An Evaluation of Discussion Board Instructions in Online Courses

by

Nicholas Dale Butler

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Approved May 2012 by the
Graduate Supervisory Committee:

Vincent Waldron, Chair
Jeffrey Kassing
John Wise

ARIZONA STATE UNIVERSITY

August 2012

ABSTRACT

The discussion board is a facet of online education that continues to confound students, educators, and researchers alike. Currently, the majority of research insists that instructors should structure and control online discussions as well as evaluate such discussions. However, the existing literature has yet to compare the various strategies that instructors have identified and employed to facilitate discussion board participation. How should instructors communicate their expectations online? Should instructors create detailed instructions that outline and model exactly how students should participate, or should generalized instructions be communicated? An experiment was conducted in an online course for undergraduate students at Arizona State University. Three variations of instructional conditions were developed for use in the experiment: (1) detailed, (2) general, and (3) limited. The results of the experiment indentified a pedagogically valuable finding that should positively influence the design of future online courses that utilize discussion boards.

DEDICATION

FMC;LYN

ACKNOWLEDGMENTS

Conducting this experiment would not have been possible without the supervision of Dr. Vincent Waldron and the assistance of the Institutional Review Board at Arizona State University. Additionally, I'd like to recognize the members of my thesis committee for dedicating their guidance and time to this project. As a veteran, I am honored and thankful for the financial assistance and training granted to me by the United States Air Force.

TABLE OF CONTENTS

Page

LIST OF TABLES

Chapter 1

INTRODUCTION

The discussion board is a facet of online education that continues to confound students, educators, and researchers alike. Should students be required to participate in online discussions? Should discussion contributions be evaluated; and, if so, how? What role should educators assume in facilitating online discussion? Such questions permeate the existing literature on the topic of online discussion boards, and have elicited numerous responses from researchers in the fields of educational technology (Ajayi, 2009; Bliss & Lawrence, 2009; Cooper, 2001; Hew & Cheung, 2011; Kay, 2006; Mazzolini & Maddison, 2003; Rocco, 2010), math and science education (Armstrong & Powell, 2009; Buckley, Beyna & Dudley-Brown, 2005; Li, 2003; Resnick, 2005), linguistics (Jewell, 2005; Rempel & McMillen, 2008; Yilmaz & Saglam, 2011; Zha, Kelly, Park & Fitzgerald, 2006), as well as business (Campbell, 2007; Karnstedt, 2010; Robinson, 2011). Considered holistically, the existing literature across disciplines yields numerous terms and themes that help frame the conversation surrounding online discussion.

According to Campbell a *quality* contribution to an online discussion is one that, "describes an idea or argues a point clearly, convincingly, and succinctly" (2007, p. 37). Similarly, Ferdig and Roehler's (2004) research identifies *intertextuality* as the degree to which responses mentioned outside texts, experiences, and examples; and *uptake* as demonstrated

comprehension of a lesson's content. For example, Ferdig and Roehler's model codifies such contributions as: (1) *UI*, uptake and intertextuality; (2) *UNI*, uptake with no intertextuality; (3) *NUI*, no uptake with intertextuality; and (4) *NUNI*, no uptake with no intertextuality. Considered together, these terms offer a method of evaluating the substance of discussion board contributions. Yet, before such an evaluation of quality can occur, it is necessary to first address the larger issues of participation and facilitation associated with online discussion.

The generally acknowledged benefits of discussion boards in online education include: asynchronous engagement with materials that allow for flexible hours; enriched course materials via hyperlinks and downloads; relative anonymity; interactivity and collaboration; as well as increased participation from marginalized groups including ESL learners. However, it is critical to acknowledge that all of these advantages are regularly preceded in the literature with the adjectives "may" and "potentially"—qualifiers that both reflect the developmental state of scholarship associated with online education as well as underscore competing pedagogical approaches to promoting and assessing discussion board postings.

Chapter 2

LITERATURE REVIEW

Participation

The concept of student involvement and participation in the learning process traces its roots to the Socratic method of inquiry (Mello, 2010). Participation is commonly utilized to facilitate the development of critical thinking skills, particularly related to conceptually complex or controversial issues. Researchers have been attempting to determine the impact of class discussion and participation on learning and performance since as early as 1925 (Mello, 2010). Early studies found no significant relationship between levels of participation and test scores, but a significant relationship between levels of participation and the ability to recall material several months after its presentation (Bane, 1925). More than fifty years later, Karp and Yoels published their seminal study on classroom participation in college classrooms. Major findings of the study included the phenomenon termed "consolidation of responsibility" in the classroom, wherein a few students assume the bulk of the responsibility of participation. Preparation for class facilitated student participation, and peer pressure was identified as a powerful regulator of student contributions (Karp & Yoels, 1976).

More recently, Dallimore, Hertenstein, and Platt (2004) identified that college students attributed high rates of classroom participation to six classroom characteristics: (1) required/graded participation, (2) incorporating ideas and experiences, (3) active facilitation, (4) asking

effective questions, (5) supportive classroom environment, and (6) affirming contributions/constructive feedback. For example, Garrison, Anderson, and Archer offer that a *supportive* environment in an online discussion is one that provides "insightful comments" and "friendly" criticism to promote learning (1999, p. 87). However, while some educators believe that grading student participation serves as a motivator and as a way of signaling priorities to students (Bean & Peterson, 1998), others contend that participation in discussion should always be voluntary (Dallimore, 2004). Yet, what constitutes participation in the first place?

Fritschner (2000) offers that instructors and students have different definitions of participation. 32 undergraduate students were surveyed in Fritschner's study and reported that participation is an important aspect of classroom learning. Yet when students in the study were divided into groups of "talkers" and "non-talkers," the former defined participation as "voluntarily speaking out in class," while the latter defined participation as including "attendance, active listening, sitting in their seats, doing the assignments, and being prepared for class" (Fritschner, 2000, p. 342). Meanwhile, instructor definitions of "participation" emphasized verbalization and compliance (in-class activities), with a tertiary emphasis on preparation (out-of-class activities). Only occasional allusions to "quality" or internal engagement were included in these definitions. Similarly, the majority of concrete grading practices that were reported corroborated an assumption expressed in the literature that many "participation" grades rely

on attendance, holistic impressions, and/or "one-shot" student presentations (Rogers, 2011, p. 86). One of the chief concerns that students express relative to classroom participation is that they are unaware of what constitutes acceptable participation for the instructor. Some students simply assume that attendance is participation while others may assume that any verbal input to the class constitutes participation (Mello, 2010). Taken together, these studies suggest that defining participation is a necessary component of communicating expectations.

While the grading of participation can be highly subjective, the nature of performance feedback that students will encounter in the real world is similarly highly subjective (Mello, 2010). Combined with the fact that the grading of most written work submitted by students is similarly subjective, the only difference between graded class participation and graded written work is that with graded class participation there is generally no evidence available after the fact for disputes of grades (Bean and Peterson, 1998), unless the participation took place in an online environment and has been archived.

According to a 2009 semester-long study of 33 pre-service teachers (those still in graduate-level training), students of the digital generation in online courses learn differently from students in the pre-digital age (Ajayi, 2009). Results from interviews conducted during the study indicate that pre-service teachers perceive that discussion boards are a tool of learning that can be used to foster situational learning through practice scenarios and

sharing experiences in a positive environment. Similarly, a study of 20 graduate students in an online occupational therapy course revealed in a self-assessment survey that discussion boards foster peer support, meet student needs for access to resources, and encourage staying in touch with other classmates—noting that social context contributes to effective discussion (Trujillo & Painter, 2009).

In addition to these benefits, online participation may provide support or a sense of community for students who are close to failing a course, and could make the difference between them continuing with the course and giving up (Rovai, 2003). The author concluded after conducting an ex post facto casual-comparative study of 18 graduate-level courses online (N = 262) that beneficial effects of online participation and interaction do not necessarily translate into higher grades at the end of the year, with students who frequently participated not being awarded with significantly higher grades. However, students who failed in one or more modules interacted less frequently than students who achieved passing grades (Rovai, 2003).

Thus, participation in online discussion forums serves a dual purpose: to improve learning and to provide social support. It may, therefore, be the case that factors such as the frequency of postings are likely to be more important in providing support, whereas quality and dynamics of the postings may be the more important influencing factors in learning and performance (Davies & Graff, 2005).

