# Impact of Instructor Intervention on the Quality and Frequency of Student Discussion Posts in a Blended Classroom

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**Abstract**

This quasi-experimental study examined the impact of structured instructor postings on the participation and performance of student discussion groups in a blended classroom. Undergraduate students enrolled in an instructional technology course were assigned to either a treatment (instructor postings; n=97) or control group (no instructor postings; n=98) for three distinct discussion topics spanning a six-week period. A crossover design was used to control for timing and instructor biases. Resulting student posts from all three discussions were compared between the groups with respect to quality and frequency. Quality of student discussion posts was determined based on an assessment scoring rubric, while frequency was measured in terms of the number of student posts. Results indicated that instructor posting did not impact the quality of student posts but did negatively correlate with student participation as measured by the frequency of their posts. These findings suggested that although students received equal quality scores in both situations, different posting strategies were utilized in the presence or absence of instructor posts. Further research is needed to explore specific strategies students employ when posting with and without instructor intervention, and to consider how this knowledge can be used by instructors to support students in online discussions.

**Keywords:** asynchronous, CMC, participation, facilitation, online learning

## Introduction

There is a lack of consensus on the level of instructor intervention needed to effectively facilitate student participation and learning in asynchronous discussions. Expert opinions and available data on the impact of instructor intervention in asynchronous discussions are inconsistent and can depend on whether the focus of a discussion task is to promote participation (Pena-Shaff, Altman, & Stephenson, 2005) or meaningful learning (De Wever, Schellens, Valcke, & Van Keer, 2006; Marra, Moore, & Klimczak, 2004). Some researchers suggest instructor presence and participation in asynchronous discussions improve student learning (Beaudoin, 2002; Brookfield & Preskill, 2012; Kearsley, 2000; MacKnight, 2000; Muirhead, 2005; Walker, 2005) and increase participation (Bedi, 2008; Beadouin, 2002; Mandernach, Dailey-Hebert, & Donnelli-Sallee, 2007). Contradictory research indicates that instructor participation in asynchronous discussions can neutralize or hinder student participation and learning (Andresen, 2009; Horton, 2000; Mazzolini & Maddison, 2003; Swan & Shih, 2005). Other researchers argue that instructor interventions in asynchronous discussions can be beneficial but only when used in moderation (Ahern, Peck, & Laycock, 1992; Bonk & Cunningham, 1998; Guldberg & Pilkington, 2007; Hara, Bonk, & Angeli, 2000; Heckman & Annabi, 2006).

Regardless of findings, the prevalent underlying assumption is that students have the potential to behave differently in online discussions based upon the presence or absence of instructor participation. With potentially conflicting research findings, instructors can become confused about how to support students in asynchronous discussions in blended classrooms. Instructors want to support students and maximize both participation and learning, but previous research has primarily investigated the impact of instructor involvement on either student participation or on levels of learning. Results suggest that too little or too much intervention has the potential to prevent students from receiving the full benefits of the asynchronous discussion experience, but less is known about the impacts of instructor participation on the combined student behaviors of participation and learning.

This study examines the impact of a moderate level of structured instructor intervention on an asynchronous discussion in a blended classroom environment. It seeks to identify how an instructor's postings affect student behavior in the asynchronous discussion experience. Specifically, this study investigates the effect that moderate level instructor postings have on both the quality and frequency of student participation in asynchronous discussions. The purpose of this investigation is to offer some potential resolutions to conflicting findings in the extant research and to extend the research by considering how both the quality and frequency of student posting behaviors are impacted by instructor participation. Results of this study seek to provide guidance to instructors regarding the degree of instructor intervention required to effectively facilitate student participation and learning in asynchronous discussions occurring within a blended classroom.

**Asynchronous Online Discussions**

Asynchronous online discussions are a form of communication that can organize messages into "threads." A thread is a chain of messages that reply to each other, forming a discussion. There are many perceived benefits associated with student participation in this type of discussion. Due to their more flexible yet structured nature, asynchronous discussions can help meet the challenge of student-centered instruction by providing the opportunity to construct knowledge through interaction with peers (Conrad & Donaldson, 2011; Jonassen, Davidson, Collins, Campbell, & Bannan-Haag, 1995; Palloff & Pratt, 2010). Online discussions can serve as a great equalizer in a blended classroom, offering all learners an equal opportunity to make their thoughts known and to respond to others. Learners can read a post, take time to reflect, and make a thoughtful response when they are prepared to do so (Brookfield & Preskill, 2012; Harasim, 1990).

