.

I found the videos to be a good tool for better understanding the material. Probably because I'm an older student and my learning style prefers interaction with Professor's. Though I couldn't interact with the video, I could watch it again and pick up any key points that I may have missed. The video also caused me to use my textbook more but aided in my understanding of some concepts.

The word cloud shows in Figure 1, in terms of the pedagogical nature of the comments, that material, learning, depth, and understanding were all prominent. This is consistent with the findings that most students viewed the video exercises as favorable.

Figure 1
Qualitative Results of Student Comments

DISCUSSION AND CONCLUSIONS

As is shown in the findings above, most students liked the videos and thought they were a valuable learning experience. Most felt that the number of video exercises and length were good and with a few exceptions, felt they provided a valuable learning experience, added to their knowledge of the text material, and hoped that other courses would adopt this concept. There are, of course, pros and cons of using video exercises.

Pros:

1. Creates a different perspective on the course material than what is in the text.
2. In the business research course, the video creates the opportunity to demonstrate some of the newest data collection techniques, like neurodata.
3. Questions used for assessment can be varied from term to term and newer videos can replace ones that are out of date.
4. Videos enhance the learning experience for visual learners.
5. Videos provide a different experience than the usual discussion boards used in many online course formats.

Cons:

1. The videos can become outdated and would need to be regularly updated.
2. Instructors need to understand that the video exercises are just one tool for student engagement.
3. Some videos are preceded by ads, especially those from YouTube.

These results indicate that videos are a valuable tool for increasing student engagement. However, the drawbacks noted above will need to be addressed by instructors. Additionally, this exploratory study does not directly compare the student engagement level of videos as compared with discussion boards or some combination of videos and discussion boards. Researchers may want to address these issues in the future.

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