

Quality of Asynchronous Discussions: A Case Study of Professor Impact

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Although research suggests synchronous discussions are often favored by students (Skylar, 2009; Barker & Pittman, 2012), complexity in personal schedules makes it difficult to include synchronous communications consistently in distance learning programs. Asynchronous discussions are an obvious alternative, but this approach often suffers from limited student participation (Hewitt, 2005; Wan & Johnson, 1994; Guzdial, 1997). On the one hand, the sharing and exchanging of ideas is necessary for the construction of knowledge (Dunlap, 2005). Online discussions were identified by Richardson and Swan (2003) as one of the activities students found most beneficial to their learning. Ertmer and colleagues (2007) also found that students viewed discussions in distance education as integral to learning. On the other hand, instructional activities must hold value for students. If instructors do not value discussion enough to participate, then students begin to see the activity as superfluous. While instructor-facilitation of distance discussions has been shown to have a potentially negative influence on student participation (Mazzolini & Maddison, 2003), research related to specific instructor behavior and the impact that behavior has on student engagement and the quality of discussion posts is limited. The purpose of the current research is to shed light on how deliberate facilitation approaches implemented by the instructor might motivate students to increase the depth of their engagement in asynchronous discussion.

Literature Review

Through the transformation in technological advances from motion pictures to computers, researchers and educators have been on a quest exploring technology tools to enhance student learning (Hew & Brush, 2007). An asynchronous classroom platform allows educators the opportunity to promote individual student interactions within a text-based computer-mediated medium without time constraints. One positive attribute for using this platform is data can be saved in an easily accessible location for students throughout the course. The advantage this flexibility affords the learner is increased reflection time for posting personal thoughts. In addition, having a reflection period allows students time to process information clearly to better construct thought-provoking responses (Vonderwell, 2003; Benbunan-Fich & Hiltz, 1999), which in turn increases the development and use of higher order thinking skills such as analysis, synthesis, and evaluation (Newman, Johnson, Webb & Cochrane, 1997). Asynchronous platforms are successful only if students contribute to discussions, and learning is best fostered when a plethora of postings are documented (Mazzolini & Maddison, 2003). Dennen (2005) agrees, suggesting that student contributions are essential for online learning, even though they may not be a direct, measurable factor of learning. Additionally, Dunlap (2005) stated that discussions provide an avenue for students to exchange ideas, share multiple perspectives, and clarify understandings; a concept that directly coincides with Vygotsky's (1978) social constructivist learning perspective. Unfortunately, according to previous research, limited student contributions in asynchronous environments continue to pose a problem (Hewitt, 2005; Wan & Johnson, 1994; Guzdial, 1997).

Bassett (2011) conducted a study where asynchronous discussions promoted valuable learning experiences promoting collaborative interactions. Exposure to this inclusive environment enhanced content knowledge, understanding, and critical abilities. Within the study students embraced the notion of sharing peer perspectives on a given article and learning from others' perspective viewpoints. The timing flexibility posed with asynchronous discussions, allowed students the opportunity to produce more thought-provoking responses. Students were more obliged to outline their contributions thoroughly. Garrison and Cleveland-Innes (2005) found that social presence, cognitive presence, and teaching presence strongly impact student engagement.

Particular classroom structures should be established by the instructor to promote meaningful learning activities. Asynchronous online learning studies suggest that students are more likely to experience meaningful learning when involved in participatory learning situations (Pratt & Palloff, 2007). Furthermore, Jong, Verstegen, Tan, and O'Connor (2013) conducted a study utilizing online asynchronous learning and found that the online students scored higher than the face-to-face group on cognitive presence. Online students reported more elaborations and critical discussions with online peers.