Threaded discussions may also help an instructor to become more adaptive to learners. By monitoring the discussions that take place between students, an instructor can not only identify topics that are well understood but also those that need to be addressed more thoroughly (Wang & Chen, 2008). This information can help an instructor to structure class time or course materials more effectively. Some instructors may choose to address more straightforward material in asynchronous discussions so that class time may be used more efficiently, as is frequently the case in flipped classroom situations (Harmon, Alpert, Histen, & Lambrinos, 2013). Additionally, researchers say that threaded discussions can offer increased contact between students and instructors, as instructors are able to assist a greater number of students online than in the classroom since they are not required to meet at a common time or place to address a specific student comment or query (Goldman, 2011; Harasim,1989; McComb,1993; Mandernach et al., 2007).

The threaded discussion environment can also be useful for discussing sensitive or controversial issues (Harmon, et al., 2013; Horton, 2000). Students in an online environment are able to escape the confines and inhibitions involved with sharing ideas verbally in a face-to-face (FTF) learning environment. This blending of FTF and online communication can facilitate the advancement of new and exciting ideas. Additionally, threaded discussion provides the ability to archive all discussions. Teachers or students can check the complete record of a discussion (assuming of course that the discussion is archived and accessible). This also allows instructors to evaluate and assess student contributions in a way that would be very difficult in a FTF or synchronous online environment (Brookfield & Preskill, 2012; Davie, 1987; Harmon et al., 2013; Palloff & Pratt, 2010).

As indicated above, there are many potential benefits to the use of asynchronous discussions in a blended classroom. As Brookfield and Preskill (2012) suggest, discussions can help students become connected to a topic and can encourage attentive, respectful listening. They can also increase student

capacity to reflect and communicate ideas in a clear and meaningful way, both with each other and with the instructor. Although asynchronous discussions offer great potential, proper implementation and facilitation can be challenging for instructors. As noted by Abawajy (2012):

Although the lecturers and learners are increasingly comfortable with the use of information technology for communication, they are still grappling with strategies to ensure their effective use and achievement of quality learning outcomes.

> …[O]nline asynchronous discussion forums have become an integral part of teaching and learning in higher education. However, there are considerable challenges involved in designing discussion forums for learning and teaching arrangements that can support desired learning outcomes. (pp. 11-12)

**Challenges of Asynchronous Discussions**

Researchers have identified numerous challenges associated with the use of asynchronous discussions for learning purposes. A crucial problem is lack of student participation (Andresen, 2009; Brookfield & Preskill, 2012; Conrad & Donaldson, 2011; Hammond, 2005). Not all students relish the opportunity to make their views known or to engage in scholarly discourse. Letting learners know how important these discussions are to learning may help but will not necessarily guarantee participation. To better understand how to support students in asynchronous discussions, instructors may wish to consider reasons behind student reticence.

One potential reason for student reticence is lack of familiarity with the target technology, which can severely curtail participation. Despite the popular belief that students are savvy with most technologies, Thompson (2013) suggests "the range of technology tools used by the digital natives is more limited than what the popular press suggests" (p. 9) and indicates students may require scaffolding to properly implement unfamiliar technologies in instructional environments. Similarly, a less recent study by Klipowicz and Laniak (1999) asserts computer training must always be addressed when utilizing online tools such as discussion boards. More recent scholars continue to support this assertion and suggest the incorporation of "test" or "practice" discussions at the beginning of a course to ensure student familiarity with this specific technology (Ko Ko, & Rossen, 2010; Palloff & Pratt, 2010). In addition to lack of familiarity with new technologies, students may also experience discomfort when responding within the context of an unknown online group. This concern may or may not be applicable to blended classroom settings, depending on whether students are presented opportunities to form relationships FTF prior to the online discussions. Researchers suggest students must develop relationships first, prior to engaging in serious scholarly discourse (Dennen, 2005; Guldberg & Pilkington, 2007; Salmon, 2000). As introduced above, a recommended way for instructors to familiarize students with asynchronous technologies and facilitate the building of relationships is to provide low-stakes introductory discussion topics or online ice-breakers (Bedi, 2008; Ko et al., 2010; Palloff & Pratt, 2010).

