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# LEARNING TO DISCUSS LITERATURE ONLINE: WHERE TECHNOLOGY DESIGN AND INSTRUCTION INTERSECT

By

Kenneth H. Martin

B.A. Harvard College, 1973

M.Ed. University of Maine, 2003

A THESIS

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

(in Literacy Education)

The Graduate School

The University of Maine

December, 2011

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# DISSERTATION

## ACCEPTANCE STATEMENT

On behalf of the Graduate Committee for Kenneth H. Martin, I affirm that this manuscript is the final and accepted dissertation. Signatures of all committee members are on file with the Graduate School at the University of Maine, 42 Stodder Hall, Orono, Maine.

Julie Cheville, Ph.D., Advisor (Date)

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# LEARNING TO DISCUSS LITERATURE ONLINE: WHERE TECHNOLOGY DESIGN AND INSTRUCTION INTERSECT

By Kenneth H. Martin
Thesis Advisor: Dr. Julie Cheville

An Abstract of the Thesis Presented
in Partial Fulfillment of the Requirements for the
Degree of Doctor of Philosophy
(in Literacy Education)
December, 2011

While agreement exists that computer-mediated communication (CMC) should support rich discussion, research has not yet established *how* or *if* such discussion can be realized. The problem is that users often do not attend effectively to others' entries. The main question guiding this case study was the following: How does an introduction to the design elements of Moodle Forum in a twelfth-grade English classroom influence participants' threaded discussion? Drawing upon CMC research, this investigation documented the impact of a 15-week instructional intervention designed to increase users' explicit reference to peers' entries in Moodle Forum discussion. Participants included twenty students in two sections of a twelfth-grade English class. Using a gradual release model, the instructional intervention introduced students to strategies for achieving compositional significance (i.e., explicit reference to another's entry in one's own) and convergence (i.e., explicit reference to multiple entries in one's own). Sources of evidence included online discussion transcripts, semi-structured interviews, observational fieldnotes, and other documentary data. Descriptive analytic codes were generated both deductively and inductively and achieved inter-reader reliability. From salient codes applied to the data set, three key findings emerged. First, following instruction, participants employed strategies that resulted in entries evidencing compositional significance. As a result, their online entries were lengthier and more substantive. Second, discussion topics that invited contention proved crucial to compositional significance. Third, instruction aimed at supporting convergence in participants’ online entries was mitigated by the design of Moodle Forum and by instructional limitations. This study offers researchers and practitioners an instructional framework for assisting students to achieve compositional significance in online literature discussions. Among its implications is the need for technological and instructional refinements if users are to achieve convergence in online discussion.

# DEDICATION

To Janet

# ACKNOWLEDGEMENTS

A great many people have supported me and contributed to the completion of this work, beginning with the members of my dissertation committee. I especially want to thank my committee chair, Julie Cheville. Invariably, her demand for theoretical and empirical precision pushed my thinking into new and deeper paths. Richard Ackerman provided the perspective of educational leadership and prompted my attention to alternative explanations for what I observed. Susan Bennett-Armistead introduced me to John Dewey who not only proved central to the theoretical framework here but to my educational philosophy in all contexts. Troy Hicks contributed essential technology expertise, and I am especially grateful for his willingness to join a committee outside his own university. Finally, I want to thank my friend and colleague Rich Kent. Without Rich, I would not have started let alone finished this degree. For years, he has supported my professional growth and encouraged me to do more.

I appreciate having completed this degree at the College of Education and Human Development at the University of Maine. I am grateful to Associate Dean Jan Kristo for her support, and I particularly want to thank the administrative support staff that daily makes my teaching, study, and research easier. I was fortunate at the University to have found the Maine Writing Project, an association of teachers who share my interest in reflective practice. I want to recognize Jeff Wilhelm, former MWP director and my original mentor. Above all, I want to thank Cindy Dean, Maureen Montgomery, and Dave Boardman. We’ve been traveling this doctoral road together and that’s the best support of all.

I want to thank my former teaching colleagues Elizabeth Holub, Brittany Ray, Deb Elz-Hammond, Lucille Willey, and Ron Smith. They seemed to know I would pursue this work even before I did, and their interest in my progress never waned.

I particularly want to thank the faculty, administration and staff at Riverside High School for granting me open access to their school. Of course, I am particularly indebted to the Riverside students with whom I worked, and words cannot express my gratitude to their teacher, Ms. Hawthorne. Whatever success I achieved in this study of online discussion is as much theirs as my own.

Finally and most importantly, I am grateful to my family for their support and encouragement. Most of what I really know about education, I learned from my daughter Hilary and my son Nick. Nick's contribution to this study will be apparent from the second page, and to me at least Hilary's contribution is present throughout. Completing a dissertation involves long days and late nights as well as a whiplash succession of euphoric highs and grinding lows. Only one person experienced all that with me, and instead of tossing me out the door worked to keep some semblance of normalcy in our life. For that I'll always be grateful to my wife Janet.

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# Chapter 1

# INTRODUCTION

As a technology integration coach during 2007-2009, I worked with teachers at thirty-five schools in one of the most rural areas of the United States. Classes often numbered 10-12 students, all of whom shared remarkably similar backgrounds. Their schools were located far away from zoos, museums, universities, and other educational opportunities often found within walking distance in urban areas, and in a time of shrinking school budgets, field trips by bus were increasingly rare in this area. I had been hired to develop videoconferencing as a way to bridge this geographic isolation. Videoconferencing could take students to visit the Bronx Zoo, to see exotic animals and speak with an expert; it could introduce them to Asian or Hispanic students in far-off states, and it could even bring them subjects like Advanced Statistics that were not available locally. Local administrators and I had hoped that distance technology would provide an alternative for teachers and students, although we considered it less satisfactory than personal, face-to-face contact. Soon after I was hired, two experiences caused me to question this initial perspective.

First, at a conference on teaching with technology, educator Will Richardson emphasized for effect that “Today, *all* education is distance education.” At the time, I took him to mean (as I believe he did) that in today’s more global environment, every class needs to lift its four walls. Resources need to be brought into the classroom, and students and teachers need to travel out, albeit virtually, to connect with those outside their own locale. This change requires not just material investment but a conceptual shift as well. Although Richardson made me consider a broader need for distance education, it took a more personal experience involving my own son to get me thinking about the broader scope of distance technology itself.

At about the time of the conference, my son took part in an all-night Rock-a-Thon to benefit the Muscular Dystrophy Association. He spent the night at his high school gym, in a rocking chair with many of the school's 200 students. Imagine plenty of food and not too many books but lots of MP3 players, video games, and laptop computers. The next day, Nick commented that it was funny to be sitting next to his best friend and carrying on a conversation through instant messaging. His comment made me consider that for young people, emerging technologies may not be just a poor substitute for traditional forms of communication. Rather than *settling* for technology-mediated communication out of necessity, Nick had chosen it as a *preferred* medium. With videoconferencing, my objective had been to create a substitute experience as similar to face-to-face contact as possible. However, my observation of how Nick and others were actually using technology suggested that for these young people, the line between traditional, face-to-face contact and emerging, technology-mediated contact may have blurred if not altogether disappeared. I began to wonder if I needed to attend to these technologies in a new way, and so I turned to research literature that addressed students' engagement with emerging technologies, particularly distance technology. What I found informed my thinking in two ways.

From the literature, I learned it was indeed reasonable to expect a difference between Nick's perspective on distance technology and my own. Prensky (2001) distinguishes digital natives from digital immigrants as those who have grown up with emerging technologies versus those who grew up prior to these technologies.

Interestingly, the divide between the two can actually be pinpointed to the early 1990s. At that time, there were just fifty websites. In 1993, the *Mosaic* Graphical User Interface (GUI) was invented, and for the first time, something other than plain text could be posted to the World Wide Web (Bolter, 2001, p. 40). By the year 2000, the result was more than 25 million websites (BBC News, 2002). My son Nick was born in 1991, which makes him one of the first digital natives. While there are socioeconomic issues concerning access to technology, Nick is among those in the first generation to have experienced Internet access throughout his formal schooling. Like others, he has been taught by digital immigrants. This distinction sets up profoundly different expectations for technology. According to Prensky, natives prefer multi-tasking over single-tasking. In addition, they want information just-in-time as needed, not just-in-case or out of context, and they much prefer multimedia, including images and sound, over strictly linear text. Above all, digital natives prefer to interact or network simultaneously with many others, a characteristic that aligns with the intense social nature I have observed in adolescents.

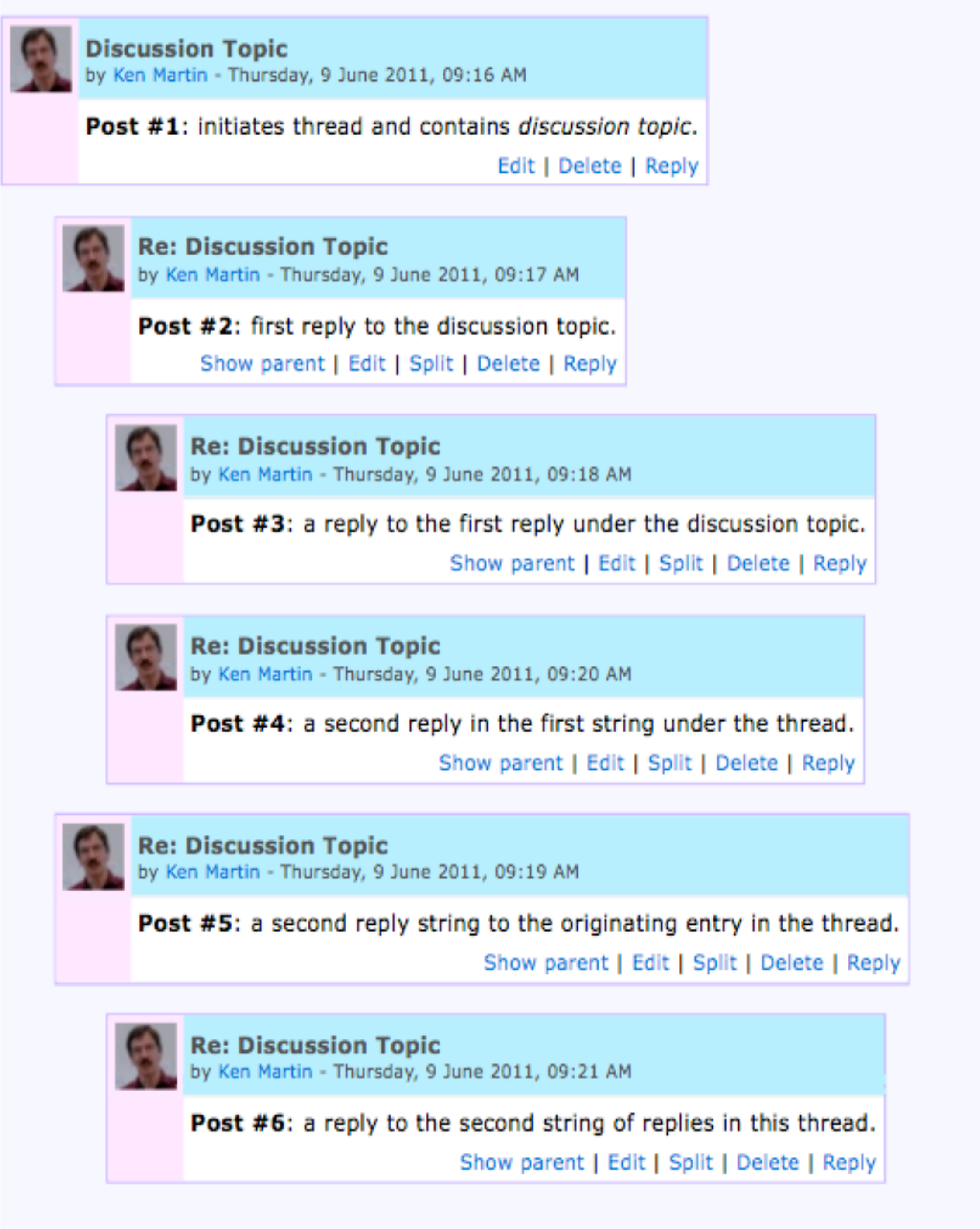
From the literature, I also learned that engagement in technology-mediated environments revolves around the concept of *social presence*. Those who feel a high degree of social presence with technology also feel a high degree of satisfaction that leads, in turn, to increased engagement (Gunawardena & Zittle, 1997; Rourke, Anderson, Garrison, & Archer, 1999). Short, Williams, and Christie (1976) originally defined social presence as “the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship” (as cited in Gunawardena & Zittle, 1997, p. 9). Since then, social presence has been redefined in numerous ways, but what these definitions share is a comparison of technology-mediated environments with face-to-face environments. Newberry (2001), for example, calls social presence "the degree that a person is perceived to be *real* [emphasis added] in a mediated environment" (p. 5).

The first component of social presence is *intimacy* (Argyle & Dean, 1965 as cited in Gunawardena & Zittle, 1997, p. 7), the inherent capacity of the medium alone to deliver input, including nonverbal, emotional cues. Television, for example, is more intimate than radio by virtue of its capacity to transmit a visual image of the speaker as well as the speaker's voice. The second component of social presence is *immediacy*, actions by participants using the medium that affect their feelings of "psychological distance" (Wiener & Mehrabian, 1968, as cited in Gunawardena & Zittle, 1997, p. 9). Even with radio, for example, a speaker can use volume to approach the listener differently (e.g., shouting for anger or whispering for affection). Together, intimacy and immediacy contribute to social presence in technology-mediated communication. However, the contribution of each tends to be judged according to expectations carried over from face-to-face communication. The intimacy of a medium is judged by its transparency, the degree to which the medium delivers input without reducing or otherwise altering the nature of the original output (Newberry, 2001, p. 5). The immediacy of what users do in the medium is judged in terms associated with face-to-face behavior: prompt response, expressing emotions, a style that is informal, friendly, relaxed, open, and personal (Newberry, 2001; Rogers & Lea, 2005; Tu & McIsaac, 2002).

In my initial reading on social presence, I found that research had been conducted almost entirely with *post-secondary* students in a *distance* learning environment. I concluded that the experience reported in the literature might differ in two important ways from my own experience as a father and as a technology integration coach. First, as a father, I had observed that Nick and his friends were not strangers. When they went online, they seemed to rely on social presence previously established in their face-to-face contact. Second, because participants in these research studies had matured before the development of the Internet, I concluded that they were digital immigrants. In contrast, the young people I observed were digital natives. Therefore, I considered that the social presence needs and expectations of high school students in an online context might be different from those reported in the literature. I began to wonder whether a different perspective toward online communication on their part might be leveraged to increase student engagement in school.

## The Effect of Threaded Discussion on Student Engagement: A Pilot Study

During the 2007-2008 school year, in my capacity as a technology integration coach, I assisted Ms. Hawthorne, a high school English teacher, to implement the threaded discussion application known as Moodle Forum. Moodle Forum is a threaded discussion board on which students post their own responses and reply to entries posted by their classmates and their teacher. This discussion takes place in an *asynchronous* manner that does not require participants to be online at the same time. The Forum technology presents these entries in discussion "threads." This format accommodates multiple discussions from a single starting point, which the Forum organizes visually in a way that makes clear which entries are in response to each other (Figure 1.1). In the threaded discussion format, an initial or "parent" post is followed by "child" replies that are gathered and indented under their "parent." In Figure 1.1, posts two and five are child replies to post one. Posts three and four are child replies to post two, just as post six is a child to post five. For all entries, time stamps indicate chronological order in which entries were posted, and indicate, for example, that entry number five was posted before entry number four.



**Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:16 AM

**Post #1**: initiates thread and contains *discussion topic*.

Edit | Delete | Reply

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:17 AM

**Post #2**: first reply to the discussion topic.

Show parent | Edit | Split | Delete | Reply

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:18 AM

**Post #3**: a reply to the first reply under the discussion topic.

Show parent | Edit | Split | Delete | Reply

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:20 AM

**Post #4**: a second reply in the first string under the thread.

Show parent | Edit | Split | Delete | Reply

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:19 AM

**Post #5**: a second reply string to the originating entry in the thread.

Show parent | Edit | Split | Delete | Reply

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:21 AM

**Post #6**: a reply to the second string of replies in this thread.

Show parent | Edit | Split | Delete | Reply

Figure 1.1. Threaded discussion format.

In fall 2007, Ms. Hawthorne had experienced positive results using the Forum with her junior-level Advanced Placement English class. I assisted Ms. Hawthorne in learning to use Moodle, but I had no direct contact with this junior English class. Ms. Hawthorne found that these students contributed to the Forum frequently and at length in more varied and thoughtful ways than their in-class discussion. In the spring, she hoped her ninth-grade, under-performing students would find this technology similarly engaging. These students had evidenced limited participation in class, low rates of homework completion, and substandard performance generally. Ms. Hawthorne hoped that by tapping into these students' interest in technology she could achieve instructional objectives not met in the fall term. She was particularly concerned with students she called "unreachables—students who were perfectly lovely and sat there in the classroom and just didn't seem engaged in much of anything" (Martin, 2008, p. 17). Ms. Hawthorne had previously observed that even these students, when given the chance to use a laptop, were more actively engaged over a longer period of time, and she reasoned that if they were more on task, "more cued in to what we were doing as we went along," then they would learn (Martin, 2008, p. 17). Although Ms. Hawthorne acknowledged technology as a way for teacher and students to interact outside the classroom, her objective for this ninth-grade class was to engage students more fully while in the classroom itself.