Required Participation

Dallimore, Hertenstein and Platt (2004) found that students reported overwhelmingly that graded participation was a major factor in influencing classroom participation; students suggested that participation should count for a large percentage of the grade in those classes which the instructor desired participation. This tendency for students to report greater participation in courses where participation is required may stem from the social pressure identified by Fritschner (2000), where students are conscious of peer pressure not to participate too much in classes. Requiring participation may relieve some of the personal responsibility, and hence stigma, of frequent contributions in the classroom, making students more likely to speak up without fear of negative social fall-out from peers. Additionally, these results imply that research should not rely solely on the number of messages posted to measure learner participation, but should also consider the possibility that students also learn through passive participation in forums by reading the contributions of other learners (Michinov, Brunot, Le Bohec, Juhel, & Delaval, 2010).

Current research suggests that the majority of online instructors do in fact incorporate student participation into final course grades; however, the methods that instructors use to calculate these grades vary widely (Rogers, 2011). According to a study of 18 online courses (Rovai, 2003), grading student discussions motivates students to increase the number of weekly

messages they contribute. Weekly messages posted by students were lowest for courses where discussions were not graded (on average less than two messages per week per student) and significantly higher for courses where discussions were graded (on average more than three messages per week per student). Interestingly, there were no significant differences in the number of weekly messages posted by instructors, suggesting that the number of messages posted by instructors each week had a negligible effect on the number of student messages.

Effective learning at a distance requires students who are engaged in discussions with the teacher and with other students. These results also suggest that grading incentives are needed in online courses to encourage student participation in discussion (Chickering & Ehrmann, 1999). Thus, encouraging discussions becomes an important course design consideration for online instructors. Without motivation to engage in discussions, students are less likely to take the time to contribute (Rovai, 2003).

Regardless of delivery method or pedagogical approach, the literature largely concurs that participation is a necessary component of learning and acknowledges that an enduring challenge that instructors face is the problem of *how* to get their students to participate more in class. Although recent studies (Dallimore, Hertenstein & Platt 2004; Rogers, 2011) indicate that participation is necessary, the assessment of required discussion remains fraught with challenges.

Assessment

Grading discussion boards for quality and participation has become an issue of increasing concern among researchers with the growth of online and distance learning. Research regarding assessment of online discussions has generally supported employing specific rubrics for participation as well as content and quality of postings supported by instructor feedback (Hura, 2010); yet, there are a number of criticisms associated with such practices. Gilson's treatise *Of Dinosaurs and Sacred Cows* eloquently summarizes the discontent surrounding the issue as follows:

> As well as a reward-based motivational tool, grading participation, and the measuring of performance, also acts as a control system . . . we are employing an instructor-centered paradigm whereby students refract their learning experiences and opportunities through the instructor . . . Thus we reinforce a top-down, instructor-driven reward system and yet expect this initiative to create a behavior change, whereas it contributes to a culture which emphasizes grades and not learning . . . As a tool of assessment, grading classroom participation fails to capture the dynamic complexity of our ever-broadening constituency. Its operation within our classroom fractures the relationship between instructor and student in a manner that suggests an abuse of power. If this

> occurs as an unconscious act, it is unfortunate; if by explicit design, it is pure manipulation (Gilson, 1994, p. 234).

To counter many of the traditional criticisms of graded class participation, numerous benefits have been cited. In summary, these benefits are: 1) better prepared students (Reinsch & Wambsganss, 1994); 2) improved class discussion through enhanced preparation (Dallimore, Hertenstein & Platt, 2004); 3) the sharing of personal experiences, facilitating deeper learning by creating a better connection to the real world; 4) preparation for participation on the job; 5) the development of critical communication skills; 6) increasing motivation to learn and focus on the student's individual responsibility for learning; 7) teaching students to "think on their feet," which is often necessary in an employment setting when dealing with supervisors, co-workers and customers; 8) limited opportunities for academic dishonesty; and 9) the promotion of diversity (Mello, 2010). However, the most common response to criticisms of subjectivity in grading has been the adoption of rubrics designed to promote objectivity in the process.

Scoring Rubrics

Many instructors take comfort in the fact that a numerical grading guideline (that is, a rubric) has the potential to work just as well for the online discussion board as it does in the four-walled classroom. If a rubric is the chosen method of assessment, three general options are available for creating grading criteria: 1) instructors can write their own; 2) collaborate

with their students; or 3) use a rubric with pre-established guidelines as found in the literature (Oncu, 2005).

According to research by Lunney and Sammarco (2009) scoring rubrics for grading participation in online discussions are needed to meet the following learning principles outlined by the American Association of Higher Education: 1) encourage contact between students and faculty; (2) encourage active learning; (3) give prompt feedback; and (4) communicate high expectations. Regarding the first of these, in asynchronous online courses there are no regular face-to-face meetings between faculty and students, so contact must be achieved through e-mail and on the course site. When students are required to conduct self-evaluations regularly using a scoring rubric and communicate the results of self-evaluations with the teacher through e-mail, it achieves the goal of regular contact. The second principle, encouraging active learning, is attained through the methods of course participation, that is, reading the assigned content and discussing the readings with expectations set by the instructor through the grading criteria. These expectations include critical thinking for the application of the weekly content to an assigned task. The third principle, giving prompt feedback, is accomplished each week by letting students know how well they met the standards for weekly discussions of the readings. The fourth principle, setting high expectations, is achieved through directions in the scoring rubric of how to achieve high grades each week for class participation (Lunney & Sammarco, 2009).

Bean and Peterson (1998) outline several different methods available for assessing student participation. First, the authors advise instructors to co-construct the criteria and characteristics of successful discussion with students. Once clear criteria are determined, several options are suggested. Instructors may use the criteria to form a rubric and assign periodic grades several times in a semester which cumulatively form a student's "participation" grade. Instructors may ask students to rank their participation against that of their peers, and/or to self-reflect on their own and their classmates' participation over a set period of time. These self-reflections can serve as a foundation for further discussion, and can help inform instructors' holistic grading decisions. Yet another method of assessment involves placing nearly all of the responsibility for class activity on the students, and then assessing individuals' participation holistically. This method purposefully avoids the construction of criteria and rejects attempts at objectivity, embracing the assumption that all assessment is biased by the assessor (Bean & Peterson, 1998).

In an online environment, however, because the discussion is recorded, feedback to the student can be improved compared to the traditional classroom where classes are rarely videotaped for review (Baglione & Nastanski, 2007). Online, however, the transcript (or archive) of discussion serves to record everyone's contributions equally. This compares favorably to the traditional environment, where content is relegated to memory. According to Baglione and Nastanski's sample of experienced

professors, online discussion boards provide more substantive discussion than informal classroom discussions because of "research and reflective time, physical anonymity, and equitable distribution" (2007, p. 142).

Overall, the literature suggests that online discussion groups offer a technologically-rich environment for developing virtual learning communities in which students can develop strong analytic and critical thinking skills based on inherent time, reflection, and distribution advantages. While the traditional classroom discussion can be structured with pre-assignments and sequential classes, the inherent time, reflection, community, and assessment of using recorded transcripts offers advantages to “real-time” discussion. This suggests an opportunity to improve learning, a compelling reason for all professors to incorporate online discussion into their classrooms (Baglione, 2007).

Ultimately, online instructors need to take into account assessment as a process which requires online learning activities that facilitate self-assessment, peer-assessment, self-regulatory mechanisms, and learner autonomy (Vonderwell, Liang & Alderman, 2007). An activity that allows students to think and rethink issues that are being discussed or have not been discussed facilitates a dialog within self and with the members of a classroom. The meaning that students make out of their discussion activities needs to support student practices in assessment for learning and assessment of learning. Thus, structuring a discussion with appropriate assessment criteria is essential for student participation and learning

(Vonderwell, 2007); yet, how instructors should structure and facilitate such discussion remains in question.

Facilitation

How an instructor interacts with students can change the way learners comprehend and behave as facilitation can directly affect learners' engagement, achievement, and retention in online learning environments (Oncu, 2005). Furthermore, as Rovai states, "Discussions are more than one-way communications from teacher to students. They represent a conversation among a community of learners where students engage in deliberate cognitive and affective dialogue with each other and with the instructor" (2003, p. 102).