Although the aforementioned suggestions may help to alleviate initial student reticence, simply establishing an asynchronous discussion forum, familiarizing students with new learning technologies, and providing community-building questions or topics of discussion are not sufficient on their own to ensure success in asynchronous discussions (Guldberg & Pilkington, 2007). Heckman and Annabi (2006) argue that to increase student participation, students must also be held accountable for participation in discussions, which can be accomplished by assigning grades in accordance with the quality and frequency of their posting to the asynchronous discussion group. Without accountability, students are much less likely to participate in these discussion groups. While grades can motivate students to post, researchers suggest that instructors must establish clear expectations for student participation to ensure that students understand the desired levels of interaction, such as response time and frequency of participation.

The creation of transparent scoring rubrics has been recommended to ensure that students understand the importance of participation and to provide more precision, formality, and accountability in establishing discussion expectations (Andresen, 2009; Bedi, 2008; Hammond, 2005; Heckman & Annabi, 2006; Palloff & Pratt, 2010). Additionally, scoring rubrics should reflect the primary purpose of the discussion task (Dennen, 2008). Scoring of discussions created for the purpose of increasing higher order or critical thinking skills should focus on the metacognitive and cognitive dimensions (Henri, 1992) and should be

scored differently than discussions focused on general content acquisition (Marra, et al, 2004). Similarly, scoring rubrics for discussions that are primarily used to increase student engagement should emphasize participation. Dennen (2008) suggests that both demonstration of knowledge and student interaction are equally important when assessing quality of discussion posts. Thus, she asserts assessment rubrics for discussions should include the major activities performed by students during general content acquisition, which include "read (source documents, each other's messages), write (their own thoughts and conclusions), and engage with others (ask questions and provide feedback)" (p.210). Including these three items within a scoring rubric holds students accountable for all aspects of an asynchronous discussion aimed at increasing general content acquisition.

In addition to holding students accountable, Gilbert and Dabbagh (2005) point out that the design of online discussion activities has a significant influence on the quality and frequency of student posts. Discussions should be instructor initiated (Ko et al., 2010), anchored in the content topic being covered in class, and interesting in nature. In order to increase participation, Horton (2000) suggests that tedious or boring topics should be avoided because they lack the ability to spark learner interest. Similarly, Andresen (2009) stresses that instructors should spend sufficient time in advance preparing carefully thought-out discussion questions that are stimulating and directly related to class subject matter.

Research pertaining to the design of asynchronous discussions is relatively uniform with respect to recommendations for instructors. However, this is not the case when considering the role of the instructor relative to intervention in or the facilitation of online discussions. Bender (2003) describes a facilitator as one who enhances student learning by encouraging active participation in discussion and by helping to see the activity as meaningful and relevant. That said, the degree of instructor intervention needed to achieve successful facilitation remains a subject of debate and is based on the learning context and desired outcomes.

According to Andresen's (2009) review of literature related to asynchronous discussions, increased instructor intervention decreases learner-to-learner interaction because learners rely on the instructor to carry the discussion. As a result of his review, Andersen recommends that instructors spend time up front preparing carefully thought-out discussion questions and then participate only as needed to keep the discussion on track. To illustrate the potentially negative impact of high instructor facilitation, a research study by Swan and Shih (2005) finds that the frequency of student posts decreased as instructor contributions to the discussion increased.

On the other hand, Thompson (2010) offers an assortment of best practices for online discussions that included strategies to control the level of instructor engagement and student participation. He suggests a minimum of two to four instructor postings per discussion topic and advocates instructors showing a substantive presence in the discussion at least four days a week. Other researchers also pinpoint an active and ongoing presence by instructors as essential to facilitating successful asynchronous discussions (Bedi, 2008; Brookfield & Preskill, 2012; Dennen, 2005; Jung, Choi, Lim, & Leem, 2002; Mandernach et al., 2007).

Taking the middle ground in the debate, Guldberg and Pilkington (2007) advocate the need for a proper balance of instructor intervention to prevent learners from overreliance on the instructor, which could in turn decrease learner-to-learner interaction. Heckman and Annabi (2006) echo the need for balanced instructor intervention, suggesting that instructors should establish expectations regarding interaction, engage in a modest level of modeling, and let their students do the work.