In many ways, my own experience as a high school English teacher had been the same as Ms. Hawthorne's. I had routinely experienced unsatisfactory rates of homework completion, inadequate length on writing assignments, meager attempts at revision, and class discussions that seemed dependent on me for support. During my tenure as a technology integration coach, Ms. Hawthorne and other teachers confirmed this problem was not unique. And yet, it was decidedly in conflict with what I was observing of students outside school where they seemed heavily involved in literate activity through technology. Ms. Hawthorne agreed to my request to conduct a pilot study documenting the effect of threaded discussion in her ninth-grade classes. For my main research question, I was interested in examining how threaded discussion influenced student engagement. To explore this broad question, I constructed three sub-questions. First, I considered how threaded discussion influenced student engagement with the technology itself. Second, I investigated how threaded discussion influenced students' engagement with their peers. And finally, I examined how threaded discussion influenced students' engagement with their teacher.

For this pilot study, conducted in spring 2008, I utilized a case study design (Dyson & Genishi, 2005). The data set from this pilot study included observational field notes, a biographical student survey, pre- and post-study attitudinal student surveys, threaded discussion transcripts, and individual post-study, semi-structured interviews with three focal participants enrolled in one of Ms. Hawthorne's ninth-grade sections. This setting was located in a regional high school that served a district comprised of five towns with a total population of approximately 5,000 people. For ten years, I had been an English teacher in this high school. However, the pilot study took place eighteen months after my departure from the school, and since I had taught only senior students, I knew few students in the school and none of the ninth-grade students in the pilot study. Nevertheless, I knew most of the faculty and administration, and I was familiar with the school culture. As a technology integration coach serving this school, I had continued to help teachers integrate technology. As a teacher, I had been a colleague of Ms. Hawthorne's for two-and-a-half of my ten years in this site. I was not only familiar and comfortable with her teaching style but confident that our educational philosophies were complementary. Ms. Hawthorne had been an early adopter of new technology, and I also expected she would be a helpful thinking partner in this pilot study.

The class setting chosen for this pilot study was one section of ninth-grade English comprised of seventeen students. "English 9" was a general survey course that combined the reading of young adult literature with expository and creative writing. Students in this class had been identified by their teacher as under-performing and lacking interest. From this class of seventeen, the participant sample for the pilot study included ten students for whom I obtained informed parental consent. Composition of the sample closely reflected the composition of the class with balanced gender (five/five) and little ethnic diversity (nine Caucasian, one Hispanic). Within the range of under-performing students, this sample also represented a variety of academic abilities and varied levels of participation.

Before beginning the pilot study, Ms. Hawthorne and I had one planning session in which we agreed that I would not only introduce the pilot study but also the Moodle technology to the students. We felt this would create a role for me in the classroom as more than an outside observer. We also agreed that after introducing Moodle, I would participate only informally, answering questions or helping students as needed. We would design Moodle assignments together, and we would confer on instructional moves. She, however, would conduct any mini-lessons or other teaching activities throughout the pilot study.

About two weeks before introducing Moodle, I visited the class, explained my study, and distributed the informed parental consent forms. In the following week, Ms. Hawthorne received parental consent as well as student assent forms from ten students who became the participant sample for the pilot study. At a second class meeting prior to introducing Moodle, I visited the class to conduct two surveys. First, I administered a biographical survey consisting of open questions addressing students' technology experience. Ms. Hawthorne collected and read surveys from all students to inform her own use of Moodle as classroom teacher. She gave me copies of those surveys completed by the ten participants. None of the participants had any prior experience with Moodle. However, all but one had experience with instant messaging, and seven of the ten primary informants had experience with social networking sites like MySpace. To the ten participants, I also administered a Likert-scaled survey to document their attitudes toward schoolwork and class discussion. Data from both the biographical and the attitudinal surveys provided baseline information and, in the case of the attitudinal survey, a basis for comparison when an attitudinal survey was administered at the conclusion of the study. At a third class meeting, I introduced the class to Moodle. Students personalized their user profiles, and I showed them how to navigate the various resources and activities in Moodle. Most importantly, students tried out the Forum, particularly starting and replying to discussion threads. Students required little direct instruction in manipulating the Forum technology, but we did talk about formatting options like font size and color that make reading online posts easier.

The pilot study lasted four weeks, during which time I was present in the classroom six times to observe behavior and comments among students and between students and their teacher while they posted in the discussion forum. The class used Moodle to respond to their reading of *The Pigman* (Zindel, 1968), a young adult novel that addresses two teenagers' relationship with a lonely widower. Each class period was forty minutes long although Moodle discussions lasted only 20-25 minutes. When I was not present in class, Moodle was sometimes but not always used. Also, students were allowed to use Moodle when not in class, but they were not required to do so. Most Moodle discussion took place during class time while students were together in each other's physical presence. The teacher's objective was to assist students to express their reactions to what they read in more diverse, thoughtful, and engaged ways than they had in face-to-face discussion. For each Forum discussion that addressed the content of one chapter, Ms. Hawthorne introduced a topic for discussion, and each student was expected to begin one original discussion thread and reply to at least two threads started by other students. No specific requirement was set as to entry length. Ms. Hawthorne participated in the Forum. She did not initiate discussion threads, but she did post a reply to each student-initiated thread. Ms. Hawthorne also discussed Forum participation with students in class either informally or as mini-lessons. She generally emphasized the need for students to write longer, more detailed posts, and she encouraged pertinent references to *The Pigman*. I did not participate in Forum discussions. I did participate in class discussions but more with regard to technical issues than content. For example, I led one discussion about what makes a helpful subject line for Forum entries. My participation in class gave me the opportunity to engage students in informal but substantive conversation about Moodle and about school generally.

At the end of the four-week data collection period, I conducted a Likert-scaled survey that documented the ten participants' attitudes toward Moodle assignments and discussion. The items on this survey were the same as those on the initial survey except that those originally worded as "in class" were reworded to "on Moodle." Immediately following this survey, I conducted exit interviews with three students each of whom was chosen for a particular reason. Valerie was chosen because she was identified by her teacher as the participant with the highest academic standing. Beth was chosen because I had observed she was a quiet student in class discussion but appeared heavily engaged in the Forum. Evan was chosen because he acknowledged being a gamer and appeared to be the most technologically savvy student in the sample. In addition, Evan had been identified by his teacher as a lower-performing and less-engaged student in class. With the admittedly limited sample of ten participants, I selected those primary informants representing diverse academic abilities, levels of engagement, and technology experience. In the exit interviews, I used a semi-structured protocol that included asking how each student felt about using Moodle, what they liked and disliked about the use of this technology, how Moodle compared with other schoolwork and with in class discussion, how they manipulated the technology, and how they made choices about who to talk with and what topic threads to join. Each interview lasted 15-20 minutes.

Participant interviews were transcribed, de-identified, and cleansed. To analyze interview transcripts and other data, I used an inductive approach (Strauss & Corbin, 1990) that began with an initial coding run to generate potential master and sub-codes. In a second data run, to establish internal reliability, these master and sub-codes were applied and revised as required. Once a stable set of master and sub-codes were in place, I developed a coding dictionary and coding map to insure internal reliability across coding sessions. Formal analysis proceeded with the application of master and sub-codes across the data set.

Two salient themes emerged from the pilot study, one having to do with student engagement and a second having to do with activity on the Moodle Forum. First, with regard to engagement, all three primary informants that I interviewed reported that they preferred computer-mediated literary discussions in comparison to those held in class, and all three articulated multiple reasons for this preference. They all described the Forum as easier and faster than class discussion, and all three reported that the multiple discussion threads on Moodle afforded them a choice of what topic to discuss and which other students to talk with. Evan reported that he liked how on Moodle every discussion “turn” or contribution by a student doesn't have to be managed by the teacher. Beth reported that on Moodle the teacher seemed more like a student and that this influenced her more and helped her to understand what she was writing. According to the literature, the separation in time and space in online discussion enables users to contribute more thoughtfully and reflectively (Bailey & Wright, 2000; Grisham & Wolsey, 2006; Hofstad, 2003; Kirk & Orr, 2003; Lobry de Bruyn, 2004). Valerie and Beth stated that they could express themselves better on Moodle because they had more time to think. Finally, when I asked Beth if she was an active contributor in class she stated, “Not at all, but with Moodle it’s different. It gives you courage.” The technical term for what Beth described is “*disinhibition,*” meaning that the separation of time and space between participants in an online environment removes certain cautious behaviors that typically constrain face-to-face contact (Suler, 2004). Disinhibition like that reported by this informant is recognized in the literature as assisting "shy" students to participate more and all students to address sensitive issues more freely (Grisham & Wolsey, 2006; Kirk & Orr, 2003; Lobry de Bruyn, 2004).

The second salient theme that emerged from the pilot study was that the primary informants reported that the positions they expressed on the Forum developed over time and were influenced by what other students said. Among these informants, common criticisms of in-class discussion were that the discussion moved too fast and along just one path. Face-to-face, they felt they had no time to consider their own thoughts in detail, let alone consider and incorporate more than the last statement made by the last speaker. In contrast, all three primary informants reported that the asynchronous nature of threaded discussion allowed them to work at their own pace, pausing to reflect as they worked, and disinhibition encouraged them to be more fluent and open in what they expressed. With threaded discussion, participants could attend to more of what was said by more contributors. All three participants recognized each of these distinct characteristics in comparison with in class discussion. Valerie, for example, put it this way:

> I can read and understand what I read, but it’s hard for me to answer questions over it in class when a teacher picks on you really quick. But when I go on Moodle...I answer what I think is right and then go and read my peers’ postings, and see what they think, and if I change my mind then I go back and fix that.

Valerie indicates that with Moodle she had more time to think, that she listened to a greater number of her classmates, and that with their help she could revise her own interpretation. This suggests that Moodle helped her to experience school as a formative environment, not just a procession of summative events.

Following the pilot study, I returned to the literature on technology-mediated communication and found that the primary informants were describing two rhetorical strategies central to interactive engagement in online discussion: significance and convergence. *Significance* – a term I derive from Jolivette (2006) – is the act of attending to what is said by another participant in a discussion. Simply reading another's entry is an act of significance, provided it is done with consideration. In other words, significance is achieved when participants have an attitude of interest and respect toward what others contribute in discussion. Whether or not participants acknowledge the contributions of another in their own responses, the perception of significance fosters an environment in which students "trust one another and collaborate" (Jolivette, 2006, p. 537). Increasingly complex acts of significance include agreeing or disagreeing, extending, or being influenced in one's own thinking by what another has said. *Convergence*, or convergent response, is the act of combining contributions from multiple sources into one's own reasoned position (Lobry de Bruyn, 2004). Convergence results from an individual's effort to pull together various points identified as significant across the discussion. While significance involves consideration of a single entry, convergence requires synthesis of content from multiple entries and/or threads. Significance and convergence are important rhetorical features in effective online communication because they demonstrate participants' understanding of two principles that are central to learning, including learning in an online community. First, significance and convergence demonstrate participants' understanding that learning is *socially constructed*. Simply stated, participants in online discussion are expected to articulate their own identity, solve problems together, and generally co-construct meaning through a process of social negotiation that recognizes and capitalizes on the contributions of multiple, diverse individuals (Jonassen, 2000, pp. 231-232). Second, significance and convergence demonstrate participants' understanding that learning in an online community is *formative*. In other words, the co-construction of meaning occurs over time and benefits from participants' opportunity to move in and out of intercourse with others. The asynchronous nature of online discussion enables participants to proceed at their own pace, combining interaction with others and their own reflective thinking in developing their individual position and response to the group (Dewey, 2005, p. 53; Jonassen, 2000, pp. 12-13).

Significance and convergence are rhetorical features that are not limited to online discourse. However, asynchronous online communication is considered to be a context uniquely suited to fostering these features. Threaded discussion provides a written record of what participants have stated, and it provides separation in time for participants to compose their response. Together, these design elements are expected to afford users the enhanced opportunity to consider and incorporate the work of others into their own response. In reality, however, significance and convergence are recognized as difficult to achieve even in online discussion (Lobry de Bruyn, 2002; Picciano, 2002). Two discursive patterns commonly recognized in the research literature were also prominent in my own pilot study. In 86% of all participants' replies on Forums in the pilot study, the opening words "I agree," which indicated significance, were superficial and did not involve a substantive connection to the preceding entry. Also, in every reply, participants responded only to the immediately preceding or "parent" entry rather than relating multiple entries, which indicated they did not achieve convergence. Of course, significance and convergence can be difficult to recognize or document even when they do occur. Users may articulate significance and convergence by overtly referencing what others have said in the composition of their own entry. For example a user might state, "Many of us seem to think that the murderer deserved to die, but Mary has pointed out the many problems he had growing up. I think we might be missing the role that others in town played..." At the same time, the synthetic thinking expressed in this example is a cognitive process that is only indirectly accessible when incorporated into the user's entry (Garrison, Anderson, & Archer, 2001, p. 3). A user's attending to what another has said (significance) and/or somehow synthesizing multiple entries (convergence) might just as easily remain hidden behind an entry that expresses only the results of significance or convergence in a user's final, stated conclusion.

In describing the advantages of Moodle Forum, Evan said, "It's like a max of ideas...and everybody can look at your ideas, maybe add to it and take it in, and take bits and pieces of everybody's and put it together." What Evan articulates is both significance (looking at another's ideas) and convergence (putting bits and pieces together). A review of his Forum entries, however, did not show evidence of his achieving either. A closed survey of both primary and secondary informants at the conclusion of the pilot study indicated that Evan's sentiment was shared by participants. In the post-study survey five of ten participants reported that they were more likely to change what they thought as a result of reading their classmates' posts on Moodle Forum as opposed to in class discussion. However, my review of Moodle Forum transcripts for all participants showed scant evidence of this likelihood in their entries. This gap between perspective and practice left me wondering. Given students' increased engagement with Moodle and given their apparent perception of threaded discussion as a social activity, why did they not evidence more complex forms of significance or any convergence in their discourse?

## Statement of the Problem

Duffy, Dueber, and Hawley (1998) note that participants in asynchronous online discussion seldom take advantage of its affordances, particularly to analyze and respond meaningfully to what others have posted. According to these researchers, those who *design* online discussion are accountable for this failure. Duffy et al. maintain that designers expect participants to simply go online and start "talking," armed only with whatever skills they may be accustomed to using in face-to-face discussion. Designers have neither structured nor made sufficiently plain how design elements support effective online discussion.

> ...too many designers of conferencing systems have had a simplistic view of discussion as simply talking. There has been little recognition of the different rhetorical structures and of the requirements for supporting those rhetorical structures in a text rather than oral mode. (Duffy et al., 1998, p. 74)

Duffy et al. underscore that we should not expect to achieve the potential of online discussion without attending to how it is different from face-to-face discussion and to what design elements may be used to achieve particular rhetorical features. In addition, I would argue that those who *introduce* threaded discussion are similarly responsible. Teachers and technology coaches, for example, may not adequately understand or explicitly present either the rhetorical features of significance and convergence or the strategies that achieve these features. Ms. Hawthorne and I had attempted to coach and model effective use of Moodle Forum. However, like the students, we were learning to use threaded discussion ourselves. We did not explicitly teach concepts like significance and convergence, which are central to more complex forms of interaction in both real and virtual activity, nor did we explicitly teach or consistently assist students to use rhetorical strategies associated with these concepts. Finally, we did not fully understand the design elements of threaded discussion or how those elements might themselves support rhetorical strategies in online discourse.

## Purpose of the Study and Research Questions

The purpose of the study reported here was to investigate the impact of an instructional intervention designed to assist participants in achieving significance and convergence in threaded discussion. This instructional intervention introduced students to particular rhetorical moves that achieve significance and convergence, as well as design elements of Moodle Forum (i.e., the constituent parts of the application) that may support those rhetorical moves. Furthermore, this study acknowledged that today's students, as digital natives, have a particular contribution to make in defining and learning to apply the capacities of today's emerging technologies. Therefore, the study also documented the impact of sustained instructional support as students attempted to apply key rhetorical strategies in their use of Moodle Forum.

The main question guiding this qualitative study examined how an introduction to the design elements of Moodle Forum influenced participants' threaded discussion. I selected three design elements in particular for investigation: discussion topics, entry subject lines, and entry hyperlinks. I believe that these elements are closely associated with achieving significance and convergence because of their potential to promote relationships between entries across Moodle Forum. I also believe that these elements may at present be underutilized due to an impoverished understanding of this potential. Therefore, to help me answer the main question in this study, I constructed three sub-questions directed at these design elements. Each sub-question was also directed at a particular aspect in the use of threaded discussion that I anticipated might affect achieving these rhetorical features. First, how does an introduction to the design elements of Moodle Forum influence *users' participation* in threaded discussion? Second, how does an introduction to the design elements of Moodle Forum influence *participants' achieving significance and convergence* in threaded discussion? Third, how does an introduction to the design elements of Moodle Forum influence *participants' enactment of teaching presence* in threaded discussion? These questions extended the work of the pilot study by shifting the emphasis from students' reported *engagement* with Moodle Forum to the actual evidence of impact in their online discussion. These questions also recognize a shift from relatively unstructured use of Moodle Forum in the pilot study to use accompanied by more explicit instructional expectations.

## Significance of the Study

There is little research available that investigates the use of online discussion in a secondary school setting. This study helped to fill this gap by providing valuable information for the use of threaded discussion in a local secondary classroom. Specifically, this study was oriented to assist teachers and students who wish to embed threaded discussion within already meaningful rhetorical practices.