Garrison, Anderson, and Archer (1999) present three kinds of presences that have implications for facilitation: cognitive presence, social presence, and teaching presence. *Cognitive presence* is the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication; *social presence* is the degree to which a person comprehends another person as real; and *teaching presence* covers the design and integration of the social and cognitive presences into the learning environment. For example, "In order to facilitate discussions effectively, instructors should generate a social presence in the virtual classroom, avoid becoming the center of all discussions by emphasizing student–student interactions, and attend to

issues of social equity arising from use of different communication patterns by culturally diverse students" (Rovai, 2007, 77).

Thus, while social presence is a point of consideration in facilitation, it is only necessary to a certain degree to support online learners. Teaching presence manifests itself as social and cognitive presences. It is facilitating the cognitive presence, in particular, that has premises in improving those expected learner outcomes in connection with online discussion and collaboration (Oncu, 2005).

Rovai (2007) contends that online courses need to be designed so that they provide motivation for students to engage in productive discussions and clearly describe what is expected, most commonly in the form of a discussion rubric. Additionally, instructors are encouraged to provide discussion forums for socio-emotional discussions that have the goal of nurturing a strong sense of community within the course as well as group discussion forums for content as well as task-oriented discussions that center on authentic topics.

In addition to providing extrinsic motivation for students to engage in online discussions, such as making participation in discussions a graded course requirement, Rovai (2007) suggests that online courses should provide students with clear expectations of what is required regarding their active participation in course discussions. As Rovai states, "By clearly conveying expectations, students will be able to better judge their own behavior and engage in self-reflection and self-regulation" (2007, p. 80).

More specifically, in order to promote social presence, Rovai (2007) proposes that instructors: 1) access the discussion forums daily; 2) post at least a message a day; 3) avoid being sharp or overly critical; 4) periodically summarize what has or needs to be done; 5) ask thought-provoking questions that stimulate in-depth, reflective discussions and hold students responsible for their thinking; and 6) reply immediately after receiving a message via e-mail to acknowledge receipt and indicate when a complete response will be provided.

Numerous studies have identified that structure is crucial for promoting interaction (Pena & Lopez-Estrada, 2009; Blignaut & Trollip, 2003; Vrasidas, 2002). A 2004 free-response survey of 58 undergraduate students in education noted that 8% of the class did not find discussion boards helpful—citing that the assignments did not provide instructions on what *not* to do (Pena, 2009). Should instructors go to such lengths? A 2003 quantitative study of faculty postings across 18 post-graduate level courses identified that a crucial aspect of online learning is the delivery of administrative messages (Blignaut, 2003). Additionally, classroom observations show that threaded discussions develop interactive response patterns and that single question prompts should be avoided because they result in redundant student responses (Voderwell, 2007).

Additionally, the body of research from the field of educational technology defines several concepts that are valuable to the cross-

disciplinary study of discussion board facilitation. For example, *instructional scaffolding* is identified as the strategy of providing enough support to promote learning when concepts and skills are first introduced to students (Rocco, 2010, Wijekumar & Spielvogel, 2006); *educationally valuable talk* (EVT) is a particular interaction pattern in online discussion threads characterized as dialogic exchanges whereby participants collaboratively display construction and critical engagement with the key concepts that comprise the topic of an online discussion, and build knowledge through reasoning, articulations, creativity and reflection (Uzuner, 2007; Bliss & Lawrence, 2009); and *the online disinhibition effect* addresses how people say and do things in cyberspace that they wouldn't ordinarily say or do in the real world (Suler, 2004).

Conclusions from the field of science education, particularly associated with the instruction of medicine and chemistry, suggest that the development of *thought-provoking questions* is central to promoting active learning (Buckley, 2005); allowing students to post messages anonymously facilitates engagement in early stages of an online course (Markwell, 2005); the perceived value of posted material is the most important factor in determining discussion board usage (Paulisse & Polik, 1999); and *experiential*, or knowledge exhibited by other students that have experienced similar conditions, is highly valued in online discussions (Armstrong, 2009).

Furthermore, research in linguistics indicates that students are inclined to be more careful with their written language than with their oral language (Jewell, 2005); tasks that require students to meaningfully interact and reach group consensus increase participation (Zha, Kelly, Park & Fitzgerald, 2006); and creating a sense of community must occur before engaging in discussion (Rempel, 2008).

Communicating Instructions

Currently, the majority of research insists that instructors should structure and evaluate online discussions. Dallimore (2004) specifically identifies six categorical attributes of *quality* discussions that emerge from the literature: (1) required and graded participation, (2) incorporating instructor and students' ideas and experiences, (3) active facilitation, (4) asking effective questions, (5) creating a supportive classroom environment, and (6) affirming student contributions and providing constructive feedback. However, the existing literature has yet to compare the various strategies that instructors employ to facilitate discussion board participation to date. Clearly, instructors have the ability to formally define how discussion boards will be used in a given course and how they will be evaluated; yet it would be naïve to accept that such instructions will always be followed by students—much less yield the intended educational impacts.

Hence, the need for instructors to formally communicate instructions to students is identified as a necessary step toward satisfying each of the

attributes identified by Dallimore. Yet, *how* should instructors communicate such instructions online? Should they create detailed instructions that outline and model exactly what students need to do to successfully participate, as demonstrated by Davis (2002) or should more generalized instructions be communicated?

The answer to this question has yet to be addressed in the literature across disciplines, and is ideally suited for consideration by the field of communication studies. Thus, it is necessary to pose the following research question:

> **RQ1:** Do detailed instructions for participation in online discussion boards result in higher quality contributions from students?

Drawing from Davis (2002), the current study defined *detailed* instructions as those which direct students to specific parts of an assigned reading and require students to outline their responses. Moreover, in keeping with Ferdig and Roehler's model, *quality discussion* was identified as possessing uptake and intertextuality. With these definitions in mind, an experiment was designed to evaluate the independent variable of instructional conditions in online discussion boards.

Chapter 3

METHODOLOGY

Research Design

A field experiment was conducted in an online course for undergraduate students at Arizona State University. Three instructional conditions were developed for use in the experiment and functioned as the experiment's independent variable. Based on Dallimore's aforementioned categories (2009) and Davis' *Planning Log* (2002) the instructions were presented to students with the following conditions: (1) detailed, (2) general, and (3) limited. The instructional conditions are detailed in Appendix A. A null condition was not used, as the literature indicates that instructor expectations are necessary for discussion in online courses where students are evaluated.

The course was offered as an elective for students from any department and was taught by a single instructor aided by 4 teaching assistants. The course utilized Blackboard 9.1 software, which was the current standard at the university and allowed for threaded discussions as well as the archival of student postings. Readings, lectures, and supplemental learning materials were made accessible to students via Blackboard and assignments were graded by the teaching assistants. Instructions for assignments were posted in learning units for all students to access; however, instructions for participating on the discussion board were only visible to students in their own randomly assigned group.

A rubric for grading discussion board postings in the course was adapted from Lunney and Sammarco's *Criteria for Grading Online Discussions* (2009). The grading rubric is available in Appendix B. Since the teaching assistants were responsible for grading a large volume of initial postings as well as the responses from students in the course, the grading rubric was adopted in order to maintain as much reliability as possible. Students were not aware of the existence of the rubric, which was introduced to the assistants in a meeting prior to the onset of the course. Additionally, the teaching assistants were given the three sets of instructions prior to posting them in the assigned discussion groups. Sample postings were provided for the assistants, and questions about the rubric and instructions were discussed prior to providing them to students for the first discussion board assignment. After the instructions were posted, the teaching assistants were told not to collaborate with each other when grading assignments.

The four teaching assistants were assigned three discussion board groups to grade; one of each instructional condition. They were instructed to post the instructions, but not to post their own responses to student postings in order to protect the reliability of the experiment.

Sample

A sample of 167 undergraduate students in a 400-level communications course agreed to participate in the experiment. Demographic feedback indicated that students in the course were 82% Communication majors and 11% Business majors. In terms of gender, es ,

76% were female and 24% mal. Average age was 22.7 years. On average, students had taken 6.2 classes in online formats.

The participants were randomly assigned to 12 groups. These were monitored by 4 teaching assistants, each of whom were responsible for three discussion groups (one in each condition). Thus, each condition was tested four times and monitored by four assistants; yet, each group only interacted with its own randomly assigned members.