**Significance of this Study**

Researchers suggest numerous interventions to address the student participation challenges identified in the literature. These interventions underscore the important role of the instructor in designing, facilitating, and supporting asynchronous instruction. Despite a lack of consensus regarding what constitutes an ideal amount of instructor intervention, many researchers agree that instructor participation can have a significant (positive or negative) effect on learners in discussion groups (Abawajy, 2012; Andresen, 2009; Guldberg & Pilkington, 2007; Horton, 2000; Mazzolini & Maddison, 2003; Palloff and Pratt, 2001; Swan & Shih, 2005; Thompson, 2010). Most suggest that the instructor has the ability to either nurture or quash discussion participation or quality, which demonstrates the importance of further investigation into the effects of instructor intervention on both participation and quality in asynchronous discussions.

To examine this issue in greater depth, the following research question was investigated: What effect will structured instructor postings have on the participation of students in an online threaded discussion, as measured by the frequency and quality of student posts?

**Method**

One hundred and ninety-five undergraduate students (*N* = 195*)* enrolled in a three-credit undergraduate instructional technology course at a mid-sized southeastern university in the United States participated in this study. Males made up the majority of the sample (*n* = 107), with 88 participants being female. Grade classifications were sorted as freshman (*n* = 22), sophomore (*n* = 79), junior (*n* = 43), senior (*n* = 42), and graduate student (*n* = 9). Ages ranged from 18-years to 55-years, with 87.65% being between the ages of 18 and 25.

**Design**

The instructional technology course was comprised of a lecture class and an accompanying lab, with a total of 10 lab sections. Five teaching assistants (TAs) served as lab instructors, with each TA responsible for two lab sections. Each lab section contained 18 to 20 students. Instructor postings occurred within the lab portion of the course. Half (five) of the lab sections received instructor postings, while the remaining five sections did not. To control for potential timing biases, lab sections occurred two at a time, with only one section per lab time exposed to instructor postings. For example, one section from the 10:30 a.m. class received postings, while the second section of the 10:30 a.m. class did not.

To control for instructor bias, each instructor was assigned one section as a posting group and the other as a non-posting group. The overall assignments of subjects and instructors for this study may be seen in Table 1.

Table 1.

*Class Section, Instructor, Time, Group, and Number of Subjects*

| Section | Instructor | Time | Group | *N* |
|---|---|---|---|---|
| 1 | 1 | 10:30-11:20 | Posting | 20 |
| 2 | 2 | 10:30-11:20 | Non-posting | 20 |
| 3 | 1 | 11:30-12:20 | Non-posting | 20 |
| 4 | 2 | 11:30-12:20 | Posting | 20 |
| 5 | 3 | 12:30-1:20 | Non-posting | 20 |
| 6 | 4 | 12:30-1:20 | Posting | 20 |
| 7 | 5 | 1:30-2:20 | Posting | 19 |
| 8 | 4 | 1:30-2:20 | Non-posting | 19 |
| 9 | 5 | 2:30-3:20 | Non-posting | 19 |
| 10 | 3 | 2:30-3:20 | Posting | 18 |

**Procedures**

Within the lab element of the course, students were required to participate in four asynchronous discussions. As suggested by a number of researchers (Conrad & Donaldson, 2011; Salmon, 2000; Thompson, 2010), the first discussion topic occurred during the second and third weeks of the semester.

This was an introductory discussion to allow students to familiarize themselves with the technology and develop online relationships before jumping into scholarly discourse. To meet the expectations recommended in the literature (Andresen, 2009; Bedi, 2008; Dennen, 2008; Hammond, 2005; Heckman & Annabi, 2006; Palloff & Pratt, 2010), a modified scoring rubric (see Figure 1) of an example found at http://www.udel.edu/janet/MARC2006/rubric.html was provided to students during the introductory discussion. Because the purpose of the discussion was to support general content acquisition and as suggested by Dennen (2008), the rubric assessed the quality of posts by considering students' reading of materials, writing of ideas, and overall engagement in discussion activities. Post scores derived from the rubric served as the sole unit of analysis. The rubric was explained in detail during a FTF class session to ensure that students understood the expectations for participation in asynchronous discussion. Students could post as many times as desired and could obtain a maximum of 12 points per discussion topic.

| Criteria | Unacceptable<br>0 Points | Negligible<br>1 Point | Good<br>3 Points | Excellent<br>6 Points |
|---|---|---|---|---|
| **Initial Posting** | No post made. | Post content is superficial in thought and preparation; ideas are not developed or supported with references to readings. | Post offers original ideas, but not fully developed or supported by references to course readings; lacks full development or reference support. | Post is a well-developed and substantive contribution; ideas are coherent, logical, and supported by references to course readings. |
| **Follow-Up Posting(s)** | No follow-up post or responses made. | Post is a shallow contribution to discussion (e.g., agrees or disagrees); simply paraphrases what others have said; does not enrich discussion. | Elaborates on an existing posting with an original comment or observation but does not extend meaningful discussion. | Demonstrates analysis of previous posts; extends meaningful discussion by building on existing posts. |

*Figure 1.* Scoring rubric for discussions.