At the conference cited earlier, Richardson posed the question, "Who is teaching *MySpace*?" I had to admit that I was not. Even in the pilot study, Ms. Hawthorne and I encouraged but did not teach the use of threaded discussion. The key concept underlying my study was the relationship between technology design and the instruction required to fully utilize that design. Students and teachers alike are accustomed to accepting technology as it is presented by its designers (Jonassen, 1994; Norman, 2002; Pea, 1997; Swan, 2006). In Dewey's words, users are inclined to use a technology routinely rather than reflectively. I would argue that the complexity of emerging technologies as well as pressure for their adoption in schools exacerbates this tendency. It may seem expedient to provide "technology-to-go" (i.e., applications complete with routines for their use already in place). Ultimately, however, adopting a powerful application like Moodle Forum without adequate reflection on the affordances provided by its design is akin to arming a language teacher with a tourist phrase book. This is an approach that breaks down at the first unexpected circumstance, and in any event limits how far its users may progress in extending its utility.

In an effort to assist teachers and students to use online discussion more effectively, this study occurred at the intersection of technology design and discourse instruction. On the one hand, this study contributes to understanding the connection between the design elements of Moodle Forum and the affordances or possible uses of those elements. On the other hand, this study addressed the relationship between those affordances and rhetorical strategies considered central to effective discussion. Central to this study is the belief that the visible nature of design elements in threaded discussion as well as the written record of any particular discussion itself may support reflective discourse but only to the extent those design elements themselves are viewed reflectively.

This study is neither generalizable nor definitive with respect to the effect of a particular design feature on discussion outcomes. Nevertheless, it may inform the considerations that students and especially teachers make in adopting online discussion. While the direct audience is teachers, this study may also assist school administrators and teacher educators to appreciate the complexity of what may otherwise appear simple: talking online. As such, it may assist each of multiple constituencies to consider the time and resources required to fully leverage this and other technology applications.

# Chapter 2

## LITERATURE REVIEW

The purpose of this chapter is to review literature related to my study of threaded discussion in a secondary school classroom.  At the outset it is important to note two gaps in this literature.  The first gap involves the lack of literature documenting threaded discussion in secondary classrooms.  The vast majority of research addresses *distance* education in *post-secondary* environments.  The United States Department of Education (2009) published a meta-analysis of research studies reported between 1996-2006.  This meta-analysis found only 14 of 176 studies involved K-12 learners.  The second gap in the literature is a gap in understanding.  Simply stated, there is widespread *conceptual* agreement in the literature that computer-mediated communication (CMC) should support richer discussion.  However, the literature has not established *how* such discussion can be realized or *if* it can be realized.  This study investigated this gap by examining the use of the Moodle Forum application of threaded discussion technology.

Threaded discussion is widely expected to provide certain specific benefits, typically expressed in contrast to face-to-face discussion.  In the literature, live classroom discussion is often characterized as a rapid-fire sequence of isolated responses to questions on a single topic under the control of the teacher (Garrison, 2006; Picciano, 2002).  By contrast, the multiple threads of online discussion are suggested to invite the following: different perspectives on a given topic, individualized pace, and recursive reading and writing (Bailey, 2000; Garrison, 2006; Hewitt, 2001; Kirk & Orr, 2003; Lobry de Bruyn, 2004; Picciano, 2002; Swan, 2006).  Nevertheless, this study was *not* intended to position threaded discussion as superior to face-to-face discussion.  Rather, it was intended to inform our understanding of how to realize the alternative benefits anticipated of threaded discussion.

In this study, two concepts were recognized as central to hopeful expectations for threaded discussion: significance and convergence. *Significance* is the act of attending with consideration to what another has said in a discussion (Jolivette, 2006). Of course, we may attend to what another has said without acknowledging that attention; however, significance may be confirmed in one's own response by agreeing or disagreeing, by making an explicit reference, or by building upon another's response. *Convergence* involves combining the contributions of more than one other participant in one's own stated position (Lobry de Bruyn, 2004). Convergence is explicitly or implicitly confirmed by the representations we make in our own responses. Underlying this study was my belief that significance and convergence are rhetorical features that embody the expectations that practitioners and researchers have for threaded discussion. Multiple topic threads, the asynchronous format, and a written record all provide a context for participants to respond to topics of individual interest to them, at their own pace, and with full consideration to what others have said.

In the pilot study reported in chapter one, primary informants acknowledged the value of significance and convergence in language remarkably similar to that reported in the literature. In the pilot study, however, participants' actual posts showed limited evidence of significance and no evidence of convergence. The pilot study did show evidence of what Hewitt (2001) terms the *tunnel vision effect* in which "a singular focus on individual notes causes a discussion to lose its overall coherence" (p. 213). This effect is revealed in two discussion patterns that interfere with significance and convergence:

the *unread pattern* and the *parent-child pattern*. Regarding the former, threaded discussion applications like Moodle Forum typically include the capacity to mark new entries as “unread.” When an individual user returns to a Moodle Forum, the system interface designates which entries have been added since the user’s last visit. This is a convenience for users who can then quickly distinguish and open those entries that they have not previously read. One consequence of the unread notation, however, seems to be that users limit replies to the substance of those unread entries (Hewitt, 2003; Martin, 2008). In other words, rather than considering the totality of the threaded discussion, users consider only the most recent information.

A second pattern in threaded discussion is the parent-child pattern. In threaded discussion, when a user selects the “reply” option at the base of an entry, the reply becomes what is called a “child” to the original or “parent” entry. Again research indicates and my own pilot study evidenced that when users create a child (reply), that reply tends to address only its immediate parent, rather than acknowledging any other related entries in either its own or any other topic thread (Hewitt, 2001; Hewitt, 2003; Martin, 2008). As with the unread discourse pattern, the parent-child pattern is typically promoted by the threaded discussion technology. When reading, a user may be viewing the full text of all entries that have been “nested” or fit within a thread. However, once the user selects the reply option to any particular entry, a text box opens for composing the reply, and the view of the other entries changes. The parent entry remains visible in its entirety; however, all other entries in the thread are collapsed into “threaded” format in which *only* the subject line of each entry and the name of its author remain visible (See Appendix A, Figure A4). Both the parent-child pattern and the unread entry pattern are significant to the proposed study because these patterns affect how users attend to online discussion (i.e., significance and convergence) and also because these patterns seem to be embedded in the design of the Moodle Forum technology itself.

More than anything else, my perspective on technology as an educator has been influenced by my own introduction to it. As a classroom teacher, I was repeatedly assured that technology integration is not about the technology but about the teaching. Certainly, I appreciate the point that *ultimately* educators are interested in leveraging technology to advance the learning of students. However, my own experience was that what is essential *initially* is the technology. Put simply, until I became competent and confident with the affordances of a mediational means like Moodle Forum, I could not take full advantage of all that it had to offer my students. Therefore, I would argue that teachers' inability to realize the expectations researchers and designers have for threaded discussion may be due, at least in part, to an impoverished understanding of the application itself. Certainly, learning to use any mediational means involves a number of factors, not the least of which are the human interactions of its users and the general dynamics of human learning. In fact, I would also argue that the complexity of 21st century technologies accentuates the importance of broad-based participation in a learning community. With this in mind, I set my research focus at the intersection of these two arguments: first on the influence that participants' understanding of a technology has on their ability to use that technology; and second on how students as well as teachers acquire that understanding and capacity to use the technology.

This literature review is divided into four sections. The first section addresses the nature of tool and sign as 21st century mediational means. This section explains how the complexity of a technology like threaded discussion makes its affordances difficult to understand and to access. The second section of this review presents a representative model for computer-mediated communication in online environments. The third section describes two theoretic frames relevant to the context of this study: sociocultural theory and distributed learning environments. Finally, section four of this review introduces the specific design elements of Moodle Forum that I argue support the features of significance and convergence in threaded discussion, namely topic design, entry subject lines, and entry hyperlinks. This final section explains how these elements relate to the core concepts of significance and convergence, as well as how participants' use of each will be supported by the instructional intervention proposed for this study.

## The Nature of Tool and Sign in the 21st Century

Sociocultural theory is based on the premise that an individual's thought originates in the social practices of the culture in which that individual lives. Vygotsky (1978) suggests that tools and signs are the cultural elements that shape thought (pp. 54-55). Tools are concrete, physical objects that humans employ to accomplish a goal by exerting a direct effect upon another object. Tools are externally oriented; they assist an individual to conduct activity in a particular physical setting (e.g., the pen that allows a writer to scratch ink onto paper). According to Vygotsky (1978), tool use shapes only elementary psychological processes like visual memory and practical problem solving. In contrast, signs are internally oriented. That is, signs not only mediate communication between people but also allow individuals to remember, reason, and think about ideas not immediately in their midst. Vygotsky (1978) recognizes various sign systems such as numbers and images; however, he is quite clear in emphasizing language as the sign system most responsible for mediating higher psychological processes (p. 113).

### **Cultural *Artifacts*: Connecting Tool and Sign**

For purposes of this study, it is not necessary to more finely distinguish tool from sign. To the contrary, as tools become increasingly powerful in the 21st century, what is important is to understand their *connectedness* to signs. Duffy and Cunningham (1995) point out that "[d]uring the time and place where Vygotsky was writing, tools were used almost exclusively for physical labor - to manipulate physical objects in the environment" (p. 20). Nevertheless, Vygotsky (1978) himself states that tool and sign are "mutually linked" and may be "subsumed under the more general concept of indirect (mediated) activity" (pp. 54-55). In other words, rather than segregating tool and sign, we should attend to their interdependence in use. In computer-mediated communication, technological tools like computers use language and other semiotic systems (e.g., imagery, acoustics, etc.) to transmit, receive, and display the signs that influence users' higher psychological operations. Sign activity cannot be divorced from concern for the technology that makes that activity possible. Today's emerging technologies are able to manipulate signs in increasingly diverse and complex ways. As a result, distinguishing between tool (hardware and software) and sign (language and other semiotic systems like imagery and acoustics) becomes not just difficult but also tends to ignore their symbiotic relationship.

Indeed, Duffy and Cunningham (1995) and Pea (1997) argue that even the simplest of tools carries symbolic weight that not only effects (carries out) our more complex psychological intentions, but also affects (influences) how those intentions are formed. For example, a pencil and a pen are both writing implements, but each represents substantively different intentions. The erasable quality of the pencil embodies an expectation to revise, whereas the ink of a pen embodies an expectation of permanence. Pea points out that “tools literally carry intelligence *in* them” (p. 53). In other words, a tool embodies the accumulated thought that humans have invested in creating and learning to apply that tool. By our subsequent use of the tool, we share in all of the higher processes that are embedded in its history. In the case of the pen and pencil, whether we use either thoughtfully or unreflectively, our choice reflects a stream of cultural design in which we are a part as soon as we pick either up.

Duffy and Cunningham (1995) call the distinction between tool and sign “a slippery one” even in the simplest of cases (p. 19). They use the example of a hammer to illustrate how even this quintessential tool is more than just wood and steel fashioned to drive nails. It has in fact influenced humans to build structures that are more angular, and our own continued use of the hammer perpetuates that conceptual choice. “Thus, the invention of a tool and its use by members doesn’t simply facilitate forms of action that would occur anyway; the tool changes the form, structure, and character of the activity” (Duffy & Cunningham, 1995, p. 19). Just as importantly, the effect of a tool like a hammer is not limited to the external world where steel head meets spike. Rather, its influence extends to the internal world of psychological processes where our intentions are formed. If this is true of comparatively simple tools like the hammer, how much more substantial must the influence be of today’s more complex technological tools.

This study acknowledges that threaded discussion possesses both material and symbolic elements by labeling threaded discussion as an “artifact” (Wells, 2002, p. 135).

Although the term artifact is generally reserved for objects, Wells (2002) lists not only the flint knife and printing press in this category, but also "semiotic tools" including speech (p. 136). Wells (2002) draws on Buldova (1972) to define artifacts as the "material and symbolic products" of human activity by which achievements are passed from one generation to the next (p. 135). In other words, artifacts are inventions that humans develop to accomplish some purpose of cultural significance. Whether tool or sign or a tool-sign combination, artifacts are the means by which humans solve problems. This echoes Pea's (1997) point that tools carry intelligence within them – or, in this case, that artifacts hold within them the memory and analysis of a problem, and also the design and implementation of a solution. The question is, how do we come to understand and to master the *affordances* of an artifact – "those functional properties that determine just how the thing could possibly be used" (Norman, 2002, p. 9; Pea, 1997, p. 51) – in order to take full advantage of its potential to solve problems? Before addressing the question of how we learn to leverage the affordances of artifacts, the remainder of this section will discuss where those affordances are apt to be located, and hidden, in complex technological artifacts.

### How Artifacts Reveal their Affordances: The *Possibilities for Action*

Wells (2002) states that the significance of any invention is the *possibilities for action* that it creates, both for the society that originates the artifact and the society to which it is handed down (p. 136). Artifacts are defined *in practice* (Wells, 2002, p. 136). In other words, the influence of artifacts on problem solving can only be understood by documenting how they are used in the context of activity. Artifacts are invented for a purpose and can only be understood in the context of fulfilling that purpose. As Wells

(2002) states, “an artifact has no meaning out of the context of the activity in which it is used” (p. 136). An unfamiliar object – one with which I have no prior experience – suggests nothing to me when at rest. It is only when I see the artifact in action that I discern its meaning. A pencil lying on a desk has no meaning until it is taken up and put to its use as a device for writing. What’s more, even this activity may not be enough to demonstrate the full potential of the artifact – to reveal all of its possibilities for action.

Like Wells (2002), Pea (1997) maintains that human intelligence and intention are ”express[ed] as action” (pp. 49-50), and that artifacts are the essential mediators in this action. What Pea emphasizes, however, is that how effectively an artifact performs this mediating function depends on how thoroughly we understand its *design* – whatever attributes it carries that determine what is inevitable and what is possible for this artifact in use. Pea states:

> While it is people who are in activity, artifacts commonly provide resources for its guidance and augmentation. The design of artifacts, both historically by others and opportunistically in the midst of one’s activity, can advance that activity by shaping what are possible and what are necessary elements of that activity. (p. 50)

What Wells (2002) terms possibilities for action are realized by the artifact in use. However, that use is conditioned by the *design elements* of the artifact itself. The possible uses of the artifact are embedded in these elements – the individual constituent parts that have been designed into the artifact. It is not just that the *artifact* at rest has no meaning. Until I understand each *element* of the artifact in practice, my understanding of the artifact as a whole will be incomplete. The artifact may have certain capacities, but those capacities only come into existence when its design elements are put to use.

Furthermore, the *way* in which those elements are put to use is what determines the real extent of those capacities. For example, the rubber at one end of a pencil is not an eraser until it is used to erase. I may see that pencil put to use as a writing implement, but until I understand how the eraser removes what the pencil has written, my understanding of the pencil's affordances will be impoverished and thus the pencil will be underutilized. For those interested in documenting the use of computer-mediated communication, this insight is critical. I have illustrated what Wells (2002) and Pea argue using the relatively simple example of a pencil in which design elements and the affordances of those elements are fairly self-evident. As this study turns to a complicated artifact like threaded discussion, understanding individual elements is neither as simple nor as self-evident, and any oversight tends to obscure the overall affordances of the artifact as a whole.

### How Artifacts Obscure their Affordances: The *Psychology of Everyday Things*

In the 21st century, artifacts are increasingly complex. They offer an increasingly wide range of alternative choices. For example, what was once the simple choice of a sneaker now involves distinguishing between footwear designed for walking, running, tennis, basketball, and so on. In addition, this range of choices is in a state of almost constant change. Computer programs are a clear example of continuous change with their steady stream of product versions and updates. We have come to manage this complexity in two ways. One is to cede control of the artifact to those with specialized expertise – for example, the mechanic who tunes-up our automobile. A second approach is to cede control to the artifact itself. To say that artifacts now are more powerful is to recognize that they not only offer more choices, but they are also invested with more responsibility for the choices we make as we use them. For example, when using a microwave oven, we no longer set a power level and time but choose a “muffin” preset to initiate what the microwave knows is the right combination for that item. Pea (1997) borrows the term “psychology of everyday things” from Norman (2002) to represent the control vested in the artifact:

> Norman...offers many examples – microwave ovens, videocassette recorders, car instrument panels, slide projectors, even water faucets – to show how affordances of objects deeply and often *unnecessarily* restrict their *accessibility* to the ordinary human. The point is that better design of artifacts would make it easier to accomplish certain functions. One would like to be able to just look and see what to do, and then do it, without instruction, without manuals, without complex deductions. (Pea, 1997, p. 52)

As Pea states, users prefer artifacts that reveal their affordances on their surface – without mediating devices like instruction manuals. We expect the design of objects to make their operation obvious. As a result, whatever an object’s design does make obvious tends to become what we accept, not just as the object’s intended function but as its highest and best use. Humans, generally, are predisposed to accept the most immediately apparent, satisfactory course of action (Dewey, 2009), and so we may not be inclined to look beneath the surface of what the object represents for less apparent options. Pea’s point in referencing Norman is not just that today’s technologies have complex affordances but that those affordances are deeply embedded within the artifact. Indeed, they may be embedded so deeply and so firmly within the artifact that control of the affordance is left to the artifact itself—that is, the possibilities for action are limited by design choices made in how the elements of the artifact are rendered. Therefore, our objective as users, if we are to take control of the artifact, must be to overcome the designer's grip on its elements – to achieve an understanding of its capacities sufficient to gain us control of its potential and to unleash the artifact's full possibilities for action. To accomplish that objective is to learn to use the artifact.