Hew, Cheung, and Ng (2010) identified a number of factors which led to limited student contributions in an asynchronous setting based on their review of previous research. The factor most applicable to the current study, included on their list, was students not seeing the need for online discussion. In an attempt to address this concern for relevancy, Hew and colleagues (2010) also compiled a list of empirically based guidelines. First, it is important to ensure that discussion topics have a direct correlation with the intended course curriculum. Students are more prone to actively engage with discussions that produce immediate personal benefits. For instance, Guzdail and Turns (2000) felt that students engaged more in online discussions related to exam reviews and activities which allowed them to explore solutions and critique the solutions of others. Second, mandatory discussions which are graded resulted in positive gains in student contributions. This notion was supported by Cifuentes, Murphy, Segur, and Kodali (1997) and Yeh and Buskirk (2005) who found that increasing the weight of online discussions in the final grade impacted participation. Third, providing students with a clear understanding regarding the purpose of the discussion and specific participation expectations is essential. Lack of purpose and unclear expectations resulted in students losing interest and refraining from contributing (Cheung and Hew, 2005). Alternatively, Dennen (2001) found that providing explicit guidelines, including a quantitative number of required posts, assisted students in knowing when expectations were being met. Finally, having assigned deadlines for discussion postings increased student contributions. Kienle and Ritterskamp (2007) found that the largest percentage of student contributions were evident on deadline days.

Another potential factor identified by Hew, Cheung and Ng (2010) relevant to the current study is the impact the behavior of the instructor or other participants can have on student participation in asynchronous discussions. Establishing ground rules related to appropriate behavior and engagement is one way to guide students' behaviors in asynchronous discussions. Parameters for appropriate behaviors foster a respectful environment (Cheung & Hew, 2007), and enforcing a limited time period for students to respond increases the occurrence of regular and frequent postings. The instructor can also utilize controversial topics and open-ended queries to increase student participation (Cheung & Hew, 2004). When disagreement is expected, as with debatable topics, discussion is often more fervent (Chen & Chiu, 2006). Furthermore, open-ended questions and prompts that encourage students to share their experiences and points of view lead to greater student engagement in discussions (Poscente & Fahy, 2003; Dennen, 2005). One other element that may increase student participation in asynchronous discussions is the involvement of the instructor or tutor in the discussion (Painter, Coffin & Hewings, 2003). Tagg and Dickinson (1995) confirmed that instructor involvement could be instrumental in promoting student participation. They further described effective instructor involvement to include elements such as a prompt response to students' initial postings, directed responses addressing particular points in individual student postings rather than general responses to the group, and a response pattern of acknowledging student contributions followed by guidance (Tagg & Dickinson, 1995). Alternatively, Mazzolini & Maddison (2003) found discussions facilitated by the instructor ended up with shorter discussion threads as opposed to student driven discussions, and it was noted by Fauske and Wade (2003-04) that students felt that instructor involvement could be inherently oppressive to certain student ideas.

The current study assessed the impact specific instructor behaviors had on student engagement in an asynchronous discussion. Research supports the importance of discussion to the learning process, but there is clearly a challenge to overcome when the discussion format is asynchronous in nature. The instructor in the current study employed a number of practices suggested in previous studies to affect student participation. Among those practices was the provision of participation guidelines and expectations, a limited window of time for responses, frequent and consistent instructor responses to individual students, a response pattern that included acknowledgement of student contributions followed by guidance and additional queries, and a grading scheme that placed appropriate weight on discussion participation in the final grade. The transcript of the discussion completed during the experimental period was compared to a transcript of the same discussion completed earlier. Both qualitative and quantitative analyses of the transcripts were conducted.

It is hoped that the information collected will add to educators' understanding of online learners' needs and perceptions, and that the current study will serve as a springboard for future study.

Methodology

This case study was designed to look closer at instructor behavior and to examine student response to deliberate facilitation approaches to better understand what motivates students to constructively engage in asynchronous discussions. Asynchronous distance learning, although convenient, places greater responsibility on the student. Program and course design must clearly communicate this reality, but what role does instructor engagement play in this alternate learning environment? This study attempted to answer, in part, that question. Specifically, what impact does instructor behavior (i.e. prompting students to expand original postings, posing additional open-ended queries, and communicating participation expectations and evaluation procedures) have on students' contributions to asynchronous discussions?

Participants

Study participants were 34 graduate students enrolled in an assessment course offered at a southeastern regional university in the USA. Demographic information for participants was limited, but twenty-nine of the participants were female and five were male. Also, all participants were currently teaching in K-12 education or seeking a degree with certification to obtain a job in k-12 education. Twenty-six students were enrolled in the assessment course in the fall 2 terms of 2011 and served as the control group. Eight students were enrolled in the assessment course in the fall 1 term of 2013 and served as the experimental group. Study information was withheld from participants to ensure results were not impacted by participant knowledge. If participants had been made aware that discussion engagement was the subject of study their participation patterns may have been affected, making it more difficult to determine if the patterns observed were a result of deliberate variable manipulation. Transcripts were not analyzed until the courses concluded and grades were posted. Participant anonymity was protected by the removal of participant names from the transcripts.