Beginning in the fourth week of the semester, the first of three content discussion topics was introduced. In accordance with suggestions emanating from previous studies (Andresen, 2009; Gilbert & Dabbagh, 2005; Ko et al., 2010; Thompson, 2010), the lab instructor initiated each discussion topic online by providing a scenario and posting questions that anchored the discussion on the topic that was being covered in the corresponding lecture course. The anchor scenario and related questions were provided at the same time for both the posting (treatment) and non-posting (control) groups. Students in both groups were expected to contribute to the discussion topic a minimum of once per week and were given the same participation expectations via the discussion scoring rubric. Each discussion topic covered a two-week period, resulting in a total study time frame of six weeks of discussion.

**Non-posting group**

Students assigned to the non-posting group received no additional instructor intervention with respect to asynchronous discussion posts. Once the scenarios and questions were posted, students in this group were left to participate in the discussions without instructor intervention. In other words, for this group the instructor followed the recommendations of Heckman and Annabi (2006), which were to get out of the way and allow the students to do the work.

**Posting group**

Following suggestions from other researchers (Brookfield & Preskill, 2012; Guldberg & Pilkington, 2007; Ko et al., 2010; Thompson, 2010), the lab instructors were required to intervene with the treatment group

by making two structured posts per week and per discussion topic. In total, instructors intervened 12 times, or 4 times per discussion topic.

As suggested by Dennen (2005) and Gilbert and Dabbagh (2005), the instructor did not try to run the discussion when posting to the treatment group. Rather, instructor intervention posts were intended to stimulate students and promote discussion. To ensure uniformity of intervention posts, the primary researcher wrote the structured intervention posts for each discussion topic, 12 in total. Following guidelines emanating from various research studies (Brookfield & Preskill, 2012; Guldberg & Pilkington, 2007; Palloff & Pratt, 2010; Thompson, 2010), the intervention posts focused on helping students find sources of information, at the same time encouraging them to think about the topic from a different angle or in greater depth. To this end, instructor intervention posts contained additional information concerning the topic, as well as links to relevant external Internet sites.

Thus, the instructor posted two structured intervention posts twice per week on two different days, completing both posts before Sunday of each week. This followed Thompson's (2010) recommendations for two to four distinct instructor threads per discussion topic, with instructor presence at least a few days per week.

**Data Gathering**

Student discussion responses were recorded and stored within the university's Learning Management System. This study examined data from all 195 students enrolled in the course, across all three discussion topics. Specifically, data were collected on the number of discussion posts made by each student and the quality of the post as measured by the discussion scoring rubric. All discussion posts were scored individually, and averages were taken to generate overall discussion topic scores. As noted previously, the discussion scoring rubric was provided to students at the beginning of the semester and was explained in detail to ensure students understood the expectations pertaining to participation.

Additionally, to ensure uniformity of instructor scoring all instructors participated in a one-hour training/practice session on the appropriate use of the discussion scoring rubric. This training session was conducted by the primary researcher, with the session ending when all five instructors independently scored five random discussion posts and emerged with the same scores. During the research study, time limitations prevented instructors from scoring student posts from outside of their specific class sections, precluding instructor confirmation that scoring was consistent across all raters. To establish inter-rater reliability, a representative sample of 150 of 585 discussion topic scores was independently scored by an external rater, trained to score discussion posts in the same manner as the instructors. The rater randomly scored a discussion topic (topic 1, topic 2, or topic 3) for 15 subjects within each of the 10 lab sections. This provided inter-rater scoring for 15 subjects within each lab section, plus 30 scores that could be compared between each instructor and the external rater.