Computer-mediated communication is a particularly clear instance of this psychology of everyday things. Consider, for example, website design. Originally, creating a website required an intimate knowledge of HTML (hypertext mark-up language) – a system of signs that not only places text to be read onto a webpage but also commands the webpage how to display that text as well as how to perform any other functions desired by the creator. Today, the most sophisticated of web pages can be created with no knowledge whatsoever of HTML. So-called "user-friendly" interfaces have the responsibility for translating our desires into the necessary HTML. I am not suggesting that we should all go back to the cumbersome days of writing HTML to operate on the World Wide Web. However, I am emphasizing that with modern technological tools in general and with computer-mediated communication in particular, it is critical that we recognize their complexity and remember that our capacity to manage that complexity is directly related to our understanding of the individual elements on which they are built.

Earlier in this section I posed two questions. First, how do we come to recognize and understand the affordances of an artifact? To that question, the literature underscores the need to examine and understand the design elements of the artifact that contain those affordances. The underlying argument in this study is that any failure to effectively use a digital technology, including threaded discussion, may begin with a failure to understand the elements that comprise that technology. As the literature suggests, when our understanding of the composite elements is undeveloped, our use of the artifact in practice is also impoverished. The second question had to do with how we learn in practice to leverage the affordances of an artifact. The third section of this literature review will address how a learning community can assist its members to acquire use of an artifact like threaded discussion. First, however, it will be helpful in section two to describe the general framework for discussion and learning within which communities operate in an online environment.

## A Framework for Online Conferencing: The Community of Inquiry Model

Before examining the design elements of the artifact known as threaded discussion, it is helpful to understand the dynamics of online conferencing in general. In contexts of distance education from the late 1960s into the 1990s, research investigating online discussion was oriented toward social presence—that is, toward the interpersonal relations of online participants (Gunawardena & Zittle, 1997; Short, Williams, & Christie, 1976). More recently, research has expanded to include interest in dynamics related to learning outcomes—both the way in which participants construct knowledge in online discussion and the role of instruction, facilitation and other traditional teaching functions in supporting these learning objectives. Inquiry-based instruction has a long history in educational studies (Dewey, 1997), and various researchers have adopted the inquiry process as a framework for this integration of the social, cognitive, and teaching dynamics of online communication (Duffy, Dueber, & Hawley, 1998; Garrison, Anderson, & Archer, 2000; Garrison et al., 2001; Gunawardena et al., 2006). In this section, I introduce one such model: the Community of Inquiry or CoI (Garrison et al., 2000). First, I review the key stages this model identifies in the inquiry cycle. Then, I discuss the three conditions that CoI researchers recognize as central to the inquiry process: social presence, cognitive presence, and teaching presence. Finally, I review the role of technology as the mediating interface that can support these three conditions and provide a context for inquiry.

### Stages in the Inquiry Cycle

According to Garrison et al. (2001), the objective in online communities is critical thinking, which they describe as the capacity to use inquiry skills to advance the understanding and purpose of a group of learners. In order for a group to accomplish this objective, there must be a motivating and organizing goal – some common purpose represented by production of a tangible, shared product (e.g., a report, plan of action, or invention). Inquiry is the process by which the group moves toward its goal and develops its product.

According to Garrison et al. (2001), the inquiry cycle presented in the CoI model occurs in four phases: a triggering event, exploration, integration, and resolution (Figure 2.1). The first phase in the inquiry cycle is a *triggering event* – some problem, dilemma, or perturbation that presents an inquiry question. Although the triggering event can originate with any member, in educational settings it is traditionally initiated by the teacher. The second phase of the inquiry cycle is *exploration*, a phase in which participants generate and analyze multiple possibilities for answering their inquiry question. Exploration is a divergent phase in which members clarify the nature of the problem itself and uncover as much relevant information as possible. The third phase of the inquiry cycle is *integration,* a phase in which participants begin to synthesize the various possibilities that exploration has generated. Integration is a phase that requires members' convergent thinking, which is characterized by an attempt to make connections and combine information in order to resolve the inquiry problem. In practice, exploration and integration are not segregated or strictly progressive. In these middle phases of inquiry, individual participants move *back and forth* between divergent and convergent thinking. In addition, individuals move *into and out of* group discussion, alternating between their own private reflection and interaction with other group members. In the CoI model, the fourth and final phase of inquiry is *resolution* in which members arrive at some outcome or response to the original inquiry problem.

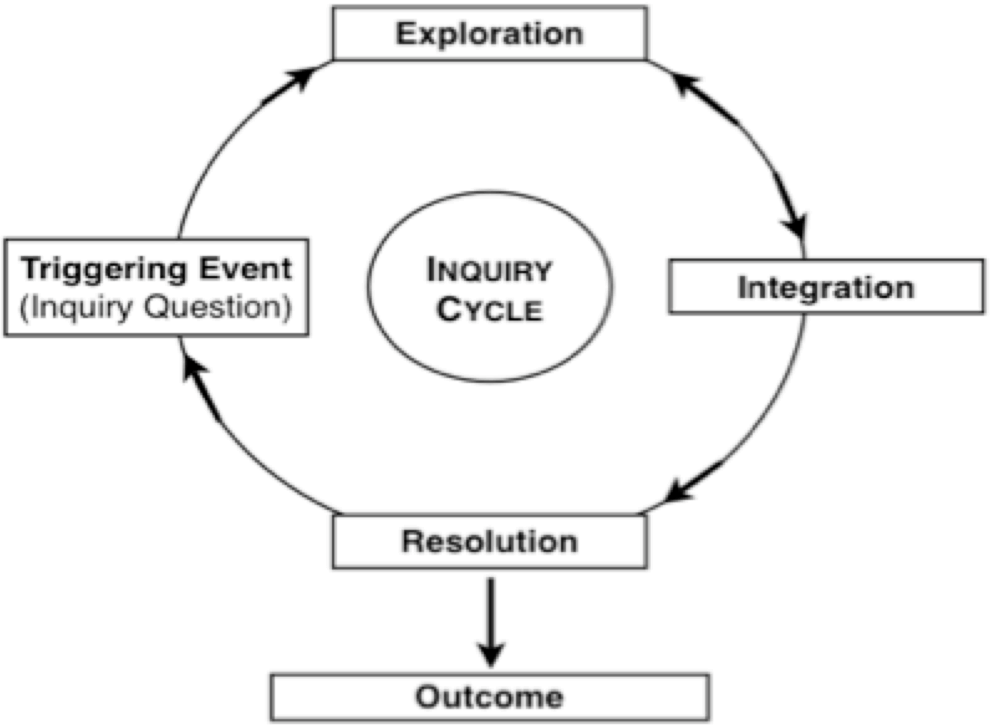


Figure 2.1. The inquiry cycle represents the four stages of problem-solving in a community of Inquiry that lead either to resolution of the original question in a shared outcome or to a new inquiry question.

According to the CoI model (Garrison et al., 2001), resolution is the stage at which the group produces its shared product or common plan of action. However, Duffy et al. (1998) recognize that the outcome of inquiry may also be an individual's "reasoned position" (p. 54). Instead of being limited to a product or understanding agreed to by the group as a whole, the result of inquiry even in a group setting may be some new personal understanding arrived at individually by members within the group. Whether the outcome is shared or individual, in the Community of Inquiry model, successful inquiry in online environments relies on three conditions: social presence, cognitive presence, and teaching presence.

### Social Presence as the Foundation for Online Discussion

According to the Community of Inquiry model, successful computer-mediated inquiry rests on social presence. Social presence has been variously defined as the degree to which participants are *perceived* as real in a mediated environment (Gunawardena & Zittle, 1997; Swan, 2006) or the degree to which participants are able to *project* their persona into the online community (Garrison et al., 2000; Rourke et al., 1999). Definitions of social presence rely on two concepts addressed earlier: *intimacy*, the inherent capacity of the medium itself to deliver input, including emotional cues; and *immediacy*, the moves that participants make in using a medium to influence feelings of "psychological distance" (Gunawardena & Zittle, 1997, p. 9). Although both the medium and the way it is used can affect the level of social presence in computer-mediated communication, in the literature greater emphasis has come to be placed on user actions, as evidenced by the social presence indicators delineated by Rourke, et al. (1999).

In the CoI model, according to Rourke, et al. (1999), there are three categories or kinds of participant response that indicate social presence (Appendix B). The first category is *affective response*, which includes self-disclosure and other expressions of feeling (e.g., sharing personal anecdotes, using emoticons, "shouting" with capital letters). The second category is *interactive response*, which includes evidence of attending to other participants (e.g., referring to or quoting others, expressing agreement or appreciation, and asking questions). The third category is *cohesive response*, which includes greetings and other social activities that recognize participants as a group and encourage commitment toward group objectives (Rourke et al., 1999).

Regardless of how social presence is achieved, in the CoI model social presence has come to mean the creation of a "warm, open, and trusting environment" (Rourke et al., 1999, p. 4) – the kind of environment that encourages participation by all members. In distance education, social presence has been widely reported as important to participants' satisfaction and to their persistence in completing courses (Jolivette, 2006; Picciano, 2002). Although no correlation has been found between social presence and *actual* learning outcomes, a significant correlation has been established between users' *perception* of social presence and their *perception* of having learned (Garrison & Arbaugh, 2007; Jolivette, 2006; Picciano, 2002). As Garrison and Arbaugh (2007) report, there is consensus in the research literature that social presence in and of itself will not guarantee learning outcomes, but it is extremely difficult to achieve such outcomes without the foundation of social presence (p. 159; See also, Garrison & Cleveland-Innes, 2005, p. 141).

## Cognitive Presence as the Objective in Online Discussion

In online conferencing, social presence is expected to do more than encourage participation. Researchers and practitioners expect it to foster "purposeful relationships" (Garrison & Arbaugh, 2007, p. 160; Garrison & Cleveland-Innes, 2005, p. 135). For inquiry to succeed, participants need to be not just friendly toward each other but committed to helping each other and the group to think and to achieve learning objectives. This commitment is represented by cognitive presence, the second of three conditions considered central to effective online discussions. Social presence alone may sustain discussion, but cognitive presence is required to sustain the kind of purposeful discussion that achieves learning outcomes like those defined in the CoI model. Like social presence, cognitive presence is distinguished by its own set of individual and collective behaviors. For example, a participant in online discussion may make a "self-disclosure" (e.g., "Where I work, this is what we do..."), and that self-disclosure may help others to feel they know that participant more closely (i.e., social presence). However, if the participant introduces this disclosure in order to address a problem the group is considering, then the disclosure represents cognitive presence. In the above example, an entry like the following would indicate cognitive presence, an attempt to construct meaning and move the group process forward: "Where I work, when this situation arises we...However, I don't think this has been effective because...Can anyone suggest another approach that might work?"

In the CoI model, according to Garrison et al. (2001), there are four categories or kinds of participant response that indicate cognitive presence (Appendix C). Each of these categories of response corresponds to one of the stages of the inquiry cycle. The first category, *evocative* response, corresponds to the initiating stage of triggering events and includes responses that indicate recognition and definition of the inquiry problem. The second category, *inquisitive* response, corresponds to the exploratory stage and includes responses that generate information and diverge in new directions (e.g., brainstorming, unsupported opinions, unsubstantiated contradiction of previous ideas). The third kind of response that indicates cognitive presence, *tentative* response, corresponds to the integration stage of the inquiry cycle and includes responses that connect information and converge toward solutions (e.g., reference to previous messages, integrating information from various sources, beginning to develop and justify hypotheses). The final category of participant response, c*ommitted* response, corresponds to resolution, the final stage of inquiry, and this category includes responses that indicate testing and defending solutions.

Research indicates that the transition from social presence to cognitive presence can be difficult to achieve. Findings consistently indicate that because participants in inquiry-based online discussions tend to remain in the exploration stage rather than moving into the latter two stages of integration and resolution, they do not experience key contexts for cognitive presence (Garrison & Arbaugh, 2007; Garrison et al., 2001; Swan, 2006). For example, from their analysis of threaded discussion transcripts, Garrison et al. (2001) report that 42% of participants' online responses illustrate exploratory activity, whereas only 13% evidence response that integrates knowledge and only four percent evidence response that resolves the inquiry problem (p. 12). These researchers recognize that discussion transcripts may not tell the whole story. That is, what students choose to contribute online may not reflect the thoughts and discussions they are having offline.

Nevertheless, Garrison et al. (2001) conclude that the inquiry cycle in online environments tends to breakdown between exploration and integration, and they suggest two possible explanations. First, they maintain that participants are more comfortable with exploration than with integration or resolution because the latter two stages are more demanding both cognitively and socially. Exploration is a kind of brainstorming that de-emphasizes rules or consequences. Integration and resolution, however, require skills that are more complex mentally and for which students typically feel more *insecure* emotionally (e.g., probing with questions, pointing out misconceptions, evaluating positions). Second, integration and resolution rely more heavily than does exploration on the organizing force of the inquiry task to move the group toward agreement. In school settings, the outcome of inquiry is often "vicarious" (i.e., imagined rather than authentic with real world consequences). Such contrived problem solving may diminish participants' investment in pushing through the cognitive and social challenges of advanced inquiry (Garrison et al., 2001, pp. 4-5). As Garrison and Arbaugh (2007) report, a number of studies point to teaching presence as the critical factor in facilitating the transition from social to cognitive presence in online discussion.

### Teaching Presence as the Enabling Influence in Online Discussion

Simply stated, teaching presence encompasses the functions traditionally associated with the position of an instructor, namely designing and managing the educational experience. Anderson, Rourke, Garrison, and Archer (2001) define teaching presence as "the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (p. 5). As this definition indicates, teaching presence involves the responsibility for leveraging users' social presence to support their cultivation of cognitive presence. In other words, *social* presence provides the foundation for successful online conferencing, *cognitive* presence represents the achievement of successful online conferencing, and *teaching* presence is the means by which the latter is built upon the former.

In the CoI model, according to Anderson, et al. (2001), there are three categories or kinds of participant response that indicate teaching presence (Appendix D). The first category of response, *design and organization*, includes instructions and suggestions concerning the materials, structures, and activities that make up the curriculum of the learning community. The second kind of response that indicates teaching presence is *facilitating discourse*. This category includes responses that encourage participation, identify agreement and disagreement, seek consensus or understanding, prompt discussion with comments and questions, set climate, and assess the group process. The third category of response that indicates teaching presence is *direct instruction* that involves the teacher's introducing subject matter knowledge or scholarly leadership beyond the experience of the learners. Introducing content includes injecting outside resources and dispelling misconceptions. Providing scholarly leadership includes directing discussion in ways associated with academic inquiry or a particular field of study.

Teaching presence was the last component in the CoI model to be conceptualized (Garrison & Arbaugh, 2007, p. 163), and it continues to be the least firmly developed condition in the model. Of particular importance to the proposed study is the current uncertainty regarding who is responsible for the condition of teaching presence.

Researchers and practitioners universally hold that all participants in an online community are accountable for social presence and cognitive presence. However, there is no consensus on who is responsible for enacting teaching presence in online inquiry. When Garrison et al. (2000) originally introduced the CoI model, they stated that one category of teaching presence, facilitation, “is a responsibility that may be shared among the teacher and some or all of the other participants or students” (p. 90). They argued further that even though teaching presence is “likely to be the primary responsibility of the teacher...*in an educational environment* [emphasis added]”, in a Community of Inquiry per se, any participant may perform its functions (Garrison et al., 2000, pp. 89-90). Others, however, have taken an opposing position (Garrison, 2006; Garrison & Arbaugh, 2007; Swan, 2006; Swan et al., 2008).

Represented in the preceding citations are studies of the CoI model that report a correlation between the activity of the instructor and both user satisfaction and perceived learning. Shea (2006), for example, found that “...a strong and active presence on the part of the instructor – one in which she or he actively guides the discourse – is related both to students' sense of connectedness and learning” (p. 41). Among those studying this model, there appears to be consensus that teaching presence is not just the “integrating force” in a community of inquiry (Garrison, 2006, p. 26) but that it is also essentially the responsibility of the instructor. However, I would argue that this orientation to the teacher glosses the complexity of this condition when what is needed is a definition of teaching presence that clearly distinguishes the functions of teaching from the person of the teacher.

### *Redefining Teaching Presence as a Responsibility for All Participants in Online Conferencing*

As noted above, teaching presence was the last condition in the CoI model to be conceptualized, and as Garrison and Arbaugh (2007) point out, "there are questions regarding the stability of its dimensions" (p. 164). For example, according to the original CoI model, teaching presence encompasses three components: design and organization, facilitating discourse, and direct instruction. However, there is disagreement in the literature over whether facilitating discourse and direct instruction should be separate categories or combined into one category: "directed facilitation" (Shea, Lea, & Pickett, 2006, p. 185). I would agree with Garrison and Arbaugh (2007) that "this is more than a theoretical issue" (p. 165). It goes to the central question concerning teaching presence: *who* can perform its functions. *Separate* categories seem to recognize that some functions fall only to the teacher (direct instruction) whereas others can be distributed amongst the group (facilitating discourse). In contrast, *directed* facilitation seems to place responsibility for all of the underlying functions in the person of the instructor. This discussion of the categories of teaching presence illustrates how the distribution of teaching presence in online communities is, in fact, a power issue (Anderson et al., 2001, p. 5). As Anderson et al. (2001) argue, the move from a traditional face-to-face classroom into an online environment prompts the need for both students and teachers to redefine their roles and relationship in ways that involve consideration of the teacher's authority (See also Anagnospoulos, Basmadjian, & Mccrory, 2005; Grisham & Wolsey, 2006). With each of the functions associated with teaching presence, what is at stake is whether the teacher reserves the action to him or herself or releases ownership of the action to the student(s). It seems apparent that the original concept of teaching presence (TP) should be distinguished as either *teacher* presence (TrP) or *teaching* presence (TgP). TrP (teacher presence) signifies the *person* of the instructor in online discourse, whereas TgP (teaching presence) represents the *functions* of an instructor without regard to who performs those functions.