Procedures

Students were randomly assigned to their groups on the first day of class by using the random assign function on Blackboard. Brief introductions by the instructor and each assistant were posted on the welcome page in order to personalize the experience for students, while maintaining identical delivery of instructions in each discussion board group. Hence, the various sets of instructions for participation were only published in each group's discussion board in order to create the experiment's conditions. Only members of a group, the assistants, and the instructor were able to access the contents of the randomly assigned discussion board groups—not the students of other groups.

After the first discussion, students were asked to complete an online questionnaire evaluating the use of the discussion board in order to gain demographic information as well as additional data on the quality of the students' experience. The questionnaire, included in Appendix C, was adapted from

Ajayi's (2010) study, which was designed to better understand the effectiveness of the discussion board.

Measures

As detailed in Appendix A, Ferdig and Roehler's model was modified to reflect the grading rubric for the course, which was based on Lunney and Sammarco's *Criteria for Grading Online Discussion* (2009). Thus, each post served as the unit of analysis for the study, and each posting was coded simultaneously as part of the grading process in order to analyze the content of the students' discussions. For example, a grade of 15 on a student's initial posting was designed to automatically be coded as a 1. Further examples are available for reference in Table 1. In cases of multiple responses, the highest level of uptake and intertextuality demonstrated was used as the student's grade for the assignment.

The author checked for inter-rater reliability by grading a random sample of the participants' postings for knowledge construction using Ferdig and Roehler's scheme and comparing the results to the ratings of the four assistants. The author graded over 25% of students from each group and did not know the identity of the students. Reliability was calculated for each assistant (Assistant A, r = 0.938; Assistant B, r = 0.864; Assistant C, r = 0.955; Assistant D, r = 0.943), and resulted in a high inter-coder reliability. Thus, it appears that the teaching assistants used the grading rubric consistently.

Chapter 4

RESULTS

Initial responses were assigned codes of 1-4, with corresponding points of 15, 12, 10, and 0. Secondary posts were also assigned codes of 1-4, with corresponding points of 5, 3, 2 and 0. Tables 2 and 3 report frequencies and mean scores for each of the three instructional conditions. Statistical analyses considered both frequency distributions and mean scores.

Effects of Instructional Conditions

Analysis began with an examination of mean scores (points awarded for the initial post) within each condition. Visual inspection of the means suggested that the grades in the detailed instruction condition 1 (N = 56, M = 12.05, SD = 4.630) were different than both general (N = 56, M = 8.44, SD = 6.863) and limited conditions (N = 55, M = 9.38, SD = 6.542). A one-way ANOVA of initial postings confirmed a main effect for instructional condition [F (2, 164) = 6.3, p = .002]. Post hoc tests using the LSD procedure indicated that students in the highly structured condition scored higher than those in the general (p. < .001) and limited (p. < .01) conditions, but no difference when the latter two conditions were compared.

A separate of analyses concerned only the second posts, but no significant differences emerged.

The significant finding suggests that student responses are of higher quality when detailed instructions are provided. However, further analysis of the frequency data proved to be revealing. As anticipated, the lowest

quality (NUNI) postings occurred with greatest frequency in the general (f = 22) and limited (f = 17) conditions. However, it appears that much of this result is due to students not posting at all (which resulted in a grade of zero points). Only three postings that were coded as 4 (zero points) were due to poor quality contributions. The vast majority (over 93%) of initial responses coded as 4 (zero points) were the result of students missing the deadline or not posting at all. After removing these instances, a second one-way ANOVA indicated no statistical significance between the three conditions [F (2, 164) = 2.026, p = 0.135]. Thus, it can be concluded that the significant difference indentified between Condition 1 and Conditions 2 & 3 may be due not so much to the *quality* of postings but, instead, to frequency of posting -- the failure of students to post by the deadline when they were exposed to the general and limited instructions.

To further explore these apparent differences in frequency, chi-square statistics were computed. The first analysis documented that the frequency of the various codes did in fact vary by instructional condition, x^2 (6) = 12.4, p = 0.05. Because the frequency distributions within the limited and detailed conditions appeared to differ most substantially from what might be expected based on chance, follow-up testing was conducted using the SPSS nonparametric statistics procedure, In both cases, results indicated that the null hypotheses assumption of equal probability could be rejected (p <.002).

Analysis of Student Queries

Thus, in order to further explore the significant finding that emerged from coding the postings, qualitative data was drawn from an unexpected source of input: student inquiries and complaints sent via e-mail. Of the 167 students who agreed to participate, 43 did not post to the discussion board prior to the deadline. Yet, only 10 students voiced concerns related to the assignment via e-mail to their groups' assistant. Surprisingly, 7 of these messages were sent from students in groups with detailed instructional conditions.

While the sample size was relatively small, the study of these unsolicited messages yielded several themes that offer an explanation for non-participation from the students' perspective: 1) lack of clarity in the instructions regarding deadlines; 2) lack of clarity in the instructions regarding the amount of required postings; 3) computer problems; and 4) inability to navigate Blackboard.

As an example of seeking clarification on deadlines, one student questioned, "The syllabus is a little misleading. It says Unit 1 is due 1/15 but does not indicate that [the initial posting] is due 1/13. Unfortunately, I missed the deadline for yesterdays discussion board post… Would I receive any points if I completed a post today?"

Regarding the amount of postings, another student wrote, "[H]ow many times are we supposed to post? My understanding is that we need a total of two posts, an original, and then a response to a group member.

However, I am confused because the directions say to contribute twice to each session."

Additionally, computer-related problems were cited by two students. One cited, "i was having trouble with system so i was not able to access the learning unit 1 just before the due date," and another noted, "I am just getting the hang of this [software]."

Similarly, three students voiced their concern over where and how to post their contributions to the Blackboard site. Statements ranged from, "Hey I'm not sure if I posted in the correct area. Was I supposed to click 'Create Forum?'" to, "I just submitted my post, but accidentally also created a forum as well as a thread and do not know how to delete the forum."

Considered in combination with the quantitative findings, the identification of these themes adds a qualitative dimension to the study's findings.

Survey Results

After the discussion concluded, students were asked to complete a questionnaire about their discussion experience. The results of survey questions are recorded in Table 4. Of note, the majority of responses affirmed that the instructions across conditions were "clear," "easy to understand," "enriching," and "effective." Additionally, the majority of the class disagreed with the single question that was reverse-coded (Question 16), and indicated that the only statement they disagreed with was that the discussion allowed for "social connection" with their peers (Question 17).

Unfortunately, data collected from the questionnaire did not provide any indication as to why students in general and limited conditions did not participate in the required discussions. However, students did indicate a high level of familiarity with online courses, as the average number of online courses previously taken by students was reported as 6.

Table 1:

Coding Examples

Grade	Code	Initial Post
15	1 (UI)	Within the text example of the Benson Family Downtown Restaurant, the three main elements of the Risk Negotiation Framework, historical factors, context, and risk perceptions, can be seen (Kassing and Waldron 12). First and most notable, the historical factors can be seen within both the family matriarch, Helen Benson, and within the long established business model of the restaurant. With its history of a business model including an emphasis on comfort and familial service in addition to Helen's often unquestioned authority when issues arise, the historical factors of the situation heavily influence the way in which Jake Benson handles the newly risen risk of increased competition. The context of the family restaurant is also highly dictated by the social relations in its workplace, which allows Jake, who trusts his grandmother, though he knows she is resistant to change, to suggest an alternative solution to remedy their situation (Kassing and Waldron 3). Finally, with regard to risk perception, Jake observes an organizational risk, which threatens the central values of the family's restaurant. However, through effective communication, he successfully managed the risk.
12	2 (UNI)	In the case of Benson's Family Restaurant, it seemed that taking a risk benefitted the restaurant far more than not. Jake took initiative that could have potentially hurt his family's business and made it better by asking customers how they could better their restaurant. By asking the regular customers what they could improve upon, Jake used RNF and took a risk that would end up aiding to the revamping of the restaurant to better suit what the customers wanted. Although Jake was hesitant to ask his grandmother about change, because of his willingness to help and open communication she obliged and agreed to making these changes for their restaurant.
10	3 (NUI)	In the past the restaurant had been fine with their business model functioning just fine and customers loving the "country-style" food and feel. Helen Benson being the matriarchal figure and overall person that calls the shots with the restaurant also is included in the historical factor. Namely because for twenty years she has called the shots and her decisions were not questioned in that time either. In the contextual factor it was the cultural context that eventually had an impact on the restaurant because customers were looking for quicker and healthier meals. Country-style food is not exactly known for being speedy or healthy, so customers would go to different places to have their needs met in this regard.
0	4 (NUNI)	The Benson family restaurant, though being a popular choice in the city, needed a change. That is what Jake Benson realized. Changing the menu to continue competing against other restaurants was a needed transformation, but keeping the traditional menu still maintained tradition. It is something that we have seen with all types of businesses today. In order to maintain their business operations, they have needed to update operations and menu or entertainment to stay operational to today's standards. The perfect example is in the Benson family restaurant story with the other restaurants offering "heart healthy" menu options as opposed to Benson's home "fried" meals.