Krippendorff's Alpha, a flexible yet rigorous test of inter-rater agreement, was used to assess the degree to which all five instructors provided consistency in their scoring, as compared to the external rater. The resulting alphas fell within Hayes and Krippendorff's (2007) "excellent" range (instructor 1 and external rater, $\alpha$=.98; instructor 2 and external rater, $\alpha$=.97; instructor 3 and external rater, $\alpha$=.99; instructor 4 and external rater, $\alpha$=.99; and instructor 5 and external rater, $\alpha$=.99), indicating that discussion posts were scored consistently by all five instructors and the external rater.

After the quality of all student discussion posts as defined by the scoring rubric was evaluated for each topic, the frequency of student discussion posts was recorded alongside the quality scores. Frequency consisted of a count of the number of posts made by each student within each discussion topic. These data were then analyzed to determine what effect, if any, structured instructor intervention had on the frequency and quality of student posts.

**Results**

The quality of the students' discussion posts was measured using the discussion scoring rubric, with a scoring range of 0-12 for each topic and a total scoring range of 0-36. Scores for both the posting and non-posting groups were totaled across all three discussion topics and analyzed using an independent t-test to compare potential differences between the means. Results indicated no statistically significant

difference existed ($t(193)= .007$, $p = .995$) in the total mean scores for the posting and non-posting groups (see Table 2).

Table 2.

*Mean Data for Total Quality Score Analysis*

| Group | *N* | Mean | *SD* | Std. Error Mean |
|---|---|---|---|---|
| Posting | 97 | 24.10 | 11.17 | 1.12 |
| Non-posting | 98 | 24.09 | 12.84 | 1.29 |

Range: 0-36

Scores for both the posting and non-posting groups across all three discussion topics were analyzed using an independent t-test to compare potential differences between the means. Results indicated no statistically significant difference existed in the mean scores for the posting and non-posting groups for discussion topic one ($t(193)= .159$, $p = .874$), discussion topic two ($t(193)= -.033$, $p = .973$), and discussion topic three ($t(193)= -.112$, $p = .911$). Mean scores across all three discussion topics are presented in Table 3.

Table 3.

*Mean Scores for Quality Across Discussion Topics and Groups*

| Topic/Group | *N* | Mean | *SD* | Std. Error Mean |
|---|---|---|---|---|
| *Topic 1* | | | | |
| Posting | 97 | 8.16 | 4.39 | .46 |
| Non-posting | 98 | 8.06 | 4.73 | .48 |
| *Topic 2* | | | | |
| Posting | 97 | 7.96 | 4.09 | .42 |
| Non-posting | 98 | 7.98 | 4.62 | .47 |
| *Topic 3* | | | | |
| Posting | 97 | 7.98 | 4.28 | .43 |
| Non-posting | 98 | 8.05 | 4.63 | .47 |

Range: 0-12

The effect of instructor posts on student posting frequency was measured by totaling the number of discussion posts made by each student within the instructor posting and non-posting groups. Results of an independent t-test revealed the non-posting group submitted more discussion posts ($t(193) = -2.182$, $p = .031$) than the posting group (see Table 4). Posting frequency for both the posting and non-posting groups across all three discussion topics was analyzed using an independent t-test to compare potential differences between the means. Results indicated differences existed in the frequency of posts for the posting and non-posting groups for discussion topic one ($t(193)=-2.206$, $p = .029$), discussion topic two ($t(193)= -2.166$, $p = .032$), and discussion topic three ($t(193)= -2.173$, $p = .031$). Specifically, results revealed the non-posting group submitted more discussion posts for each of the three discussion topics. Mean scores across all three discussion topics are presented in Table 5.

Table 4.

*Mean Data for Frequency Analysis*

| Group | *N* | Mean | *SD* | Std. Error Mean | t value |
|---|---|---|---|---|---|
| Posting | 97 | 9.31 | 4.733 | .481 | -2.18* |
| Non-posting | 98 | 10.79 | 4.739 | .479 | |

*p<.05

Table 5.