Anderson et al. (2001) recognize a distinction between teacher presence and teaching presence in their study of two graduate online courses, one a course in health and the second an education course in which the instructor enlisted student moderators to assist in facilitating online discussions. Anderson et al. used content analysis to assess the efficacy of a specific set of indicators to identify instances of teaching presence in threaded discussion transcripts (Appendix D). In this study, analysis was applied only to the instructors' entries and not to entries made by students in either course, including the student moderators in the education course. Nevertheless, Anderson et al. report that the instructor in the education course (with student moderators) posted only one-third as many teaching presence (TP) messages as the instructor in the health course, and they attribute this difference to the role played by student moderators.

> In the education course, the student moderators were performing a substantial part of the teaching presence role. We have observed this phenomenon in a number of online courses. This supports our decision to refer to this element of the community of inquiry as 'teaching presence' rather than 'teacher presence,' as a number of individuals who are not teachers often collaborate in carrying out this role. (Anderson et al., 2001, p. 13)

Anderson et al. state that student moderators took on the teaching presence role in the education course, but they do not explain how. Their objective was to document evidence of teaching presence in the instructors' entries only, not in entries made by students, including student moderators. Although Anderson et al. recognize a distinction between teacher presence and teaching presence, I would argue that the use of student moderators in their study continues to suggest teaching presence as an instructor's role (TrP). Student moderators in their description perform teaching presence (TP) because they have been invested with the mantle of the instructor. This is different from distributing teaching presence (TgP) across the community as a function to be taken up as needed by any member – that is, as the member is more capable to do so and as the community needs that member to step forward. Genuine teaching presence (TgP) resides in a community only when it is a role available to all.

Framing the general concept of teaching presence (TP) as a question of function rather than position served my research in two ways. First, it invited all of the participants in this study (teacher and students alike) to collaborate in examining the affordances of the Moodle Forum artifact. Second, framing teaching presence (TP) in this way focused the attention of my investigation on whether and how the affordances of threaded discussion may be influenced by distributing the responsibility for teaching across all participants in the online community. In other words, rather than limiting my attention as a researcher to the actions of the classroom instructor, a function-oriented definition of teaching presence acknowledged my research interest in the actions of students as well. If, indeed, teaching presence (TgP) advances the inquiry process, then it is important to understand how teaching presence works or can work, including who can be responsible for teaching presence in online conferencing. The question of how teaching presence is distributed in a community of learners will be taken up in the third section of this literature review. First, however, there is an additional aspect of the CoI model to be addressed.

## The Influence of the Interface on Forms of Presence in Online Inquiry

As stated, the three kinds of presence are interdependent in online conferencing: social presence provides the foundation for participation, cognitive presence represents purposeful participation, and teaching presence promotes progress from one to the other. Nevertheless, as Garrison and Arbaugh (2007) point out, the three kinds of presence have for the most part been studied in isolation when what is needed is further research into the *interrelationship* between social, cognitive, and teaching presence (p. 159). The need to better understand the interconnection of these forms of presence in online discussion suggests the importance of understanding the *interface* or space in which these forms of presence come together. In computer technology, a *user interface* is any device that enables a user to communicate with a computer (e.g., the keyboard, mouse, icons, and menus). The term interface is also used to designate the point of contact between multiple components in a technology context. The hardware interface (e.g., cables and modems) connects two or more devices (e.g., computers), and the software interface (e.g., languages and codes) negotiates between various programs and applications. A computer *program* is a set of instructions that cause a computer to act in a predetermined way, and these instructions include the directions that manage communication between user and technology at the user interface. For example, when a user composes a word processing document, the computer offers various options for formatting, editing, printing, saving and so on as governed by instructions built into the program. In turn, the user enters text and initiates any commands like cut and paste using keystrokes and mouse clicks. In this way, user engagement with computer hardware and software is mediated by multiple interfaces.

Like any threaded discussion *application,* Moodle Forum is a group of programs designed to coordinate a number of functions for multiple users. As such, Moodle Forum involves a multitude of interface points. However, these separate interface points are for the most part transparent to the user. While certain interface components like keyboard and mouse are visible, the actual interface where electric impulses cross from one system to another is not visible. Instead, what a user sees is the representation of the interface that is made to the user by the application programs. For example, when users select "Reply" in Moodle Forum, they are presented with a screen that includes various format and command options (See Appendix A, Table A4). The actual interface point at which the user's command or formatting instruction meets the program's initiating code is not visible nor is it important. Any "interface" is a point of communication, a juncture at which meaning passes between user and technology or, in a larger sense, between multiple users through technology. What is critical, therefore, are the representations that an artifact like Moodle Forum makes in order to indicate what options are available at its interface(s). These representations present the artifact's elements to the user and influence the user's opportunity to take advantage of the affordances of the artifact by utilizing those elements.

Swan (2006) acknowledges the importance of the interface and of how it is presented to the user. Specifically, Swan (2006) emphasizes that social, cognitive, and teaching presence cannot be understood, let alone cultivated, apart from explicit concern for the influence of the interface (Figure 2.2).

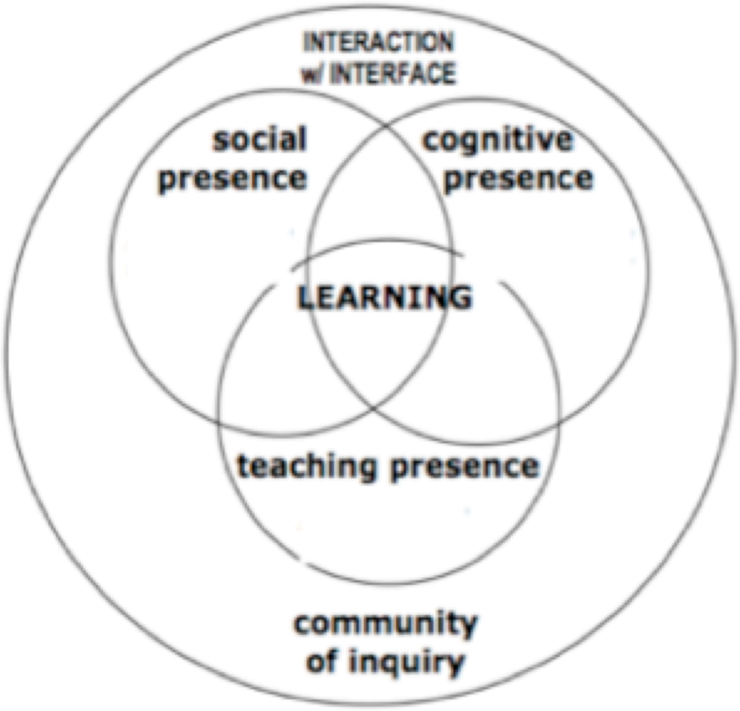


Figure 2.2. Community of Inquiry Model of the relationship between three conditions or forms of presence in an online learning environment (Garrison et al., 2000) with addition of interaction with interface that underlies this model (Swan, 2006).

To understand these forms of presence as situated by the interface is to recognize the importance of users' understanding what an application can and cannot do. Swan’s (2006) incorporation of interface into the CoI model raises issues relevant to the proposed study. She points out that there has been little research on the effects of the interface on threaded discussion despite its potential to influence online discussion patterns. She suggests this gap may be “because most course platforms have a common way of representing threaded discussion that we may have taken for granted” (p. 7). In other words, the application of threaded discussion in various course management systems (e.g., Moodle, Blackboard, WebCT) has tended to follow the same rules and procedures. As a result, teachers and students alike have come to accept and use the elements of threaded discussion as they are presented and reinforced by these systems. This is essentially the point made above under the psychology of everyday things: specific design elements of the artifact and their effects go unexamined.

Hewitt (2003) suggests how the failure to recognize and use affordances associated with the interface can be characteristic of threaded discussion. This researcher studied interactivity patterns among graduate students engaged with asynchronous online courses and found that 82% of students read *only* messages that were flagged as "unread." Hewitt (2003) concluded that when the interface flags unread messages and displays only single messages at one time, this design element influences the nature of discussion. Rather than progressing organically as a coherent whole, discussion tends to grow "on its outer edges" (Hewitt, 2003, p. 39). Put simply, entries are made only in relation to the last nib in a discussion stem and without regard to themes that may be running throughout the discussion. Hewitt (2003) observed two side effects of this pattern. The first side-effect is *unintended thread abandonment.* When participants have read all of the entries in a thread, they attend only to other threads in a Forum rather than returning for further or deeper consideration. The second side-effect Hewitt (2003) observed is *unintended changes in topic.* When one participant responds to a particular detail in a thread entry, that detail may take over the thread to the exclusion of other aspects in the original entry. For Hewitt (2003), "what is disturbing about these two [patterns] is *the unintentional manner* [emphasis added]" in which they come and go (Hewitt, 2003, p. 41). It may be appropriate to abandon a discussion thread, and one point in a thread may deserve to become its own discussion. Nevertheless, these shifts should not occur unwittingly. If threaded discussion is to meet the expectation for richer discussion, these are the kinds of moves that participants should recognize and make reflectively.

Swan (2006) interprets Hewitt's (2003) findings as an example of how the interface itself goes unexamined despite its potential to influence online discussion. Hewitt himself (2003) does not explicitly reference social, cognitive, or teaching presence. However, he does recognize that online discussion is influenced by "the interest of participants, the content of particular notes, and course expectations" (p. 38) – three descriptors evocative of social, cognitive, and teaching presence, respectively. What Hewitt (2003) emphasizes is that thread development may also be "affected – perhaps deeply affected – by the habitual activity patterns of online participants" (p. 39), and these habits may be promoted, if not directed, by the design of the interface itself. Instead of our using the interface to manage and integrate social, cognitive, and teaching presence, users may be allowing the interface to govern activity patterns without regard to those conditions. Swan (2006) acknowledges research findings that suggest online conferencing fails to achieve more advanced stages of critical inquiry, and she suggests two explanations for how these findings may relate to the interface. One explanation is that discussion applications as they are currently designed and utilized may work against discussion objectives. For example, using the unread notation to flag responses may counteract a user's inclination to read previous messages. In that case, what designers and users consider to be an affordance (e.g., convenience) proves to be a constraint in the context of practice. A second explanation for the failure of threaded discussion to facilitate significance or convergence may be that the interface, however it is used, is simply not suited to that objective. In other words, with or without the unread flag, participants in online discussion might not be inclined to read earlier messages. In either case, further investigation of the interface is needed. While this study does not claim to settle this question, it does maintain that effective online discussion requires an understanding by users of how their activity patterns may be influenced by the design of the technology interface as well as an understanding of the concepts of significance and convergence.

## Teaching and Learning in a Distributed Environment of the 21st Century

As noted, Swan (2006) recommends further research on the design and use of the technology interface that supports threaded discussion. In addition, researchers investigating the broader CoI model recommend further research into the nature of teaching presence in online communities (Anderson, et al., 2001; Garrison & Arbaugh, 2007; Swan et al., 2008). This study rests at the intersection of these two recommendations. In section one of this literature review, I argued that our capacity to use a technology depends on our understanding of its design elements. For purposes of this study, I identified three elements of Moodle Forum technology that I believe are not fully understood and utilized: topic design, entry subject lines, and entry hyperlinks. The objective of this study was to investigate what happened when members of a high school class were introduced to, encouraged to use, and encouraged to help others use these elements in an effort to achieve significance and convergence in their online discussion activity. In this section, I address literature relevant to the learning environment studied. First, I describe the distributed nature of learning in online environments. Second, I introduce two concepts from sociocultural theory that are essential to investigating a distributed environment: internalization and the zone of proximal development.

## The Distributed Nature of Learning in Online Environments

Online environments, generally, are described as *distributed* (Bonk & Cunningham, 1998; Duffy & Cunningham, 1995; Ryder & Wilson, 1996). In distributed environments, neither control nor knowledge is possessed and allocated by single individuals. Instead, both authority and understanding are shared throughout the environment by members engaged in problem solving. Ryder and Wilson (1996) state that current technologies “allow for new possibilities...Agency is shifting from center to periphery, from teacher to learner, from author to reader, from librarian to researcher, from curriculum to context” (p. 11). Agency is the capacity to make choices and to impose those choices on the world. When this capacity shifts from one central figure to multiple participants, all community members acquire both a right and a duty to influence the community. In other words, in technology-supported environments, what is widely distributed is *responsibility* and *opportunity*. For example, in a traditional library, resources are selected, managed, and provided by a librarian. On the Internet, however, countless individuals contribute to a resource like Wikipedia. These individuals share in evaluating materials, filling gaps, and providing recommendations in this electronic online library. As a result, everyone who participates in Wikipedia is responsible for content, including its accuracy. This library-oriented example should illustrate that to be distributed sets a higher standard for a community than interaction or collaboration. Distributed environments do more than offer a convenient opportunity to share information; they depend upon the active involvement of all participants in the construction of knowledge. Education is another context in which agency is shifting from a central figure (the teacher) to the periphery (students). As described in the earlier discussion of teaching presence, this shift represents the re-definition of teaching presence from the role of an instructor (TrP) to a functional responsibility, and opportunity, shared by students as well (TgP).

Like any context of activity, a distributed environment is made up of more than its members. It also includes a variety of material and symbolic resources: objects like tools and machines, as well as symbolic representations like diagrams and plans, images, questions, written text, and so on (Pea, 1997, p. 48). A distributed environment is considered particularly well-suited to learning in the sense of coming to understand and acquire the capacity to use these artifacts (Duffy & Cunningham, 1995; Pea, 1997; Ryder & Wilson, 1996). Although individuals are still considered to be primary in importance, in a distributed environment members acknowledge the contribution of their "surrounds" – the artifactual, physical, and symbolic as well as the social resources associated with participants (Pea, 1997; Perkins, 1997). The specific benefit of a distributed environment is an increased likelihood that somewhere across the network a member will distinguish what is being obscured or overlooked in the use of an artifact and will bring this awareness to the attention of others in the community. In other words, "none of us is as smart as all of us" (Blanchard, 2001). In distributed environments, diverse individuals examine and learn from human activity, including the use of artifacts. Different eyes see different views and different hands try different approaches. The combination of these different perspectives may be more revealing of the elements of any artifact and more instructive of its possibilities for action. From this point of view, every context is a learning context – an opportunity to acquire new and expanded understandings of the artifacts that mediate our world.

## Sociocultural Learning in a Distributed Environment

Sociocultural theory and distributed cognition are theoretic frames that share a common emphasis on human learning as a social enterprise. While these frames originate in different disciplines, their compatibility is particularly important to this study. Both frames address how thought emerges in the context of joint activity. Research in the area of distributed cognition, as I have noted, suggests how particular social conditions distribute knowledge in joint activity. The contribution of sociocultural theories of cognitive development (Vygotsky, 1978, Vygotsky, 1986) is their focused concern for how language practices mediate the thought of those engaged in social activity. Two concepts of sociocultural theory in particular are well-suited to explain learning in distributed environments: internalization and the zone of proximal development (Vygotsky, 1978). Both concepts orient researchers and practitioners to the social, cultural, and historical features that frame learning in any context.

### *Internalization: Acquiring and Transforming Artifacts*

According to Vygotsky (1986), learning begins as social interaction and proceeds to gradual individualization. Higher psychological functions of memory, thought, and reasoning appear first on the plane of external, social practice before the child internalizes them as mental processes. For Vygotsky (1978), learning represents the shift from activity in the *inter*psychological plane to the *intra*psychological plane, a process Vygotsky (1978) calls *internalization*. In this shift, children are not passive. Learning is not simply transmitted by adults and copied by children. For Vygotsky (1978), internalization involves the child's own "internal reconstruction of an external operation" (p. 56). In other words, learning – including learning to use cultural artifacts – involves the child's active mental *appropriation* of practices that adults or more capable peers have employed in social activity. The learner does not acquire an exact copy of the artifact in use. Rather, the learner acquires practices for using the artifact that she or he may transform in activity. Consistent with Vygotsky, Wells (2002) points out that "appropriation is not the end of the process" (p. 137). When a learner appropriates an artifact and transforms its use in a dramatically innovative way, that transformation may alter others' subsequent use of the artifact. What Wells (2002) describes is a transformative process in three stages: first, social activity involving the artifact transforms the learner's competence; second, the learner's personal appropriation of the artifact transforms its use in the learner's hands; and finally, if the learner's reconstruction is original and beneficial enough, it may alter the way the artifact is viewed and/or used by others in practice.

### ***Zone of Proximal Development: Capitalizing on Distributed Resources***

Internalization is not a haphazard process. Rather, it is structured by the intervention of others. According to Vygotsky (1978), children possess two developmental levels in any context of activity. First, children have an "actual developmental level" of psychological operations that represents the problem solving they can accomplish on their own. Second, children also possess a "*zone of proximal development"* in which they can accomplish more advanced psychological operations "under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). For learning in the zone of proximal development to occur, the adult or more capable peer must provide assistance that builds upon a child's actual development without surpassing what that child is capable of learning with that assistance. According to Vygotsky (1978), development also proceeds as a spiral. The learner passes through psychological operations and re-encounters artifacts and practices at increasingly complex levels (Vygotsky, 1978). Therefore internalization is a prolonged process in which each step in mastery constitutes a new beginning and the zones of actual and proximal development continue to advance. Throughout this spiral, cooperation with peers as well as adults advances development (Vygotsky, 1978).