Research Design

Participants were members of a convenient sample. The independent variable of interest was instructor behavior. The dependent variable was student engagement in asynchronous discussions. Asynchronous discussions are a common component of the online learning format used at the institution that housed the research. For the purpose of this study systematic and deliberate steps were taken by the instructor to influence student participation in an asynchronous discussion. Although multiple discussions were included in the course structure, the transcripts from only one discussion topic were analyzed in an attempt to gain depth of understanding. The transcript of the discussion potentially influenced by the instructor's behavior during the study was analyzed both qualitatively and quantitatively and the results were compared to an archived transcript of the same discussion held during a previous term when instructor behavior was not deliberately manipulated. The same instructor facilitated both discussions so instructor personality and course climate differences were not an influencing factor. The particular discussion topic was also addressed at the same point during both course terms so timing within the course framework was not an influencing factor. The grading rubric used to evaluate discussion engagement was the same for both groups and therefore could not influence student behavior. During both terms students were reminded of the deadline for their initial discussion posting via email. In addition to this reminder, participants in the experimental group were provided with additional information related to participation expectations of the instructor. Students were encouraged to respond throughout the discussion period. They were made aware of the instructor's intention to respond to students and pose additional questions. Students were also informed that their participation would be evaluated, in its entirety, only after the close of the discussion period and points would be awarded based on their overall engagement. During the control group's discussion period the instructor posted some supportive comments, but a specific attempt to contribute to the discussion was not made. During the experimental group's discussion period the instructor made a concerted effort to elaborate on student postings and posed additional questions related to the content of postings.

Transcripts

Transcripts for the two asynchronous discussions were quantitatively evaluated to determine differences in post length and frequency. In addition, the transcripts were qualitatively analyzed for types of participation. The study's researchers found that the asynchronous discussions did not include non-substantive material.

Students generally refrained from chatting during formal discussion, and improved interface systems have all but eliminated technical issues that may have led to procedural or technical statements in earlier years of distance learning. As a result, all lines of text in the discussion transcripts were included in the analysis. The researchers were interested in evaluating engagement between students and instructor and engagement with one another.

Data Analysis Procedures

The following procedures were followed for gathering and analyzing the data.

- Transcripts were evaluated to collect data related to instructor and student post frequency and length. Independent sample t-tests were run to determine if differences in post length and frequency between the control and experimental groups were significant.
- Transcripts were also qualitatively evaluated to determine participation differences in individual threads of the discussion, and to identify patterns in student participation to better understand how students reacted to the deliberate interactions of the instructor.

Results

The data collected from the transcripts allowed the researchers to develop a tentative answer to the research question; “What impact does instructor behavior have on students’ contributions to asynchronous discussions?” Quantitative data uncovered some significant differences in student discussion participation with respect to post frequency and subsequent posts length, but a closer analysis of the transcripts reveal an interesting difference in participation patterns of students in the experimental group when compared to the control group. It is these differences in engagement that may be most meaningful to distance learning course designers and instructors.

Quantitative Analysis

By design there were differences in the participation practices of the instructor during the control and experimental discussion periods. In addition to the various guidelines and procedures discussed earlier, information related to the instructor’s discussion participation is also of interest. The instructor posted seven responses to the discussion board during the control group’s discussion with an average of 13.43 words per post. Alternatively, the instructor posted seventeen responses to the discussion board during the experimental group’s discussion with an average of 86.12 words per post. It was the belief of the researchers that deliberate actions taken by the instructor, such as direct and frequent posting, would influence the engagement of students in asynchronous discussion. Statistical analyses were conducted to determine if differences in initial post length, number of posts, length of subsequent posts, and number of posts per thread existed. The researchers did not expect to see a difference in the initial post length of the two groups, but the data was analyzed none the less. The average length of initial posts for the control group was 256.15 words, while the average length for the experimental group was 277.5 words. Table 1 contains the results of the t-test for independent samples. The results indicated no statistically significant difference existed, $t(32) = .344$, $p = .733$, between the initial post length of the control group ($M = 256.15$; $SD = 162.66$) and the initial post length of the experimental group ($M = 277.50$; $SD = 114.29$).