*Mean Data for Frequency Across Discussion Topics and Groups*

| Topic/Group | *N* | Mean | *SD* | Std. Error Mean | t value |
|---|---|---|---|---|---|
| *Topic 1* | | | | | |
| Posting | 97 | 3.32 | 1.52 | .15 | -2.21* |
| Non-posting | 98 | 3.80 | 1.56 | .16 | |
| *Topic 2* | | | | | |
| Posting | 97 | 3.02 | 1.58 | .16 | -2.16* |
| Non-posting | 98 | 3.50 | 1.56 | .16 | |
| *Topic 3* | | | | | |
| Posting | 97 | 2.98 | 1.60 | .16 | -2.17* |
| Non-posting | 98 | 3.49 | 1.66 | .17 | |

*p<.05

**Discussion and Conclusions**

This study investigated whether students enrolled in an instructional technology course would submit a higher quality and frequency of online discussion posts when provided with a moderate level of instructor posting as compared to students who received no additional instructor posts. Results of previous studies indicate that it is possible for instructor intervention to either hinder or facilitate student participation, depending on the instructor's level of involvement (Ahern et al., 1992; Andresen, 2009; Bedi, 2008; Beadouin, 2002; Bonk & Cunningham, 1998; Brookfield & Preskill, 2012; Guldberg & Pilkington, 2007; Hara et al., 2000; Heckman & Annabi, 2006; Horton, 2000; Jung et al., 2002; Kearsley, 2000; Mandernach, Dailey-Hebert, & Donnelli-Sallee, 2007; Mazzolini & Maddison, 2003; Snow and Shih, 2005).

With regards to the frequency of student posts, results from this study indicate that students who received instructor postings submitted a lower number of posts than those who experienced no posting by instructors. These results fail to support previous research findings that instructor participation motivates students to post in greater quantity (Bedi, 2008; Beadouin, 2002; Brookfield & Preskill, 2012; Kearsley, 2000; Mandernach et al., 2007). On the contrary, the present results are more consistent with research showing that instructor intervention can potentially hinder discussion or, as seen in this particular case, inhibit the number of posts made over the designated posting period (Andresen, 2009; Horton, 2000; Mazzolini & Maddison, 2003; Swan & Shih, 2005). As evidenced by the results of this study, students who

experienced no instructor participation after the posting of the initial scenario consistently submitted more discussion posts than students who experienced instructor participation.

Despite the employment of moderate instructor intervention, as recommended by previous researchers (Ahern et al., 1992; Bonk & Cunningham, 1998; Guldberg & Pilkington, 2007; Hara et al., 2000; Heckman & Annabi, 2006), the results of this study indicate that students received equivalent scores on the quality of posts, regardless of the presence or absence of instructor postings. This finding does not confirm assertions that instructor presence in threaded discussions can enhance the quality of student participation and increase levels of understanding (Bedi, 2008; Beadouin, 2002; Brookfield & Preskill, 2012; Kearsley, 2000; Mandernach et al., 2007). Rather, these results are similar to the findings of other research studies (Andresen, 2009; Horton, 2000; Mazzolini & Maddison, 2003; Swan & Shih, 2005) in that instructor intervention was found to have a neutral effect on the quality of student participation. In other words, students who experienced no instructor intervention posted the same quality of responses, per the assessment rubric and rater's scores, as students who were provided with additional sources of information and encouraged to think about the topic in more depth.

When findings regarding the quality of postings and frequency of postings are combined, the results demonstrate that, even though the non-posting group reflected a higher frequency of posting within this study, the quality of posts as measured by the scoring rubric were equal across both groups. This indicates that students may have strategized their discussion participation differently in the presence or absence of instructor postings. This assertion is evidenced by the higher frequency counts in non-instructor discussions resulting in the same number of points and calls for further consideration of how student posting behaviors differed, why they may have differed, and the potential implications for future research.

The differences identified in posting frequencies invoke questions concerning the total amount of participation that occurred in posting and non-posting groups. Frequency of participation in this study was assessed based on the number of posts made by students. This limited method of analysis makes it impossible to examine participation in more depth, which calls into question the effectiveness of count as a measure of student participation. Gilbert and Dabbagh (2005) report that "The number of postings per student significantly increased leading to increased interaction between students and hence a deeper processing of the course content" (p. 16). This statement indicates posting counts may be of value. On the other hand, Meyer (2004) suggests quantitative measures, such as the number of student posts, are not enough to fully understand student participation. For example, students may be making fewer posts, but the posts may be more thoughtful and of greater length as demonstrated by Hara et al. (2000). Meyer argues that a content analysis is necessary to discern true participation levels, and the present study supports this assertion.