## Investigating Threaded Discussion from a Sociocultural Perspective

This study acknowledged the role of internalization and the zone of proximal development to learning in a distributed environment. Anderson et al. (2001) note that in designing and learning how to use technologies like threaded discussion, teachers are themselves forced to be learners (p. 15). Given that students are often more capable users of emerging technologies, this study acknowledged students' capacity to support peers' zones of proximal development and to contribute to shaping the features of threaded discussion in practice. In this way, I hoped to capitalize on what Wells (2002) describes as the mutually transformative nature of appropriating artifacts in practice.

The instructional intervention described in chapter three was intended to involve students in assisting one another and in jointly learning and practicing the targeted elements of threaded discussion. In section two of this literature review, I suggested the redefinition of teaching presence (TP) from a role restricted to the course instructor (TrP) to a collection of functions (TgP), some of which may be shared by other members of the learning community. This redefinition involves the redistribution of teaching functions, and the instructional intervention in this study was intended to support that redistribution. The final section of this literature review addresses the specific interventions for teaching and investigating this redistribution of teaching presence.

## Assisting Students to Achieve Significance and Convergence: The Role of Strategic Instruction to Leverage Technology Design

This study identified three design elements of Moodle Forum that were introduced to assist students as a means to achieve significance and convergence in their online discussion. These elements were discussion topics, entry subject lines, and entry hyperlinks. This study recognized that learning, especially learning in the 21st century, is most effective when it applies the principles of sociocultural theory to a distributed learning environment. It is not enough simply to ask students to manipulate the identified elements in ways that the design of Moodle Forum encourages. Rather, it is important to engage students in examining these elements in use, to more fully understand these elements, and through that understanding to unlock the full potential of the artifact as a whole. Furthermore, this study maintained that such an examination is the responsibility of the entire learning community. Admittedly, teachers have a special responsibility for initiating and sustaining inquiry. The teacher is, or should be, the *most* capable other. Accordingly, there was a role for the teacher's instructional presence in this community's learning to use Moodle Forum. At the same time, this study maintained that it is important to frame teaching presence (TP) as a shared function (TgP) rather than a designated position (TrP). Such a redefinition invites all of the participants in online discussion (teacher and students alike) to collaborate in examining the affordances of the

Moodle Forum technology artifact. Pea (1997) indicates how a distributed learning environment welcomes broad participation in acquiring the use of an artifact.

> This knowledge [that artifacts contain] may come to be exploited in activity by a new learner through a variety of genetic paths: through observations of use by other humans and attempts to imitate it, through playful discovery of its affordances in solitary activity, and through guided participation in its use by more knowledgeable others. (Pea, 1997, p. 54)

As Pea suggests, in a distributed environment instruction in the sense of guided participation as well as collaborative discovery in learning to use an artifact are functions rightfully shared by all participants. In the distributed learning environment of the 21st century, leadership must be open to every member of the community, and every member must feel the responsibility to take on leadership.

This study acknowledged the role of collaborative participant involvement in learning to fully utilize the design elements of a threaded discussion artifact like Moodle Forum. At the same time, this study maintained that in using threaded discussion, these design elements can be important scaffolds in achieving rhetorical features like significance and convergence (Jonassen, 1994, p. 5). To this end, Garrison (2006) and Garrison and Arbaugh (2007) suggest that one competency in particular may influence the quality of discourse in online environments: *metacognitive awareness*. Metacognitive awareness is one’s conscious recognition and understanding of his or her thought processes. As Garrison and Arbaugh (2007) note, “it is normally the role of the teacher to guide the learning process and provide metacognitive awareness” (p. 165). Therefore, if metacognitive awareness of rhetorical features (i.e., significance and convergence) can be cultivated in students, it can significantly contribute to the re-distribution of teaching presence (TgP) in online discussion.

Researchers and practitioners recognize that today's technologies have an enhanced capacity to support users' metacognitive awareness by making computer-mediated activity visible to participants (Garrison, 2006; Garrison & Arbaugh, 2007; Swan, 2006). In threaded discussion, in particular, an exact transcript of discussions is available to participants and can reveal what has or what *is* taking place in the discussion. What is not fully appreciated, however, is the role of strategic instruction that supports students' appreciation for how the use of particular design elements can support their inquiry. As discussed in the first section of this literature review, the design elements of Moodle Forum should not be used routinely. That is, they should not necessarily be used in ways commonly suggested by the technology interface. To the contrary, to fully leverage the affordances of this technology, participants in threaded discussion require instruction that introduces them to strategies that cultivate metacognitive awareness of how these affordances may be leveraged to achieve significance and convergence. As previously stated, the possible uses of any artifact are embedded in its design elements. Metacognitive awareness represents one's capacity to understand those possibilities in use as well as the design elements in which such possibilities reside.

The main question guiding this qualitative study examined how an introduction to the design elements of Moodle Forum influenced participants' threaded discussion – in particular, their achieving significance and convergence as demonstrated in their Forum entries. To help me answer the main question in this study, I constructed three sub-questions directed at these design elements. Each sub-question was also directed at a particular aspect in the use of threaded discussion that I anticipated might affect achieving these rhetorical objectives. Participation represents the foundation for involvement in online discussion. Consequently, my first sub-question was the following: How does an introduction to the design elements of Moodle Forum influence *users' participation* in threaded discussion? Because significance and convergence are two rhetorical features that represent rich online discussion, my second sub-question was as follows: How does an introduction to the design elements of Moodle Forum influence *participants' achieving significance and convergence* in threaded discussion? Teaching presence has been identified in the literature as the enabling force toward inquiry in online discussion, yet it is the least well-understood or documented of the conditions in the Community of Inquiry model. Accordingly, my third sub-question was the following: How does an introduction to the design elements of Moodle Forum influence *participants' enactment of teaching presence* in threaded discussion?

In the following sub-sections, I address the three design elements that comprised the instructional intervention in this study: discussion topics, entry subject lines, and entry hyperlinks. These design elements were selected for investigation because each has a strong and direct relation to the concepts of significance and convergence. Other elements like text formatting, inserting an image, or attaching a document relate more to the composition of individual entries and do not share this relation to how Moodle Forum designers or its users conceptualize the interconnectedness of different entries or threads. There were other aspects to using threaded discussion including entry length and the scheduling and duration of Forum discussions that were not originally identified for investigation. These aspects are not *design* elements embedded in the structure of a

Forum. Instead, these aspects are practices introduced either explicitly by the teacher or implicitly by participants in the context of use. As such, their structure and use will be delineated in later sections on the implementation of instruction in this study. Nevertheless, findings with regard to these aspects of instruction will be included in chapter four. In the following sub-sections, I address the selected design elements of topic design, entry labels, and entry hyperlinks, explaining the capacity of each to support significance and/or convergence and indicating generally how each was addressed by my instructional intervention.

### Documenting the Impact of Strategies for Effective Topic Design

The first design element taught and investigated in this study was the design of discussion topics. A discussion topic is the subject of a discussion thread as introduced in the initiating entry. Researchers have found that topic design has the potential to influence student engagement and discussion (Cooney, 1998; Sugar & Bonk, 1998; Zhu, 1998). Wells, MacLure, and Montgomery (1981) provide a framework for understanding the influence of topic design. In their discussion of the traditional features of classroom discourse, they suggest the basic unit of discourse is the “exchange,” which consists of an “Initiating move” (I) by one speaker (typically the teacher) and a “Responding move” (R) by a second speaker (typically the student). Wells et al. (1981) recognize that in schools, a common discursive pattern is the I-R-E pattern in which the teacher asks a question (I), a student answers the question (R), and the teacher evaluates the student’s answer (E) (See also Cazden, 2001; Mehan, 1979). What Wells et al. (1981) explore are the ways in which these moves either generate or diminish the “prospective force” of discourse (p. 81) – that is, its persistent energy and participant interest. Different discourse moves increase or decrease participant engagement by inviting or closing off response. The I-R-E pattern is an example of discourse that quickly weakens prospective force because the authority for who talks and when remains with the teacher. In threaded discussion, the objective is to design conversational activity that sustains prospective force.

Moodle is designed such that the teacher creates a Forum by drafting a Forum *name* and *introduction*. Participants are then directed to initiate discussion threads within the Forum by selecting a button marked "Add a new discussion topic." As multiple users initiate different threads, the Forum organizes these threads under the teacher's introduction. For clarity, I will refer to the teacher's introduction as the *discussion domain*, and I will use the term *discussion topic* for the initiating entry of separate discussion threads (See Appendix A, Figure A1). How the teacher introduces a Forum discussion influences the prospective force of students' initiating entries and the responses that follow. The more narrowly the teacher defines the acceptable range of discussion in the Forum introduction, the more constrained will be the ensuing range of topics and discussion. Giving directions is traditionally the instructor's exclusive responsibility. Therefore, the risk inherent when the teacher introduces the discussion domain in a Moodle Forum is to reproduce the I-R-E pattern in the online venue: the teacher initiates the Forum with a question and students respond to that question in their initial thread entries. The remainder of each thread, although involving responses by other students, represents an evaluation of the first entry, and prospective force immediately begins to diminish.

Using Wells et al. (1981), it seems clear that what is needed is a shift in understanding as to where a thread of discussion actually begins. In other words, topic design in Moodle Forum should distribute responsibility between the teacher who designs a broad discussion domain and students who design more focused discussion topics within that domain. Emphasis, however, must be placed on the students' initiating entries as the origin of discussion. Within the context of the CoI model, each of the students' initiating entries, not the teacher's Forum introduction, should be the triggering event for an inquiry cycle. Each Moodle Forum presents students with a collection of discrete discussion threads. As such, Moodle provides a visible representation that within a broad domain of interest discussion may proceed in a variety of directions. Framing this study was my belief that with instruction and the collaborative effort of all participants, students can learn to leverage this design element to achieve significance and convergence in online discussion.

This study recognized that a teacher can assist students to initiate and sustain discussion topics by providing strategic instruction aimed at raising their metacognitive awareness of topic design. This study further recognized that students can and should share in the work of exploring and considering what makes a good discussion topic. Finally, this study maintained that the design of Moodle Forum, when effectively used, can scaffold students' appreciation for how effective topic design supports significance and convergence.

## Documenting the Impact of Strategies for Effective Entry Subject Lines

The second design element taught and investigated in this study was the entry subject line. A subject line is text that a user writes in the subject box above a Forum entry and the Forum application uses to catalogue an entry. Duffy et al. (1998) recommend "labels" as a way to focus user attention both on the content of an entry and on its function or role in the ongoing enterprise (p. 71). Subject lines function like titles in two ways. First, they *identify* entries, and second, they help to *index* those entries for future reference. In threaded discussion, readers are confronted with what can be an overwhelming number of choices for what to read in a Forum. The subject line is one factor in a user's selection of what is relevant to his or her personal and intellectual interests. In addition, if significance and convergence are to be realized, efficient indexing is essential. When entry subject lines are effectively designed, they assist readers to locate and access material across a Forum, and they help to indicate the relationship between entries. Finally, in threaded discussion, entries should be coherent in content and they should serve some purpose in a discussion thread. When students create and attach subject lines to Forum entries, those lines can be a tool that helps students to reflect upon and articulate both the content and purpose of their entries (Jonassen, 1994). In Moodle, entry subject lines are a visible reminder of the importance of referencing others' entries in threaded discussion. With instruction and the collaborative effort of all participants, students can learn to leverage this design element to achieve significance and convergence in online discussion. The intent of this study was to document the impact of instruction aimed at helping students understand how effective entry subject lines support significance and convergence in online inquiry.

This study recognized that a teacher can assist students to identify and reference Forum content by providing strategic instruction aimed at raising their metacognitive awareness of subject design. This study further recognized that students can and should share in the work of exploring and considering what makes a good entry subject line. Finally, this study maintained that the design of Moodle Forum, when effectively used, can scaffold students' appreciation for how effective entry subject lines support significance and convergence.

## Documenting the Impact of Strategies for Effective Entry Hyperlinks

The third design element taught and investigated in this study was entry hyperlinks. Moodle Forum entries have the capacity to support both external and internal hyperlinks. External hyperlinks provide a direct connection from words in a Forum entry to a website or other Internet resource (e.g., pdf document, image) located *outside* the community's own Moodle site. Internal hyperlinks provide a direct connection to a location *within* the community's Moodle site. This location may also be a resource like a pdf document or image. Most significantly, however, an internal link can be made from one entry in a Moodle Forum to another entry in the same or any other thread in any Forum on the Moodle site.

Warlick (2004) explains that unlike traditional two-dimensional reading (across and down), text today requires *three-dimensional reading* (across, down, and deeper in) (p. 22). In other words, hyperlinks create layers of text beneath the surface. As such, hyperlinks are a clear representation of significance and convergence. To create a hyperlink is to recognize that a connection exists between one's own thought and something else; similarly, to select a hyperlink recognizes that a connection exists, or may exist, between one's train of thought in reading and something else. One cannot create an internal hyperlink without attending to what another has put into a Forum entry. Moreover, internal links may be used to fashion convergence. As multiple entries are incorporated into one's own position, intersecting connections can be suggested for those who want to drill down into those connections. Furthermore, once users understand the hyperlink element, their metacognitive awareness of the linking possibility influences their relationship with the text and with the other participants even when they are not engaged in constructing a hyperlink (Dewey, 2005, p. 111; Dewey, 2009, p. 14). In Moodle, the hyperlink element is a visible reminder that connections can be made between the entries of different participants. With instruction and the collaborative effort of all participants, students can learn to leverage this design element to achieve significance and convergence in online discussion. The intent of this study was to document the impact of instruction aimed at helping students understand how effective use of entry hyperlinks supports significance and convergence in online inquiry.

This study recognized that a teacher can assist students to acknowledge connections in Forum content by providing strategic instruction aimed at raising their metacognitive awareness of entry hyperlink design. This study further recognized that students can and should share in the work of exploring and considering what constitutes effective use of entry hyperlinks. Finally, this study maintained that the design of Moodle Forum, when effectively used, can scaffold students' appreciation for how entry hyperlinks support significance and convergence.

## Conclusion

In the first section of this literature review, I explained how the affordances of an artifact are embodied in its design elements and how the capacity to fully realize those affordances therefore depends on a rich understanding of those elements. Section two described three conditions essential to online communication (social, cognitive, and teaching presence) as well as how those conditions interact through the medium of interface design. In addition, section two emphasized the importance of the functions of teaching presence (TgP) in facilitating that interaction. As explained in section three, sociocultural theory in a distributed learning environment provides a perspective from which all participants (teacher and students alike) can contribute to understanding and learning to use a complex artifact like Moodle Forum. Finally, section four of this literature review introduced the concept of metacognitive awareness to represent participants' conscious recognition of how the design elements of threaded discussion can and should function. Section four also identified three design elements of Moodle Forum that were taught in this study: topic design, entry subject lines, and entry hyperlinks. These elements were investigated to document their influence in assisting participants to achieve significance and convergence in online discussion.

Gura and Percy (2005) maintain that one of the challenges to technology integration is the need for digital immigrant educators not just to learn new technologies but also to *unlearn* certain habits and practices embedded in school culture. These entrenched norms include, for example, "bite-size, forty-minute periods...aimed at the *superficial* covering of content that is 'pablumized' and made sufficiently general to be fed to thirty-odd pupils from a one-size-fits-all spoon" (Gura & Percy, 2005, p. 3). Both Gura and Percy and Papert (1980) maintain that the presence of emerging technologies as a cultural phenomenon will disrupt and to some extent force a change in these entrenched patterns, and that "...where teachers are hired who know how the technology itself is used, there is...at least one layer less of consideration that must be removed for them" (Gura & Percy, 2005, p. 4). It is commonly anticipated that technology integration will increase with the arrival of new, cutting edge teachers. However, it is not generally recognized that these teachers and even today's digital native students themselves may need to unlearn existing habits in learning to use a technology like threaded discussion. In school, students are subject to the same cultural norms that influence veteran teachers. Furthermore, students' use of technology is apt to be influenced by their out-of-school experience, much if not all of which has been acquired unreflectively as directed by technology designers. For students, in fact, this tension between existing technology use and new demands like those introduced in this study may be intensified by their sense of ownership vis-a-vis technology contexts.

Jonassen (1994) points out that those who learn the most from the design and development of computer technologies, including systems for computer-mediated communication, are the designers. What Jonassen (1994) advocates is taking these technologies away from the specialists and giving them to the learner. In other words, rather than accepting an application like Moodle Forum as it is routinely presented by system designers, educators and students should understand such applications enough to control and direct them. This study investigated the impact of an instructional intervention aimed at achieving this objective both by disrupting existing assumptions about the design of Moodle Forum and by encouraging more reflective application of its design possibilities.

# Chapter 3

# METHODOLOGY

The purpose of this chapter is to describe the research methodology for my study of computer-mediated communication using threaded discussion in a twelfth-grade English classroom. Information is organized in the following sections: 1) statement of purpose; 2) limitations of the pilot study; 3) bounding the case, which includes the role of the researcher, site selection, and participant selection; 4) description of the implementation of threaded discussion using the Moodle Forum application; 5) data collection; 6) data analysis; 7) establishing trustworthiness and 8) limitations of the proposed study.

## Statement of Purpose

I first became interested in computer-mediated communication (CMC) as a technology integration coach. At that time, I was enrolled in a year-long qualitative research class, and I was approaching the completion of doctoral course work. These events created the opportunity for a pilot study which investigated how a particular technology – computer-mediated threaded discussion using Moodle Forum – influenced students' engagement with their assignments, peers, and teacher. At the conclusion of the pilot study, all three of my primary informants indicated that they preferred threaded over in-class discussion. What was particularly interesting to me, however, was how these students described their online discussion. All three informants reported that they were not only reading what classmates had written on the Forum, but they were also being influenced by what they read in their own thinking and online entries. Hearing this made me wonder whether the implementation of this technology might leverage not just students' engagement in threaded discussion but also the qualities of the discussion itself.