Table 2:

Initial Posting Frequencies

CONDITION	15 (UI*)	12 (UNI*)	10 (NUI*)	0 (NUNI*)	M	TOTAL
1	31	10	9	6	12.05	56
2	22	7	5	22	8.44	56
3	24	8	6	17	9.38	55
TOTAL	77	25	20	45		167

Table 3:

Response Frequencies

CONDITION	5 (UI*)	3 (UNI*)	2 (NUI*)	0 (NUNI*)	M	TOTAL
1	27	22	5	2	3.77	56
2	29	18	3	6	3.66	56
3	24	17	2	12	3.18	55
TOTAL	80	57	10	20		167

*UI (Uptake and Intertextuality)

*UNI (Uptake with No Intertextuality)

*NUI (No Uptake with Intertextuality)

*NUNI (No Uptake with No Intertextuality)

Table 4:

Survey Results

	Question	SA (4)	A (3)	D (2)	SD (1)	NA (0)	M
1	The instructions for posting in the discussion board were clear.	28.78	52.52	14.39	4.32	0	3.06
2	Discussion board allowed me to make intertextual links, e.g. read my notes, textbooks, other students' postings, the internet, websites as I worked on my own postings.	31.66	58.27	10.07	0	0	3.22
3	Discussion board allowed me to consider alternative ideas and perspectives (from my classmates) about the course's material.	33.09	61.87	3.60	1.44	0	3.26
4	I believe that discussion board gave me time to carefully reflect on questions before I posted my own responses.	32.37	57.55	8.63	1.44	0	3.21
5	Discussion board provided me with an opportunity to freely share my own ideas.	44.00	54.68	4.32	0	0	3.36
6	Discussion board allowed me to integrate my peers' ideas and views into my own postings.	21.58	63.31	12.95	2.16	0	3.04
7	Interacting with my peers on discussion board was fun.	6.48	51.80	34.53	7.19	0	2.58
8	Learning from my peers through discussion board was enriching.	14.39	61.15	20.14	4.32	0	2.86

	Question	SA (4)	A (3)	D (2)	SD (1)	NA (0)	M
9	The discussion board gave me the opportunity to freely contribute and share my own ideas and perspectives about course material.	30.94	60.43	7.19	0.72	0.72	3.22
10	I appreciate my classmates' views and beliefs about course material even when they differ from mine.	36.69	61.15	2.16	0	0	3.34
11	My classmates posted responses that were not relevant to course material.	2.16	12.23	64.75	20.86	0	1.96
12	The discussion board allowed me to connect socially with my peers.	2.16	12.23	64.75	20.86	0	2.60
13	The instructions from teaching assistants were helpful.	21.58	57.55	15.11	5.76	0	2.94
14	The discussion board instructions were easy to understand.	22.30	53.96	18.71	4.32	0	2.95
15	The instructions for posting in the discussion board encouraged me to provide evidence.	19.42	57.55	20.86	2.16	0	2.94
16	The use of discussion board in this class is effective.	22.30	56.86	15.83	5.07	0	2.96

Chapter 5

DISCUSSION

Implications

Returning to the debate surrounding pedagogical approaches to online participation, assessment, and facilitation addressed in the literature, the findings of this study provide implications for the continued use of discussion board technology in each of these areas.

Participation. Although this study does not dispute the conclusion of notable studies (Chickering & Ehrmann, 1999; Rovai, 2003; Dallimore, Hertenstein & Platt 2004; Rogers, 2011) that participation is a necessary component of the learning process, especially in the online environment, the results of the experiment indicate that it is critical to define participation beyond *required*. As studies such as Bliss & Lawrence (2009) and Ferdig & Roehler (2004) suggest, there are different *types* of participation. In turn, as the results of the experiment indicate, failure to provide a detailed description of such participation will lead to decreased response rates from students.

However, while we may envision a discussion composed entirely of higher quality (UI) or educationally valuable (EVT) postings as desirable, in practice, this is neither realistic nor desirable. As Bliss and Lawrence state, "Educationally Less Valuable posts that contribute to the development of a learning community, through trust, acknowledgement, and empathy may not move a discussion along educationally, but they move the class towards

building community" (2009, 28). Moreover, according to Rovai, participation may provide support or a sense of community for students who are close to failing a course, and could make the difference between them continuing with the course and giving up (2003). Thus, it is necessary to acknowledge that generating *quality* participation needn't be the primary goal of instructions for online discussion. Rather, instructors should define participation in detail in order to generate the greatest *frequency* of contributions.

Assessment. While some may philosophically criticize the practice of grading participation in the first place (Gilson, 1994), the ability of online discussions to archive students' contributions provides a level of objectivity superior to the traditional classroom setting. According to Baglione and Nastanski, "Online discussion boards provide more substantive discussion than informal classroom discussions because of 'research and reflective time, physical anonymity, and equitable distribution'" (2007, p. 142). Similarly, applying a grading rubric to the assessment of discussion contributions, as numerous studies indicate (Oncu, 2005; Lunney & Sammarco, 2009), provides an added level of objectivity to the process of grading. Furthermore, employing a grading rubric for the consistent assessment of online discussions provides an opportunity to delegate the task of grading.

The significant quantitative finding of this experiment as well as the qualitative feedback offered by students indicates that the question of assessment for online courses is secondary to the question of facilitation. In

other words, instructors need to develop instructions for participation in online discussions that clearly communicate expectations in detail before a useful discussion regarding assessment can even occur. As Hura (2010) concludes in her study of 66 graduate students in an online course:

> The online students acknowledged that the metrics for grading the content would also be difficult to accomplish by the instructor due to both time to evaluate each comment/discussion for each student as well as to map the learning with the discussions' objectives. Several times throughout the summary discussions, the instructor queried the students as to the change in their attitudes and feelings about not grading for quality/content. Consistently the students' responses were strongly in favor of grading only for 'participation.' While the results of this study were not empirically driven, the strong student reaction and response to the questions of grading in-class and online discussions was certainly in favor of following an approach having the instructor only grading for participation rather than grading for quality and content (p. 167).

Moreover, as the results of this experiment indicate, it is possible to maintain a high level of reliability among multiple assistants by using a grading rubric—an asset that would only gain consistency by limiting the assessment of participation to its most basic form. In either case, such a practice not only benefits the instructor, but decreases the amount of time that students must typically wait to receive feedback on their contributions.

In turn, these benefits imply that future enrollment in online courses will continue to grow outside the physical confines of the traditional classroom; restricted more by the availability of assistants rather than instructors.

Facilitation. The educational approach underlying the design of an online program is crucial to the way in which instructors facilitate online discussions. As Mazzolini & Maddison explain:

> If the instructor assumes the 'sage on the stage' role then they will lead discussions . . .If, in contrast, the program has been designed according to a constructivist-type model meant to encourage students to initiate discussions and answer each other's questions, then the instructor, as 'guide on the side', would probably not want to dominate the discussions. . . [However] we would not be wise to encourage instructors to act totally as 'ghosts in the wings' (2003, 238).

Although the literature suggests that facilitators who give comments or opinions, show appreciation, encourage contributions, and summarize discussions more frequently may promote higher level knowledge construction in online environments (Bliss & Lawrence, 2009; Hew & Cheung, 2011) the "guide on the side" approach used in this study indicates that instructional detail, rather than instructors themselves, has a more significant impact on interaction; particularly considering the majority of clarifications that emerged from groups with detailed instructions.