Table 1: Initial Post Length

Group	n	M	SD	t	df	p
Control	25	256.15	162.66	.344	32	.733
Experimental	8	277.50	114.29			

(Note: one control group participant did not post an initial response)

The analysis of the total number of responses posted for the discussion also revealed that there were no statistically significant differences in the groups. Table 2 contains the results of the t-test for independent samples. The results indicated no statistically significant difference existed, $t(32) = 1.952$, $p = .060$, between the number of responses posted by the control group ($M = 3.62$; $SD = 1.30$) and the number of responses posted by the experimental group ($M = 5.13$; $SD = 3.27$). Although the results were not significant, the researchers believe that the difference observed is meaningful. Students in the experimental group posted, on average, 1.5 more posts than their counterparts in the control group.

Table 2: Number of Posts

Group	n	M	SD	t	df	p
Control	26	3.62	1.30	1.952	32	.060
Experimental	8	5.13	3.27			

The length of responses posted after the initial response was also analyzed. Table 3 contains the results of the t-test for independent samples. The results indicated a statistically significant difference in the length of subsequent posts, $t(99) = 2.218$, $p = .029$, between the control group ($M = 85.56$; $SD = 50.17$) and the experimental group ($M = 114.87$; $SD = 81.18$). The researchers believe the length of these subsequent posts reveals something about the thought and depth students exhibited in their responses to classmates. The experimental group not only posted with more frequency, their responses were also substantially longer than the responses of the control group.

Table 3: Length of Subsequent Posts

Group	n	M	SD	t	df	p
Control	70	85.56	50.17	2.218	99	.029
Experimental	31	114.87	81.18			

Typically, a discussion thread is created when a student posts their initial response to the discussion prompt. This pattern was observed in the analyzed transcripts. Twenty-five of the twenty-six class participants in the control group posted an initial response to the prompt and there were twenty-five threads in the transcript. Eight participants in the experimental group posted an initial response to the prompt and eight threads were present in the transcript. The researchers analyzed the threads to determine how many posts were included in each thread. Table 4 contains the results of the t-test for independent samples. The results indicated a statistically significant difference in the number of posts attached to each discussion thread, $t(31) = 3.113$, $p = .004$, between the control group ($M = 3.04$; $SD = 1.51$) and the experimental group ($M = 5.88$; $SD = 3.80$). The researchers believe that the number of posts included in a single thread shed light on the depth of discussion. The experimental group posted, on average, 2.8 more responses to each thread when compared to the control group.

Table 4: Number of Posts to Each Thread

Group	n	M	SD	t	df	p
Control	25	3.04	1.51	3.113	31	.004
Experimental	8	5.88	3.80			

Qualitative Analysis

In addition to the concrete evidence the numbers present, there were several observations made during the qualitative analysis of the transcripts. The first of these observations was that students in the control group did not reply to any response posted to their initial discussion posting. That is, once they initiated a discussion thread they did not revisit that thread to engage in additional discussion with classmates that responded to their ideas. Alternatively, five of the eight members of the experimental group responded to classmates that posted thoughts in response to their initial discussion posting, and three of that five posted more than one response to classmates that responded to their thoughts. Another interesting finding revealed in the analysis is that only three of the seventy subsequent responses posted during the control group's discussion were posted in response to thoughts expressed by someone other than the author of the discussion thread, and two of the three were responses posted by the instructor. This is likely indicative of students engaging in surface level participation. The grading rubric requires students to respond to at least two classmates and based on these findings it appears that students simply read responses of a few classmates; possibly only the two they responded to, posted comments and exited the discussion. Alternatively, twenty-five of the forty-eight subsequent responses posted during the experimental group's discussion were posted in response to thoughts expressed by someone other than the author of the discussion thread. Nine of the twenty-five were posts made by the instructor, but the majority of these responses were posted by students. This behavior is likely indicative of more thoughtful engagement and required students to read subsequent posts as well as original posts. The grading rubric for the experimental group was not altered; like the control group, they were only required to respond to at least two classmates.