In its design, this study builds upon the pilot study. However, this study altered the pilot design by including an instructional intervention that introduced students to the rhetorical features of significance and convergence. As discussed in my literature review, CMC research indicates these two features are central to effective online discussion. The first feature, *significance*, is the act of attending to what another has said in a discussion. The second feature, *convergence*, is the process of synthesizing what others have said in the articulation of one's own position. In this study, instruction introduced, modeled, and supported particular strategies aimed at assisting students to design discussion topics, compose entry subject lines, and utilize entry hyperlinks in order to achieve significance and convergence in their Moodle Forum entries.

The purpose of this study, then, was to investigate the impact of an instructional intervention designed to assist participants in achieving significance and convergence in threaded discussion. Specifically, the intervention provided particular strategies for design elements that have the potential, when effectively used, to enrich the quality of discussion and thus deepen inquiry. My primary research question was: How does an introduction to the design elements of Moodle Forum in a twelfth-grade English classroom influence participants' threaded discussion – specifically, their achieving significance and convergence in their Forum entries? To help me answer that broad question, I constructed three sub-questions. First, how does an introduction to the design elements of Moodle Forum influence *users' participation* in threaded discussion Second, how does an introduction to the design elements of Moodle Forum influence *participants' achieving significance and convergence* in threaded discussion? Third, how does an introduction to the design elements of Moodle Forum influence *participants' enactment of teaching presence* in threaded discussion?

### Limitations of the Pilot Study

As noted, the pilot study lasted four weeks and included a sample of ten participants in a ninth-grade English class, three of whom were primary informants. The pilot study included the following sources of evidence: observational field notes, a biographical student survey, pre- and post-study attitudinal student surveys, student and teacher semi-structured individual interviews, and transcripts of participants' online threaded discussion. Salient themes emerged from the data set. Nevertheless, the size of the participant sample and the short duration of the study limited its efficacy. More importantly, while the pilot study yielded interesting findings on participants' participation with threaded discussion, it was not oriented to explore the impact of explicit instruction on the quality of students' discursive activity in the online medium. The pilot study did not define or analyze the rhetorical features that characterize effective threaded discussion nor did it implement a formal instructional program to assist participants to apply strategies that achieve those features over time. The study reported here addressed each of these limitations. It studied a larger sample of participants over a longer period of time, and it examined the impact of instruction aimed at three objectives for discussion entries: 1) deepening the quality of significance, 2) deepening the quality of convergence, and 3) leveraging the design elements of threaded discussion to assist participants in achieving these rhetorical features.

## Bounding the Case

The intent of this case study was to document the influence of an instructional intervention designed to support the computer-mediated communication of a specific population of twelfth-grade English students in a specific setting. According to Creswell (2007), “case study research involves the study of an issue explored through one or more cases within a bounded system (i.e., a setting, a context)” (p. 73). Although the term case study is defined in different and sometimes conflicting ways (Creswell, 2007; Merriam, 2002), two elements are typically common in any application of this method. One element is clear definition of the unit of analysis, that is, ”what” exactly is under study. The second element is specific boundaries on time, space, and/or participants (Merriam, 2002, p. 178). In this study, the unit of analysis being studied was the particular rhetorical features evident in entries that participants produced on Moodle Forum. In distinguishing this unit of analysis, it is particularly important to be clear about how the element of space and time applied to the study because of complications that may arise from data collection in two environments – the live classroom and the online Forum. In this study, space and time were bounded in two distinct ways. Explicit instruction on the use of the Moodle Forum and the rhetorical strategies that influence literary discussions occurred in the space and time of participants’ regular classroom activity. In addition to this physical space and its corresponding activity in real time, this study’s boundaries expanded to include virtual space, the site of participants’ online discussion. It was important for me as a researcher to distinguish these spaces and times, and to collect only that data from the physical space that was relevant to students’ online discursive activity. Any data associated with students’ actual discourse in the physical space was beyond the scope of this study. Put simply, this study did *not* attend to the rhetorical strategies that characterize participants' classroom literary discussions or general classroom talk.

### Role of the Researcher

At the time of the pilot study, I was employed as a technology integration coach serving the school district where the site for this study was located. In this capacity, I assisted administration with planning for technology integration, conducted inservice programs for school faculty, assisted individual teachers in adopting specific technologies, and modeled the use of these technologies in classrooms with K-12 teachers and students. At the time of the study reported here, I was no longer employed by the school district. However, I was a member of the district's Technology Committee, and I continued to assist the district's Technology Integrator as well as administrators and classroom teachers on an informal basis. As a result, I was still known to school faculty and staff, and I continued to be recognized as a technology resource, although work with students was rare. Furthermore, some participants in this study had participated in the pilot study and recognized me in this capacity. During this study, Ms. Hawthorne identified me as a technology integration coach assisting her and her students in the use of Moodle Forum. In addition, I presented myself as a researcher conducting a study of their use of Moodle Forum. As detailed in the timeline for this study (Appendix E), I provided direct instruction as well as coaching to students in some aspects of Moodle Forum. In this capacity, I was positioned as a participant-observer in this study.

There were advantages and disadvantages associated with my position as a technology integration coach, as well as with my prior relationships with the cooperating teacher and those students who had participated in the pilot study. In my experience as a technology coach, I found that my recognized expertise created a positive working relationship with students. They seemed to assume that I had not only skill but also interest in technology, and this common ground hastened co-participation in technology activities. In this study, there may have been some further residual benefit from the pilot study in establishing participants' trust. In addition, I felt comfortable contributing in this teacher's classroom, and I believe it may have been easier for her to maintain her lead role in the face of an outside expert with whom she had previously worked. At the same time, I needed to be careful not to let data collection or analysis be influenced by my regard for this teacher, and I needed to guard against any bias originating from my prior interaction with students in the pilot study. Furthermore, my former role as a technology integration coach and continuing, informal involvement in this district had the potential to complicate my role as researcher by positioning me in ways similar to a teacher. A recognized risk with teacher-research is partisan reporting – that is, reporting prejudiced in favor of a particular outcome (Henry, 1999, p. 201). In this case, I risked being influenced by more than my connection to one instructional program in one classroom setting. I would potentially be influenced by my affiliation with technology integration in education generally. My role as an advocate for technology integration might intensify the impulse to promote the benefits of Moodle Forum. I discuss later the methodological practices I relied on to monitor my relation to participants' discussion practices on the Forum.

### Site Selection

Riverside High School was chosen as the site for this study for two reasons. First, I was aware that Riverside High School encouraged technology use and that its administrators and staff were committed to technology integration. Second, Ms. Hawthorne, the classroom teacher featured in this study, had a record of leadership in the school's efforts to integrate technology. Riverside was a regional nine through twelfth-grade public high school that served towns with a combined population of 5,500. In the 2010-2011 school year, school enrollment was 225 with a male/female ratio of 48%/52%. Of the 225 students, 92+% were Caucasian, 7% Hispanic, and less than 1% African American or Asian. In the Riverside School District, the median income was $28,525 with 14.9% of households below the poverty level, and 56% of students eligible for free and reduced lunch. Total faculty and staff numbered 39 (21 teachers, seven educational technicians, and three administrators). Average class size ranged between 12 and 18, and 3.8% of students received special education services (Riverside High School, 2010; B. Sparks, personal communication, June 15, 2010).

In recent years, three external factors had impacted Riverside School District: declining school enrollments, reduced school budgets, and a recent state initiative to consolidate administrative school units. These factors had led to closing one elementary school in the district and had the collateral effect of reducing resources and creating an uncertain climate. Riverside High School itself was built in 1967 with a new classroom wing added in 2003 to replace mobile classroom units. At the high school, most students followed a traditional program toward a diploma. Academic tracking had been dismantled in 2003 although some disciplines including English did offer Advanced Placement (AP) and Honors courses that were open to all students. Vocational education was available through a regional program about 45 miles away, and students were able to enroll in "early college" courses at a branch of the state university about 25 miles away.

Like many schools in the state, Riverside had also felt the effect of the increasing emphasis on proficient standardized test scores. Prior to this study, various school schedules had been implemented, including the modified block schedule in place during the study with six traditional 50-minute class periods on Monday, Wednesday, and Friday and three 80-minute block periods on Tuesday and Thursday. The school had also implemented “Learning Labs” for all students. These Labs were similar to study halls, except that each student's time was oriented toward a remediation or an enrichment program depending on individual educational needs.

Professional development for faculty was built around cross-disciplinary “Professional Learning Communities” (PLCs) that met regularly to foster collaboration on teaching practice. Literacy across the curriculum had been an inservice emphasis for more than five years prior to this study, and technology was now receiving similar attention. Riverside School District was served by two, full-time technology coordinators who maintained the school network and individual components. In addition, one of these coordinators spent about half his time supporting staff members’ teaching with technology. In the 2009-2010 school year, three of the district’s five professional development workshop days were devoted to technology, and each teacher had an individual plan for fully integrating one focus technology into their classroom practice during that year.

Technologically, Riverside High School housed one video conference system, three SMART interactive whiteboards, and an assortment of LCD projectors, overhead projectors, video cameras, and DVD players. Since 2002, a state-sponsored technology initiative had provided a dedicated Apple iBook laptop for every seventh and eighthgrade student in the district. As a result, students generally arrived at Riverside High School with a high degree of computer competence and familiarity. Since 2005, the high school had housed nearly 170 laptop computers, primarily PCs. Therefore, it was generally possible for teachers to have laptops for an entire class while in school, and students were generally able to take a laptop home for work on assignments outside school. In fall 2008, the state department of education issued each high school teacher in the state a MacBook laptop, and in fall 2009 the state's technology initiative expanded to include high schools. At the time of this study, every student at Riverside High School had a dedicated MacBook laptop computer for use throughout the school day and at home. This technology expansion had significant implications for this study. First, having dedicated laptops in class tended to reduce interference or delays from technology issues like breakdowns and slow start-up. It also increased user efficiency by enabling easier, faster manipulation of files and applications on a familiar interface. More importantly, although the state's technology initiative did not address Internet access outside of school, having dedicated one-to-one laptops had resulted in teachers, including Ms. Hawthorne, routinely assigning work that involved the use of laptops, including use of the Internet, outside of class. Teachers had found that in most cases, students did have regular access to the Internet outside of school, and where necessary accommodations were made to provide for access in school while out of class. In this study, the extent of participants' access to Moodle Forum outside of class may have influenced their perceptions and use of online discussion. However, unlike the pilot study in which discussion was effectively restricted to class time, in this study, the opportunity and expectation that discussion would be conducted outside of class preserved the orientation of the study toward *asynchronous* online discussion.

### Participants

Participants in this study included Ms. Hawthorne and the students in two sections of her twelfth-grade English course. Ms. Hawthorne was chosen as a secondary informant for her teaching credentials, her interest in emerging technologies, and her prior experience with the implementation of computer-mediated communication. At the time of this study, Ms. Hawthorne was beginning her twelfth year as a secondary school English teacher and her sixth year at Riverside High School. She had received a master's degree in Secondary English Education from a large public university in the South and had been one of her school's professional development team leaders for three years. Ms. Hawthorne was also a technology leader. Although she was modest in the technology expertise she claimed, she was an early adopter of emerging technologies, including the various applications of Moodle. For three years, she had been responsible for controlling a substantial number of her school's available laptops. As a result, she was also familiar with issues having to do with maintenance, security, and management of technology.

During my former employment as an English teacher at Riverside High School, Ms. Hawthorne and I had worked together for three years. Our joint professional activity included curriculum planning, professional conversation, and inservice programming. As a technology integration coach, I had continued to work with Ms. Hawthorne on technology integration, including the pilot study. During this period, she was particularly interested in how emerging technologies could leverage students' out-of-school literacy habits to increase their engagement with in-school literacy activities. Ms. Hawthorne had been encouraged by her students' reaction to the Moodle Forum during the pilot study, and she continued to believe that threaded discussion could support academic objectives. As I discuss later in this chapter, my familiarity with Ms. Hawthorne's instruction and professional expertise required instruments to monitor my observational bias.

Participants in this study were 20 members of two class sections of twelfth-grade English from whom I received both parental consent and student assent. From a total of 14 students in period two, ten students elected to participate in the study – seven female and three male. From a total of 18 students in period six, ten chose to participate – again, seven female and three male – for a total participant sample of twenty students. Of these twenty, 14 were female and six, male. In each class section or period only two participants had participated in my earlier pilot study. Nearly half had prior experience with Moodle Forum (five in period two and four in period six). Instruments to monitor observational bias discussed later in this chapter were also applied to my interaction with participants in the pilot study. Fifteen of the twenty participants had Internet access outside school while five did not. Of these five, only two (Maria in period two and Callie in period six) reported significantly less use of technology than their peers both within and outside school. All participants were familiar with using email, surfing the Internet, and social networking. All but two had cellphones, and twelve claimed sending more than 1000 text messages a month. Altogether, each participant was a frequent user of technologies involving online communication.

Upon analysis of initial observational and survey data, I selected a smaller subset of the larger participant sample. In this study, these participants are referred to as primary informants. This subset was comprised of three participants from period two (two male and one female) and four participants from period six (two male and two female). These seven provided a representative sample of academic performance, work habits (including frequency of assignment completion), and class participation as characterized by their teacher and my own classroom observation during the first three weeks of the study. Of the seven primary informants, three had been primary informants in the pilot study – Beth and Evan in period two and Valerie in period six. It is also important to note that two participants in period six had read *The Great Gatsby* as members of Ms. Hawthorne's Junior Advanced Placement English class – Norman and Matt, who was one of the primary informants. Table 3.1 lists the twenty students in the participant sample and identifies the seven primary informants.

Table 3.1. Members of the participant sample.

| **Name**[1] | **Gender** | **Internet access out of school?** | **Participated in pilot study?** | **Prior experience with Moodle?** |
|---|---|---|---|---|
| | | **Period Two** | | |
| ***Beth*** | F | dial-up | Yes<br>(primary) | Yes |
| ***Carlton*** | M | hi-speed | No | Yes |
| ***Evan*** | M | none | Yes<br>(primary) | Yes |
| Kelley | F | hi-speed | No | Yes |
| Kevin | M | hi-speed | No | No |
| Laney | F | hi-speed | No | No |
| Maria (ESL) | F | none | No | Yes |
| Michelle | F | none | No | No |
| Paulette (ESL) | F | hi-speed | No | No |
| Victoria | F | hi-speed | No | No |

[1] Note: Pseudonyms of primary informants are in bold italic and listed first.

Table 3.1. (Continued)

| **Name**[1] | **Gender** | **Internet access out of school?** | **Participated in pilot study?** | **Prior experience with Moodle?** |
|---|---|---|---|---|
| **Period Six** | | | | |
| ***Kirk*** | M | hi-speed | No | Yes |
| ***Matthew*** | M | hi-speed | No | No |
| ***Monica*** | F | hi-speed | No | No |
| ***Valerie*** | F | hi-speed | Yes (primary) | Yes |
| Bailey | F | hi-speed | No | No |
| Brittany | F | dial-up | No | No |
| Callie | F | none | Yes | Yes |
| Ellen | F | none | No | Yes |
| Jean | F | hi-speed | No | No |
| Norman | M | hi-speed | No | No |

[1] Note: Pseudonyms of primary informants are in bold italic and listed first.

### Institutional Review Board

An application for this study was submitted and approved by my institution's review board. Internal permissions were obtained from the superintendent of the Riverside School District and the principal at the Riverside High School. Informed consent (Appendix F) was acquired from the parent(s)/guardian(s) of each student in the targeted class sections. When a parent or guardian did not grant consent, the child in question was removed from the participant sample. Those students whose parents granted consent to participate were asked to provide written assent (Appendix G). The failure to receive both written consent and assent eliminated a student from participation in the study. Both consent and assent forms specified the researcher's efforts to insure confidentiality. These efforts included the following: (a) the use of pseudonyms during all phases of data collection and (b) the secure storage of participants' names and corresponding pseudonyms in a lock box in the researcher's home. In addition to security measures, consent and assent forms noted the absence of any significant benefit to participants, aside from any generalized self-knowledge they may acquire about themselves as Moodle users. Consent and assent forms also acknowledged the limited risk of the study, namely the possibility that participants may feel uncomfortable with questions they were asked in the survey and/or individual interviews. Consent and assent forms also noted that participants may elect not to participate in particular research activities or to withdraw completely from the study at any time and without consequence.

## Moodle Forum: Implementation and Procedures

In this study, the instructional intervention for the use of threaded discussion was embedded in a 15-week instructional unit organized around a central inquiry question. As discussed in my literature review, various researchers have adopted the inquiry process as a framework for online communication (Duffy et al., 1998; Garrison et al., 2000; Garrison et al., 2001; Gunawardena et al., 2006). In so doing, these same researchers have found that progress through the inquiry cycle from the introduction to the resolution of a problem typically stalls at the transition from exploration or divergent thinking to integration or convergent thinking. Simply stated, discussion participants appear to be more comfortable, both socially and cognitively, when engaged in brainstorming possibilities than attempting to critically evaluate and process those possibilities. Two recommendations for overcoming this tendency have been noted in the literature. The first is "a strong and active presence on the part of the instructor" (Shea, 2006, p. 41). The second is a common purpose represented by production of a tangible, shared product (Garrison, et al, 2001). Nevertheless, the study reported here was oriented differently. Rather than restricting the role of discussion manager to the teacher, this study encouraged participants' enactment of teaching presence. And, rather than limiting threaded discussion to achieving a single communal resolution, this study recognized discussion as a context for inquiry that serves individual outcomes. In this section, I explain how the instructional intervention in this study was designed around these positions, and I describe the elements of that intervention. Chapter four will furnish additional detail on the implementation of Moodle Forum particularly regarding adjustments made to unit and lesson plans in the course of instruction.