Results of this present study indicate instructor presence reduced the frequency of student posts but had no correlation with the sum total points gained by learners in the process of discussion. Thus, student participation as measured by number of posts was simply lower, and students packaged their participation differently in sections where instructor input was provided. This is an important finding; however, specifics related to these differences in packaging remain unknown. As previously indicated, limitations of the measures used within this study prevent in-depth data analysis of participation differences and support Meyer's (2004) assertion that additional measures aside from frequency counts are needed to fully explore student participation in future research.

Although it is not possible to identify specific in-depth differences in the quantity of participation within this study, it is possible to reflect upon the potential causes of the exhibited frequency differences as measured by counts. When considering why differences in posting frequency were found between the groups, it is possible that traditional student-instructor roles impacted the number of student posts. Conrad and Donaldson (2011) point out that because students have been educated in a predominately lecture-based environment, they may be more comfortable in a passive role when it comes to participation in online discussions. Similarly, in his review of research related to asynchronous online discussions, Andresen (2009) reported that increased instructor interaction decreases learner-to-learner interaction because learners may rely on the instructor to carry the discussion. In this present study, the posting (treatment) group experienced the presence of the instructor at least twice a week, which may have prompted students to take a more passive role by posting fewer messages. In contrast, the non-

posting (control) group was provided with no instructor presence during the discussion periods, potentially spurring students to play a more active and participatory role in the asynchronous discussions.

While instructor presence in this study lowered the number of posts, Hara et al. (2000) demonstrated that even when student participation is minimal, posts can be extremely focused, extensive, and exhibit deep levels of understanding. Conversely, Mazzolini and Maddison (2003) found that minimal instructor intervention leads to more frequent student posts, but these are not always in-depth postings. These studies provide potential insights into why the additional posts written by the non-instructor posting group garnered only an equivalent number of overall quality points as the smaller number of posts written by students who experienced instructor participation. However, the aforementioned studies used more comprehensive methods of determining the quality of student posts, which calls into consideration the measure of quality used in the current research study. While Hara et al. (2000) used Henri's (1992) extensive content analysis method to determine discussion post quality, the quality of student posts was more narrowly defined within this study and measured in relation to content acquisition as demonstrated through student reading, writing, and engagement (Dennen, 2008). The method used to determine quality within the present study did allow researchers to assess the quality of student posting behavior relative to student referencing of course reading materials, construction of written reflections, and extension of ideas posted by peers. However, as suggested by Meyer (2004), a deeper content analysis of student posts could potentially reveal differences in cognitive, socio-cognitive, metacognitive, or higher order thinking behaviors between the two groups and should be considered in future research.

Another potential explanation for the lack of difference in post quality scores is that the results may actually be a reflection of the perceived benefits of asynchronous discussions. It has been argued in various quarters that a primary benefit of asynchronous discussions is the manner in which they afford all students the necessary time to reflect and make thoughtful responses (Brookfield & Preskill, 2012; Harasim, 1990). It is possible that this particular feature of asynchronous discussion provided the non-posting group with the time needed to think about the discussion topics in sufficient depth on their own so that they were able to make posts of the same quality as the posting group (which was encouraged by the instructor to think about the topic in more depth). Similarly, another benefit of asynchronous discussion is that it facilitates student-centered instruction and provides the opportunity to construct knowledge with peers (Conrad & Donaldson, 2011; Jonassen et al., 1995; Palloff & Pratt, 2010). It is possible the non-posting group was able to construct knowledge and share resources with peers in a manner that allowed the same depth of quality posts as the posting group, despite the non-posting group not being provided with additional resources by the instructor. This could also explain the higher quantity of postings made by the non-posting group, in that students who received no instructor posts were interacting more frequently to provide resources and support to each other in the absence of instructor intervention. While the methods utilized in this study did not allow for exploration of these possibilities, each of these scenarios could be examined using content analysis in future research.

To conclude, the purpose of this investigation was to add clarity to conflicting views regarding the appropriate level of instructor intervention required to facilitate and stimulate asynchronous discussions. Despite efforts by the researchers to improve student participation in asynchronous discussion through the implementation of previous research results regarding instructor intervention, the quality of posts was unaffected and the frequency of posts was negatively impacted by a moderate level of instructor intervention. However, results demonstrate that student posting behaviors differ in the presence or absence of instructor postings. While further research is needed to explore specific strategies students employ when posting with and without instructor intervention, the findings of this investigation add to existing research-based findings and offer insights relative to the use of instructor interventions in asynchronous discussions.

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