To add to information about subsequent postings, the researchers identified layers of discussion. A layer of discussion is defined by the researchers as a strand within a discussion thread. For example, the post that initiates a new discussion thread would be considered the first layer of a discussion. Thoughts posted in response to that initial posting would be considered the second layer of discussion, and the pattern continues. The control group's discussion transcript revealed three layers of discussion. There were twenty five level one posts because there were twenty-five discussion threads created. Three of the seventy subsequent posts were found in layer three, and the remaining sixty-seven subsequent posts were in layer two. On the other hand, six layers of discussion were identified in the experimental group's discussion transcript. There were eight level one posts because eight students initiated discussion threads in response to the prompt. Then twenty, twelve, nine, three, and one responses were posted in levels two through six respectively. This particular pattern emphasizes the difference in engagement in the discussion between the two groups.

Finally, and perhaps most telling, posting patterns of students were analyzed. The deadline for students' original responses to the discussion prompt was a Thursday and the discussion closed on the following Sunday. The deadline schedule was the same for both the control group and the experimental group. Three students in the control group missed the initial Thursday deadline, while no students in the experimental group missed the deadline. Based on transcripts, the discussion for the control group began on a Wednesday and continued through Sunday for a total of five days. The discussion for the experimental group began on a Tuesday and continued through Sunday for a total of six days. Figure 1 shows the distribution of posts for each group over the six day discussion period. Day three represents the deadline day for the initial post to the discussion prompt and day six is the day the discussion closed. Comparing the activity of the two groups it can be said that the control group's discussion was concentrated around the initial deadline day and the closing day of the discussion. Alternatively, the experimental group's discussion activity was more evenly distributed over five of the six days of discussion. From an instructional perspective, it appears that the experimental group revisited the discussion posts throughout the discussion period rather than simply posting on the deadline day and returning on the closing day simply to meet the required guidelines for point assignment.

Figure 1 Posting Frequency by Day

Conclusions and Future Study

Discussion is an integral part of the process of knowledge construction and when facilitated properly can be one of the more beneficial elements of a distance learning course structure. The facilitation of asynchronous discussions is likely one of the more influential factors impacting student engagement. Research has suggested that instructor facilitation is often ineffective, but the results of the current research study indicate that particular instructor behaviors can lead students to participate more regularly and include more depth in their responses to discussion prompts and classmate thoughts. Assignments of any kind are only valued by students if students believe they are valued by the instructor. An instructor's role in face-to-face discussion might be to redirect erroneous thoughts or pose additional questions to encourage students to elaborate on ideas they express or consider concepts from multiple angles. The instructor's role in asynchronous discussions is no different. The discussion format allows for flexibility in time schedules, but discussion only adds to student learning if students read and respond to postings throughout the discussion period. When instructors engage with their students, supporting their thoughts, adding additional topic specific comments and posing questions to stretch student thinking they clearly set an example for students to follow. Add to this a statement of expectation, and students recognize the value the instructor places on discussion assignments and participate accordingly. Although the current study indicates active engagement of the instructor can positively impact student participation in asynchronous discussions, alternative approaches, such as student facilitation, might produce similar results. Instructor engagement in asynchronous discussions is time consuming and can be difficult to maintain throughout a course term when paired with responsibilities such as course development and assignment evaluation. Research comparing instructor facilitated and student facilitated discussions may help educators to understand what motivates students to participate fully in asynchronous discussions. Research could identify facilitation style differences that exist between instructors and students, and contribute to understanding how these differences are perceived by class participants. It may also be of interest to collect data on student preferences related to discussion facilitation.

As a final point, the one limitation of the current study that may have impacted the outcome was the difference in class size between the experimental and control groups. Although the design of the study attempted to control for a variety of extraneous variables, class size was one variable the researchers did not have authority to manipulate. It is possible that the smaller class size of the experimental group contributed to student engagement in the asynchronous discussion evaluated. Active participation in asynchronous discussions requires students to read, the sometimes lengthy, thoughts of all classmates and in this case the instructor. If the group participating is small the amount of content to read is more manageable. Perhaps facilitating multiple discussions with small groups of students in a large class would lead to greater student engagement. Student enrollment fluctuates for a variety of reasons, but instructors are still charged with effectively engaging students in the learning process. Discussion is only one tool used to facilitate learning in an online environment, but understanding how to best employ that tool is paramount to maintaining integrity in distance learning programs. Additional research is needed to substantiate the findings of this study and to direct the efforts of course instructors and developers.

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