As the results of the experiment clearly identify, students exposed to detailed instructional conditions will respond at a significantly higher rate than students prompted by regular or limited approaches to facilitating discussion. Thus, it is critical to recognize that *how* instructions are communicated can mean the difference between a student succeeding on an assignment or failing to respond at all.

Limitations

Although the result of inter-coder reliability testing indicated that the variance between the four teaching assistants who graded the discussion board contributions was surprisingly minimal (0.919 reliability), the large scale of the sample necessitated this compromise in reliability since it was not feasible for 1 instructor to grade postings from 167 students.

Additionally, the experiment called into to question the ethics of potentially advantaging students randomly assigned to more detailed instructional conditions. Since it was determined through the findings of the experiment that students, indeed, respond differently based on the type of instructions they are provided with, the grades assigned during the experiment were not factored into the final grades of students who did not receive 18 or more points on the 20 point assignment. Moreover, students who performed below the 18 point level were given an opportunity to repeat the assignment in order to resolve any injustice that might have resulted from variance in the experiment's instructional conditions.

Unfortunately, the greatest shortcoming of the study was the inability to match the data collected from students in the survey with their performance in the discussion boards. This limitation resulted from using the "Survey" function in Blackboard, which automatically randomizes the reporting of results, instead of administering the survey through the "Assessment" function or an independent survey service. In turn, the experiment's survey results had to be reported in the aggregate form, which limited the study's ability to report how or whether trends in the results could be attributed to demographic information.

Finally, in noting the significant difference between groups with detailed instructions to those with general or limited instructions, it is clear that a manipulation check should have been conducted to further distinguish between the general and limited conditions.

Recommendations

This study leads us to ask new and different pedagogical questions about the way online discussion boards are designed. What are the students' perceptions of their own learning? How do students want to experience learning? How do educators want to design their courses? How can assignments and reading materials be most appropriately prepared to meet the learning needs of students and teachers in the online environment? Why do certain students not engage with online discussion boards? If courses were developed with the same detailed instructions, but were assessed in different ways, would the results be significant?

As online course offerings and enrollment numbers continue to swell, the need for more studies in this area is urgent. Further research is necessary not only to validate the results of this experiment, but to expand on its significant findings by exploring whether there are categorical or subordinate facets of a "detailed" approach to facilitating online discussion boards. Moreover, it is necessary to investigate how online forums beyond the scope of an academic setting may benefit from adopting detailed instructions for engaging in public discourse.

Conclusion

The purpose of this study was to question whether detailed instructions for participation in online discussion boards yield higher quality contributions from students. While the experiment did not produce significantly sufficient findings to definitively answer this research question, the results of the experiment indentified an unexpected and pedagogically valuable finding that should positively influence the design of future online courses that utilize discussion boards. Instructors working in the online environment must acknowledge that not only providing expectations for participation in online discussion is necessary, but that *detailed* instructions are a vital component of engaging students. The more detailed instructions students receive the probability that they will participate significantly increases.

REFERENCES

Ajayi, L. (2009). An exploration of pre-service teachers' perceptions of learning to teach while using asynchronous discussion board. *Educational Technology & Society, 12*(2), *86-100.*

Ajayi, L. (2010). How asynchronous discussion boards mediate learning literacy methods courses to enrich alternative-licensed teachers' learning experiences. *Journal of Research on Technology in Education, 43(1),* 1-28.

Armstrong, N., & Powell, J. (2009). Patient perspectives on health advice posted on internet discussion boards: A qualitative study. *Health Expectations: An International Journal of Public Participation in Health Care and Health Policy, 12(3),* 313-320.

Baglioni, S., & Nastanski, M. (2007). The superiority of online discussion: Faculty perceptions. *The Quarterly Review of Distance Education, 8(2),* 139-150.

Bane, C. (1925). The lecture versus the class discussion method of college teaching. *School and Society, 21(1),* 300-302.

Bauer, J. (2002). Assessing student work from chatrooms and bulletin boards. *New Directions for Teaching and Learning, 91(1),* 31-36.

Bean. J., & Peterson, D. (1998). Grading class participation. *New Directions for Teaching and Learning, 74(1),* 33-40.

Beaudoin, M. (2002). Learning or lurking?: Tracking the "invisible" online student. *The Internet and Higher Education, 5(2),* 147-55.

Beyers, H. (2004). Interactivity and online newspapers: A case study on discussion boards. *Convergence (London, England), 10(4),* 11-20.

Blignaut, S., & Trollip, S. (2003). Developing a taxonomy of faculty participation in asynchronous learning environments - an exploratory investigation. *Computers and Education, 41(2),* 149-172.

Bliss, C., & Lawrence, B. (2009). From posts to patterns: A metric to characterize discussion board activity in online courses. *Journal of Asynchronous Learning Networks JALN, 13(2),* 15-32.

Bonner, S., & Chen, P. (2009). Teacher candidates' perceptions about grading and construtivist teaching. *Educational Assessment, 14(1),* 57-77.

Buckley, K., Beyna, B., & Dudley-Brown, S. (2005). Promoting active learning through on-line discussion boards. *Nurse Educator, 30(1),* 32-36.

Campbell, N. (2007). Bringing ESL students out of their shells: Enhancing participation through online discussion. *Business Communication Quarterly, 70(1),* 37-43.

Chickering, A., & Ehrmann, S. (1999). Implementing the seven principles: Technology as lever. *AAHE Bulletin,* October, 3-6.

Cooper, L. (2001). A comparison of online and traditional computer applications classes. *The Journal: Technological Horizons in Education, 28(8),* 52.

Cox, B., & Cox, B. (2008). Developing interpersonal and group dynamics through asynchronous threaded discussions: The use of discussion board in collaborative learning. *Education (Chula Vista), 128(4),* 553-565.

Dallimore, E., Hertenstein J., & Platt M. (2004). Classroom participation and discussion effectiveness: student-generated strategies. *Communication Education, 53(1),* 103-115.

Davies, J., & Graff, M. (2005). Performance in e-learning: online participation and student grades. *British Journal of Educational Technology, 36(4),* 657-663.

Davis, D. (2002). *The adventure of the discussion board.* Distributed by ERIC Clearinghouse.

Farrell, G., & Leung, Y. (2004). Innovative online assessment using confidence measurement. *Education and Information Technologies, 9(1),* 5-19.

Ferdig, R., & Roehler, L. (2004). Student uptake in electronic discussions: Examining online discourse in literacy preservice classrooms. *Journal of Research on Technology in Education, 36(2),* 119.

Fritschner, L. (2000). Inside the undergraduate college classroom: Faculty and students differ on the meaning of student participation. *Journal of Higher Education, 71(3),* 342-362.

Garrison, D., Anderson, T. & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2(2),* 87-105.

Gerber, S., Scott, L., Clements, D. & Sarama, J. (2005). Instructor influence on reasoned argument in discussion boards. *Educational Technology Research and Development, 53(2),* 25-39.

Gilson, C. (1994). Of dinosaurs and sacred cows: The grading of classroom participation. *Journal of Management Education, 18(2),* 227-236.

Hew, K., & Cheung W. (2011). Higher-level knowledge construction in asynchronous online discussions: An analysis of group size, duration of online discussion, and student facilitation techniques. *Instructional Science, 39(3),* 303.

Hura, G. (2010). A student perspective on how online discussion should be graded. *Journal of Educational Technology Systems, 39(2),* 163-172.

Jewell, V. (2005). Continuing the classroom community: Suggestions for using online discussion boards. *English Journal, 94(4),* 83-87.

Karnstedt, M., Hennessy, T., Chan, J., & Hayes, C. (2010). Churn in social networks: A discussion boards case study. *Social Computing (SocialCom), 2010 IEEE Second International Conference on,* 233-240.

Karp, D., & Yoels, W. (1976). The college classroom: Some observations on the meeting of student participation. *Sociology and Social Research, 60(1),* 421-429.

Kassop, M. (2003). *Ten ways online education matches, or surpasses, face-to-face learning.* Retrieved October, 2011, from http://technologysource.org

Kay, R. (2006). Developing a comprehensive metric for assessing discussion board effectiveness. *British Journal of Educational Technology, 37(5),* 761-761.

Kindred, J. (2003). Talking online about talking online: Exploring perception and identity formation. *Communication Teacher, 17(2),* 5-7.

Krentler, K., & Willis-Flurry, L. (2005). Does technology enhance actual student learning? The case of online discussion boards. *Journal of Education for Business, 80(6),* 316-321.

Lee, H., Kim, J., & Hackney, R. (2011). Knowledge hoarding and user acceptance of online discussion board systems in eLearning: A case study. *Computers in Human Behavior, 27(4),* 1431-1437.

Levine, S. (2007). The online discussion board. *New Directions for Adult and Continuing Education, 2007(113),* 67-74.

Li, Q. (2003). Would we teach without technology? A professor's experience of teaching mathematics education incorporating the internet. *Educational Research (Windsor), 45(1),* 61-77.

Lunney, M., & Sammarco, A. (2009). Scoring rubric for grading students' participation in online discussions. *Computers, Informatics, Nursing, 27(1),* 26-31.

Markwell, J. (2005). Using the discussion board in the undergraduate biochemistry classroom: Some lessons learned. *Biochemistry and Molecular Biology Education, 33(4),* 260-264.

Martyn, M. (2005). Using interaction in online discussion boards. *The EDUCAUSE Quarterly, 28(4),* 61-62.

Mazzolini, M., & Maddison, S. (2003). Sage, guide or ghost? the effect of instructor intervention on student participation in online discussion forums. *Computers and Education, 40(3),* 237-253.

McCarthy, J., Smith, J. & DeLuca, D. (2010). Using online discussion boards with large and small groups to enhance learning of assistive technology. *Journal of Computing in Higher Education, 22(2),* 95-113.

Mello, J. (2010). The good, the bad and the controversial: The practicalities and pitfalls of the grading of class participation. *Academy of Educational Leadership Journal, 14(1),* 77-97.

Michinov, N., Brunot, S., Le Bohec, O., Juhel, J. & Delaval, M. (2010). Procrastination, participation, and performance in online learning environments. *Computers & Education, 56(1),* 243-252.

Neuhauser, C. (2002). Learning style and effectiveness of online and face-to-face instruction. *The American Journal of Distance Education, 16(2),* 99-113.

Oncu, S., & Cakir, H. (2005). Research in online learning environments: Priorities and methodologies. *Computers & Education, 57(1),* 1098-1108.

Paulisse, K., & Polik, W. (1999). Use of WWW discussion boards in chemistry education. *Journal of Chemical Education, 76(5),* 704-708.

Pena, C., & Lopez-Estrada, V. (2009). The use of second-generation case studies in online discussion in teacher education. *International Journal of Instructional Media, 36(4),* 405-414.

Perry, P. (2010). The Touro 12-step: A systematic guide to optimizing survey research with online discussion boards. *Journal of Medical Internet Research, 12(2),* 16.

Reinsch, R., & Wambsganss, J. (1994). Class participation: How it affects results on examinations. *Journal of Education for Business, 70(1),* 33-47.

Rempel, H., & McMillen, P. (2008). Using courseware discussion boards to engage graduate students in online library workshops. *Internet Reference Services Quarterly, 13(4),* 363-380.

Resnik, D. (2005). Using electronic discussion boards to teach responsible conduct of research. *Science and Engineering Ethics, 11*(4), 617-630.

Robinson, J. (2011). Assessing the value of using an online discussion board for engaging students. *The Journal of Hospitality, Leisure, Sport & Tourism Education, 10(1),* 13-22.

Rocco, S. (2010). Making reflection public: Using interactive online discussion board to enhance student learning. *Reflective Practice, 11(3),* 307-317.

Rogers, S. (2011). Grading participation in college courses: instructor attitudes and practices. University at Albany, State University of New York.

Rollag, K. (2010). Teaching business cases online through discussion boards: Strategies and best practices. *Journal of Management Education, 34(4),* 499-526.

Rovai, A. (2003). Strategies for grading online discussions: Effects on discussions and classroom community in internet-based university courses. *Journal of Computing in Higher Education, 15(1),* 89-107.

Rovai, A. (2007). Facilitating online discussions effectively. *The Internet and Higher Education, 10(1),* 77-88.

Ryan, G., Marshall, L., Porter, K. & Jia, H. (2007). Peer, professor, and self-evaluation of class participation. *Active Learning in Higher Education, 8(1),* 49-61.

Suler, J. (2004). In class and online: Using discussion boards in teaching. *Cyberpsychology & Behavior, 7(4),* 395-401.

Theoret, J., & Luna, A. (2009). Thinking statistically in writing: Journals and discussion boards in an introductory statistics course. *International Journal on Teaching and Learning in Higher Education, 21(1),* 57-65.

Trujillo, L., & Painter, J. (2009). Effectiveness of discussion board usage for occupational therapy fieldwork II. *Journal of the Research Center for Educational Technology, 5*(3), 80-88.

Tu, C. (2002). The relationship of social presence and interaction in online classes. *The American Journal of Distance Education, 16(3),* 131-150.

Vonderwell, S., Liang, X., & Alderman, K. (2007). Asynchronous discussions and assessment in online learning. *Journal of Research on Technology in Education, 39(3),* 309-328.

Vrasidas, C. (2002). A working typology of intentions driving face-to-face and online interaction in a graduate teacher education course. *Journal of Technology and Teacher Education, 10(2),* 273-96.

Warner, D. (2003). *Student recommendations for discussions boards.* Distributed by ERIC Clearinghouse.

Wijekumar, K., & Spielvogel, J. (2006). Intelligent discussion boards. *Campus-Wide Information Systems, 23(3),* 221-232.

Yilmaz, H., & Saglam, D. (2011). Impact of discussion boards to the success of English lesson. *Journal of Language Teaching and Research, 2(1),* 26-31.

Zha, S., Kelly, P., Park, M., & Fitzgerald, G. (2006). An investigation of communicative competence of ESL students using electronic discussion boards. *Journal of Research on Technology in Education, 38(3),* 349-367.

APPENDIX A

INSTRUCTIONAL CONDITIONS

	Detailed	General	Limited
Directions	You will need to take a position and support your argument with evidence. You may agree or disagree with the posting OR offer an alternative interpretation. Evidence can be found in the text readings, the online readings, or in your own research. You must contribute TWICE to each session in order earn passing credit. Your second contribution must be responsive to comments made by other group members.	You will need to take a position and support your argument with evidence. You must contribute TWICE to each session in order earn passing credit. Your second contribution must be responsive to comments made by other group members.	You must contribute TWICE to each session in order earn passing credit. Your second contribution must be responsive to comments made by other group members.
Deadlines	Your first discussion contribution should be completed by Thursday (11:55pm). Replies and additional postings must be submitted by Sunday (11:55pm).	Your first discussion contribution should be completed by Thursday (11:55pm). Replies and additional postings must be submitted by Sunday (11:55pm).	Your first discussion contribution should be completed by Thursday (11:55pm). Replies and additional postings must be submitted by Sunday (11:55pm).
Prompt	Review WK Chapter 1 and LD Chapter 17. Share your ideas about how the Risk Negotiation Framework applies to the case of Benson's Family Restaurant. Address the historical/contextual factors or the types of risk you see in the case.	Share your ideas about how the RNF applies to the case of Benson's Family Restaurant. Address the factors or the types of risk you see in the case.	What do you think about the case of Benson's Family Restaurant? How does the RNF apply?
Outline	Before you post to the discussion board, outline the following: What is your position? Why have you taken this position? What evidence can you provide?		

APPENDIX B

GRADING RUBRIC

Initial Posting

Points	15	12	10	0
Quality	References course content AND demonstrates understanding	Demonstrates understanding	References course content	Does not reference course content or demonstrate understanding

Responses

Points	5	3	2	0
Quality	References course content AND demonstrates understanding	Demonstrates understanding	References course content	Does not reference course content or demonstrate understanding

APPENDIX C

QUESTIONNAIRE

This is a confidential study with no verifiable personal information. The data collected will be used only for summative and analytical purposes. The survey consists of 20 questions and will take approximately 5 minutes to complete.

Part 1: Demographic Information

1. What is your gender? Male Female No Answer
2. What is your age?
3. What is your academic major?
4. How many undergraduate online courses have you previously taken?

Part 2: Survey (select one: Strongly Agree/Agree/Disagree/Strongly Disagree)

5. The instructions for posting in the discussion board were clear.
6. Discussion board allowed me to make intertextual links, e.g. read my notes, textbooks, other students' postings, the internet, websites as I worked on my own postings.
7. Discussion board allowed me to consider alternative ideas and perspectives (from my classmates) about the course's material.
8. I believe that discussion board gave me time to carefully reflect on questions before I posted my own responses.
9. Discussion board provided me with an opportunity to freely share my own ideas.
10. Discussion board allowed me to integrate my peers' ideas and views into my own postings.
11. Interacting with my peers on discussion board was fun.
12. Learning from my peers through discussion board was enriching.
13. The discussion board gave me the opportunity to freely contribute and share my own ideas and perspectives about course material.
14. I appreciate my classmates' views and beliefs about course material even when they differ from mine.
15. My classmates posted responses that were not relevant to course material.
16. The discussion board allowed me to connect socially with my peers.
17. The instructions from teaching assistants were helpful.
18. The grading rubric provided was easy to understand.
19. The instructions for posting in the discussion board encouraged me to provide evidence.
20. The use of discussion board in this class is effective.

APPENDIX D

APPLICATION FOR EXEMPT RESEARCH

PROTOCOL TITLE: DISCUSSION BOARD INSTRUCTIONS		**DATE OF REQUEST:** 13 DECEMBER 2011
PRINCIPAL INVESTIGATOR: **DR. VINCENT WALDRON**	**DEPARTMENT/CENTER:** **SOCIAL & BEHAVIORAL SCIENCES**	**UNIVERSITY AFFILIATION:** ☒ Professor ☐ Associate Professor ☐ Assistant Professor ☐ Instructor ☐ Other: **Please specify**. ("Other" categories may require prior approval. Students **cannot** serve as the Principal Investigator)
CAMPUS ADDRESS: **(include campus mail code)** **3051**	**PHONE:** **(602) 543-6634**	
	E-MAIL: **vincew@asu.edu**	
List all co-investigators. (Attach an extra sheet, if necessary.) A co-investigator is anyone who has responsibility for the project's design, implementation, data collection, data analysis, or who has contact with study participants.		
CO-INVESTIGATOR: **NICHOLAS BUTLER**	**DEPARTMENT/CENTER:** **COMMUNICATION STUDIES**	**UNIVERSITY AFFILIATION:** ☐ Professor ☐ Associate Professor ☐ Assistant Professor ☐ Instructor ☒ Other: **Please specify**. **GA**
CAMPUS ADDRESS: **(include campus mail code)** **1205**	**PHONE:** **480-370-0294**	
	EMAIL: **Nicholas.Butler@asu.edu**	

STUDY OVERVIEW

1. Provide a **brief** description of the **background, purpose, and design** of your research. Avoid using technical terms and jargon. Be sure to list all of the **means you will use to collect data** (e.g. tests, surveys, interviews, observations, existing data). Provide a short description of the tests, instruments, or measures and **attach copies of all instruments and cover letters for review.** *If you need more than a few paragraphs, please attach additional sheets.* **FOR ALL OF THE QUESTIONS, WRITE YOUR ANSWERS ON THE APPLICATION RATHER THAN JUST SAYING SEE ATTACHED.**

How should instructors present performance expectations online? The answer to this question has yet to be addressed in the literature across disciplines, and is ideally suited for consideration by the field of communication studies. Thus, it is necessary to pose the following research question: How does the communication of formal instructions impact online discussion?

Methodology:
The study will be conducted in an online course for undergraduate students at Arizona State University, and be taught by a single instructor in order to ensure reliability. The course will utilize Blackboard 9.1 software, which is the current standard at the University and will allow for threaded discussions as well as

maintain a record of student postings. The course will be designed to offer 3 variations of instructions to students on how to contribute to the course's discussion board: (1) detailed, (2) general, and (3) limited. A null condition will not be used, as the literature indicates that instructor expectations are necessary for discussion in online courses where students are evaluated.

RECRUITMENT

2. Describe how you will recruit participants (attach a copy of recruitment materials).

Students will be recruited from a single section of an online course taught by the study's supervisor. The recruitment/information letter will be posted in the announcements section for students to view when they access the course via Blackboard. Students will be asked after they read the letter whether they agree to participate or not. They will be reminded that their answer will not affect their grade in the course and their information will be handled confidentially.

PROJECT FUNDING

3. How is the research project funded? (A copy of the grant application(s) must be provided prior to IRB approval. For funded projects, researchers also need to submit a copy of their human subjects training certification: http://researchintegrity.asu.edu/irb/training/)

☒ Research is **not funded** (Go to question 4)
☐ Funding decision is pending
☐ Research is **funded**

a) What is the source of funding or potential funding? (Check all that apply)

☐ Federal ☐ Private Foundation ☐ Department Funds
☐ Subcontract ☐ Fellowship ☐Other

b) Please list the name(s) of the sponsor(s):

c) What is the Project grant number and title (for example NIH grant number)?

d) What is the ASU account number/project number?

e) Identify the institution(s) administering the grant(s):

STUDY POPULATION- If you are doing data analysis only, please write DA.

4.Indicate the **total number of participants** that you plan to include or enroll in your study.	170	Indicate the **age range** of the participants that you plan to enroll in your study	18 to 55

SUPPLEMENTAL MATERIALS

5. Attach a copy of the following items as applicable to your study (Please check the ones that are attached):
   ☒ Research Methods (Research design, Data Source, Sampling strategy, etc)
   ☒ Any Letters (cover letters or information letters), Recruitment Materials, Questionnaires, etc. which will be distributed to participants
   ☐ If the research is conducted off-site, provide a permission letter where applicable

☐ If the research is part of a proposal submitted for external funding, submit a copy of the FULL proposal

Note: The information should be in sufficient detail so IRB can determine if the study can be classified as EXEMPT under Federal Regulations 45CFR46.101(b).

DATA USE

6. How will the data be used? (Check all that apply)

☐ **Dissertation**
☒ Thesis
☐ Results released to participants/parents
☐ Results released to agency or organization
☐ Other *(please describe):*

☒ **Publication/journal article**
☐ Undergraduate honors project
☐ Results released to employer or school
☐ Conferences/presentations

EXEMPT STATUS

7. Identify which of the 6 federal exemption categories below applies to your research proposal and explain why the proposed research meets the category. Federal law 45 CFR 46.101(b) identifies the following EXEMPT categories. Check all that apply to your research and provide comments as to how your research falls into the category.

SPECIAL NOTE: The exemptions at 45 CFR 46.101(b) do not apply to research involving prisoners. The exemption at 45 CFR 46.101(b)(2), for research involving survey or interview procedures or observation of public behavior, does not apply to research with children, except for research involving observations of public behavior when the investigator(s) do not participate in the activities being observed.

☒ (7.1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.
Please provide an explanation as to how your research falls into this category:

☐ (7.2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; AND (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.
Please provide an explanation as to how your research falls into this category:

☐ (7.3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if:
(i) The human subjects are elected or appointed public officials or candidates for public office; or (ii) federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.
Please provide an explanation as to how your research falls into this category:

☐ (7.4) Research, involving the collection or study of existing data, documents, records, pathological specimens, or

diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.
Note-Please review the OHRP Guidance on Research Involving Coded Private Information or Biological Specimens: http://www.hhs.gov/ohrp/humansubjects/guidance/cdebiol.pdf
Please provide an explanation as to how your research falls into this category:

☐ (7.5) Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (i) Public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs. **(Generally does not apply to the university setting)**

☐ (7.6) Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.
Please provide an explanation as to how your research falls into this category:

TRAINING

8. The research team must document completion of human subjects training within the last 3 years. (Attach a copy of the human subjects training for the PI and all Co-Investigators: http://researchintegrity.asu.edu/humans.)

Please provide the date that the PI and co-investigators completed the training. 30 AUGUST 2011

PRINCIPAL INVESTIGATOR

In making this application, I certify that I have read and understand the ASU Procedures for the Review of Human Subjects Research and that I intend to comply with the letter and spirit of the University Policy. I may begin research when the Institutional Review Board gives notice of its approval. I must inform the IRB of ANY changes in method or procedure that may conceivably alter the exempt status of the project. **I also agree and understand that records of the participants will be kept for at least three (3) years after the completion of the research**
Name (first, middle initial, last):

DR. VINCENT WALDRON