With regard to teaching presence, I have previously recommended a redefinition of teaching presence (TP) from a role restricted to the course instructor (TrP) to a collection of functions enacted by any member of the learning community (TgP). If, indeed, teaching presence (TgP) advances the inquiry process, then it is important to understand how teaching presence works or can work, including who can be responsible for teaching presence in online conferencing. A redefinition of teaching presence involves the redistribution of teaching functions, and the instructional intervention in this study was intended to support that redistribution. Specifically, instruction was intended to engage students in the traditional teaching function of topic design. Furthermore, by introducing students to leveraging entry subject lines and hyperlinks as a means to achieving significance and convergence, this study was intended to involve students in reflectively managing their own discussion, that is, in cultivating the metacognitive awareness of practices that are traditionally employed by the instructor.

This study recognized the importance of teaching presence to advancing discussion through the inquiry cycle and therefore maintained that the functions of teaching presence should not be concentrated in one individual but distributed across the learning community. This study further recognized that the value of online discussion should not be restricted to situations aimed at a group's deriving a single, common understanding or shared product. School is but one setting in which the objective of inquiry and discussion can assist individual participants toward their own reasoned position on an issue or question. To this end, the instructional intervention was oriented toward assisting students to engage in inquiry and discussion with others that would lead to personal understanding evidenced in individual artifacts.

The curriculum for this study included a broad inquiry question of common interest: How is character shaped? Furthermore, the curriculum included activities oriented toward group and whole class outcomes (e.g., a glossary of essential terms and concepts to which all students contributed). Nevertheless, for purposes of this study, the essential outcomes in the curriculum were individual (e.g., a culminating project on a central theme, character or other element in *The Great Gatsby*). In the context of inquiry-based learning, online discussion operates on two levels: a *macro* level of the curricular unit and a *micro* level of separate discussion events (Wells, 1994). At the macro level of the unit, threaded discussion is part of students' ongoing investigation of an over-arching inquiry question, leading to individual as well as communal unit outcomes. At the micro level of Forum activity, each discussion thread is itself an inquiry, that is, one step forward in service of the ongoing investigation toward those unit outcomes. The inquiry cycle, depicted, for example, by the Community of Inquiry (Garrison et al., 2000), provides a model utilizing both the macro and micro levels. In the curriculum for my study, inquiry operated at the macro level as a cycle starting with the unit question (i.e., How is character shaped?) and ending in individual culminating projects. However, this study was also oriented toward inquiry occurring at the micro level as represented by evidence of some or all of the stages of the inquiry cycle found in discrete Forum discussions. In this way, micro-level features functioned cumulatively to suggest macro-level functions. While this study was certainly attentive to these macro-level findings, the empirical focus was evidence related to significance and convergence in participants' online posts.

## Instructional Method: Gradual Release of Responsibility

As explained in my literature review, learning is most effective when it occurs in a zone of proximal development in which the learner can accomplish more advanced psychological operations "under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Vygotsky further suggests that in this collaborative context, cognitive development proceeds as a spiral in which learners pass through psychological operations and re-encounter artifacts and practices at increasingly complex levels. In this spiral, each step in mastery is a new beginning, and the zones of actual and proximal development continue to advance (Vygotsky, 1978). The intervention in this study capitalized on this spiraling process by utilizing a gradual release of responsibility model for instruction (Pearson & Gallagher, 1983).

The gradual release model proceeds in a series of steps that progressively transfer responsibility for the use of a strategy from the teacher to students. Before initiating instruction, learners may complete an action that evidences their existing zone of actual development, that is, what they will do without instruction. Then, the teacher introduces a strategy by stating what it consists of and why it is important. In the first stage of instruction, the teacher models the strategy in context by using it in front of the students and *thinking aloud* or talking through the use of the strategy (i.e., “I do, you watch”). After demonstrating the strategy, the teacher uses it in context again, this time inviting students to help in identifying when and how the strategy is used (i.e., “I do, you help”). Following this teacher-led but cooperative activity, students use the strategy, usually in small groups, while the teacher observes, provides feedback, and helps as needed (i.e., “You do, I help”). Finally, students use the strategy independently to demonstrate their new level of competence (i.e., “You do, I watch”). This newly acquired zone of actual development also serves to indicate the teacher's ensuing series of steps toward more advanced use of the strategy or introduction of an additional strategy.

The following sequence for introducing students to entry subject lines illustrates application of the gradual release model in the curricular unit on how character is shaped. Students were asked to compose a Forum entry that described an event from their own past that had influenced them in some way. I then introduced the concept of a *descriptive* entry subject – that is, instead of a generic “my memory,” a title that would indicate individual content and attempt to capture the reader’s interest (e.g., “learning to shoot straight”). With students' help, I modeled re-writing a selection of entry subjects, and students then assisted each other in re-writing their own entry subjects. This completed one revolution in the developmental spiral. Students were then asked to interview people at least twice their age about childhood events that somehow influenced the interviewee's character development. Students wrote a Forum entry about one interview event, and they were asked to read and reply to at least three of their classmates’ entries. I then introduced the concept of entry subject lines as a way to both identify and index entries. I modeled and discussed with students what makes an entry subject helpful in deciding what entries to read as well as locating entries for reference as needed. In particular, I introduced strategies for *reply* subject lines that did not simply copy the parent entry's subject line, but were written to reflect a specific aspect of the parent entry that the respondent was addressing. Again, students revised their own subject lines to practice their new understanding and thereby completed another revolution in the developmental spiral. As before, this subject revision set the stage for new activity and new advances.

Ensuing activities involved reading and responding to articles, poetry and other short texts, and students continued to write and respond to each other’s Forum entries. In doing so, we continued to address strategies for the effective use of Moodle Forum's design elements. As the unit progressed, responsibility for the use of discourse strategies as well as Moodle Forum was released to students. Furthermore, instruction in Moodle Forum as well as discourse strategies shifted from the researcher to the classroom teacher. In each respect, the gradual release of responsibility spiraled through two phases of instruction.

### Phase One: Introducing Inquiry, Content and Discourse Strategies

The planned curriculum was divided into two phases: an introductory instructional phase and a second phase devoted to practice and mastery of strategies considered essential to achieving significance and convergence in online discussion. Phase one lasted five weeks and was devoted to introducing targeted design elements of Moodle Forum (i.e., topic design, entry subject lines, and entry hyperlinks) and the strategies those elements support. Phase one utilized students own experience as well as short texts such as news articles, poetry, music, and short stories to allow for iterative attempts at trying out new strategies associated with each of the three design elements. In accordance with the gradual release model, phase one focused on my introduction and demonstration of the strategies, shared demonstration in which Ms. Hawthorne and I demonstrated and students helped, and student practice, which we assisted.

### Phase Two: Furthering Inquiry, Content and Discourse Strategies

In phase two, the emphasis was on the fourth and final stage in the gradual release model (i.e., “You do, I watch”) in which students attempted independent use with cycling back to more teacher support as needed. Phase two lasted 10 weeks and provided participants continued practice in leveraging the targeted design elements of Moodle Forum. Students continued to consider what shapes character and utilized *The Great Gatsby* as their principal text (Fitzgerald, 1995). Phase two included five Forum discussions, each of which revolved around one or two chapters of *The Great Gatsby*. Unlike phase one where each student was asked to initiate a discussion thread, discussion topics for the first four *Gatsby* Forums were devised by collaborative groups of three to five students. This resulted in four or five discussion threads in each Forum.

Throughout phase two, students participated in face-to-face classroom discussion as well as online discussion. During this practice phase, students also undertook two activities designed to assist them in synthesizing the influences that shape character. They collaborated in developing a glossary of essential terms and concepts in *The Great Gatsby*. Midway through reading the novel, students also completed a set of four assignments that involved both exposition and creative writing about character and theme. These assignments were posted to the class Moodle for classmates to read and comment. Following their reading of *The Great Gatsby*, students completed a culminating project that represented the resolution of their thinking based on Forum discussions and other activities during the unit of study – specifically, they composed an essay or technology-based response (e.g., iMovie, podcast) based on one character, thematic, or literary element of the novel.

The specific steps and accompanying objectives for phase one and two are presented in a timeline (Appendix E). In addition to the gradual release of discourse strategies to students, responsibility for instruction in the use of Moodle Forum was gradually released from the researcher to the classroom teacher. Initially, I instructed students in use of the targeted design elements of Moodle Forum. In planning sessions, the classroom teacher and I determined what further mini-lessons and modeling were necessary and who would provide this additional instruction. Generally speaking, I provided more of the instruction introducing the use of Moodle Forum in phase one, and the classroom teacher provided more of the follow-up instruction in phase two when students were practicing and developing their use of Moodle Forum. Consistent with the gradual release of responsibility, my demonstration gave way to Ms. Hawthorne's control as I assisted and observed. Each of us was free to participate in Moodle Forum discussions as a way to model and support strategies essential to the effective use of design elements. However, as discussed later in chapter four, our online participation in Forum discussion was limited.

## Instruments and Data Collection

Data collection began in September 2010 and ended in December 2010, approximately the duration of the students' first semester of twelfth-grade English. Multiple sources of evidence were collected. I collected observational field notes in the midst of instruction and/or Forum activity. Immediately after field noting, I contextualized each observational field note by converting it to a storied, event structure. I also collected Moodle Forum transcripts that included the discussion activity of primary and secondary informants. At the beginning of the study, a biographical survey was administered to the entire participant sample, excluding the teacher. Semi-structured individual interviews were conducted with primary informants only. Finally, I conducted formal interviews with the teacher, and I documented our informal conversations about instruction. Additional sources of evidence included periodic analytic memos and research journal entries.

### Observational and Analytic Note-taking

In this study, observational note-taking included four kinds of data: observational field notes taken in-the-midst of instruction and/or Forum discussion, contextualized field notes written after each observational session, analytic memos, and research journal entries. For the duration of the study, I was in the classroom three days each week, including one eighty-minute block period and two fifty-minute periods for each class section. In the midst of these classes, I collected observational field notes for all sessions in which I was not directly involved in instruction. For instructional sessions, I created retrospective field notes immediately after the class had ended. For those classes during which students were online participating in Forum discussion, my immediate and retrospective observations of classroom activity focused on participants' conversations in real space and time about Moodle before, during, and after threaded discussion activity. Observational field notes supported thick description of participants' perceptions as well as their use of Moodle Forum. Initial field notes informed my selection of primary informants. In my collection of observational field notes, I recorded not only *what* happened in the classroom – what was said and done – but also *when* it happened. I used a field note method that was time-stamped to insure that my observations of real space and time corresponded with content that participants generated in virtual space. In other words, my note-taking temporally identified key moments I observed in participants' talk as well as their texts. In this way, I created contextualized after-the-fact field notes that calibrated my observations of classroom activity with participants' online activity.

Immediately following each class, as noted, I reviewed my observational field notes and created contextualized field notes, synthesizing detail to create a storied account of real and virtual activity. That is, I added transition words and other language that converted my original phrases and jottings to a narrative that would be clear to me later. My note-taking also included periodic analytic memos in which I considered methodological questions and emergent themes. I composed three analytic memos, one at the end of phase one, one midway through phase two, and one at the end of phase two. I used contextualized field notes for each period as the basis for my analysis. As they became available, I also coded and analyzed Forum discussion transcripts and informant interviews as described below. Each analytic memo was an occasion to compare Forum discussion patterns with other data in my ongoing investigation of the relationship between participants' perception of threaded discussion and the actuality of their discussion entries. As the data set expanded, my analysis was aimed at analyzing emerging evidence of triangulation, analyzing gaps in the data set, and, mid-way through the study, identifying potential provisional master and sub-codes.

Throughout the study, I kept a research journal to document my own thoughts and reflections on case design and research activity. While analytic memos offered a periodic opportunity to consider methodological questions and emergent themes, the research journal represented a daily attempt to capture insights, questions, and/or dilemmas that might prove consequential enough to examine in analytic memos. This journal was a record of my own history in relation to the topic and the research process (Chiseri-Strater & Sunstein, 2006, p. 117). Altogether, observational field notes, analytic memos, and the daily research journal documented participant activity as well as my own research role. In these data collection instruments, I also monitored for bias on my part in various ways. My schedule in the field allowed me to convert field notes taken in-the-midst of instruction into contextualized field notes with as little intervening time as possible to degrade or color my observation. In contextualizing field notes, writing in my research journal, and composing analytic memos, I further monitored for bias by continually asking what if any alternative explanations might account for what I was observing. In particular, I utilized three questions to check for assumptions or other influences that might be affecting my analysis: What surprised me? What intrigued me? and What disturbed me? (Chiseri-Strater & Sunstein, 2006, pp. 55-56). As discussed below, triangulation was important to achieving validity in this study. The opportunity to compare what participants did in Forum discussion transcripts with what they said in interview transcripts was important to monitoring my own bias in analyzing each data source. In addition, what Ms. Hawthorne reported in planning and other conversations throughout the study provided a recurrent analysis of what was happening to compare with my own. When she disagreed with me, I was afforded a different point of view.

When she agreed with me, I was alert to how we might both be overlooking alternative explanations. Memo and journal writing were where I recorded these considerations to monitor bias.

### Student Survey

Before introducing Moodle Forum, a biographical survey was administered to document student participants' technology background and experience (Appendix H). This survey was administered during class time. Students were advised that they could choose to answer any or all of the questions. The survey included a document tracking number that I keyed in advance with students' names. The key was stored at all times in a secure lock box in my home. Survey data from *non-participants* was destroyed without review. Survey results from participating students was used to establish predominant biographical trends in the study sample and to contextualize the activity of primary informants selected later.

### Individual Interviews with Teacher and Students

By week three, I selected eight students as primary informants, one of whom withdrew from being interviewed though not from the study following phase one. Sampling was aimed at representative participants who could purposefully inform my understanding of the research problem (Creswell, 2007, p. 125). In other words, the selection of this smaller subset was guided by my interest in gender balance and relative socioeconomic and ethnic diversity. In addition, I sought a subset of primary informants that was diverse in its level of engagement with the unit of study and Moodle Forum. Observational field notes, analytic data, and survey data guided participant selection. Primary informants were interviewed three times: once upon selection during week four, a second time at the end of the instructional phase (week six), and a third time at the end of the second phase following completion of data collection (i.e., following week 14). On all occasions, students were interviewed using a semi-structured protocol (Appendix I, Appendix J, Appendix K). Interviews lasted about thirty minutes and were conducted during the class period or at a time otherwise convenient for participants. Interviews were conducted in a private space away from the classroom to protect participants' confidentiality.

I also interviewed the classroom teacher on multiple occasions. Using a protocol (Appendix L), I conducted a semi-structured interview before the study to document the teacher’s objectives in adopting threaded discussion. Using a protocol (Appendix M), I also conducted a semi-structured interview following data collection to document her assessment of students’ and participants’ performances in light of her instructional objectives. Finally, I documented our conversations during the course of the study as we designed and enacted the instructional program.

At the beginning of each interview, I reminded informants that their participation was voluntary and that they were free to answer or not answer any question or to discontinue the interview at any time. If an informant chose not to answer any question, I continued with the next question in the interview protocol. All interviews were audio-taped digitally. Following the initial transcription of interviews, raw transcripts were cleansed. I corrected errors (e.g., misspellings, words or phrases transcribed incorrectly), and I added punctuation and paragraphs as appropriate. I also added notations for interruptions, overlaps, pauses, laughter and other audible emotions, and so on. Finally, using brackets, I noted appropriate context information to improve others’ ability to comprehend the transcript (e.g., role of named individuals, explanation of acronyms, referents). Following this cleansing process, interviews were de-identified, that is, names were converted to pseudonyms and other individual descriptors were masked.

### Transcripts of Threaded Discussion

For the duration of the study, students participated in threaded discussion. The Moodle Forum application kept an exact and complete copy of these discussions, and these electronic transcripts together with activity reports maintained by Moodle provided a complete and exact record of each participant's work including exact dates and times of any post. In Moodle Forum discussions, students are identified by name and have access to one another’s posts. Therefore, it was not be necessary to de-identify Forum entries in ways that mask participants' or their teacher's identities. Furthermore, in my capacity of assisting the class to adopt Moodle Forum, I had access to Forum transcripts including entries from all students in the class. This access was subject to school and legal guidelines governing access to student information by teachers and professional development providers, including the Family Educational Rights and Privacy Act (FERPA). Because this access was consistent with these federal guidelines, it did not violate the rights of those students who had elected not to participate in the study. It was, of course, necessary for me to disaggregate the entries of participating and non-participating students, and to attend as a researcher only to the entries made by participants. I performed this disaggregation procedure periodically throughout the study, archiving hard copy transcripts of participants’ discussion. Only that data in which participants’ posts were associated with other participants’ posts was archived and studied. In other words, participants were studied as a network of communicants apart from the broader student population. Coded transcripts of these Moodle Forum discussions were placed in a secure lock box in my home together with the key connecting transcripts with survey or interview materials.

Creswell (2007) describes data collection as a "circle...a series of interrelated activities aimed at gathering good information to answer emerging research questions" (p. 118). More than anything else, easy access to a thorough record of every participant's communication on the Moodle Forum guided my recognition and interpretation of their rhetorical moves and the extent to which they applied strategies aimed at significance and convergence. It also informed my informal conversations with students and their teacher, and prepared me for the formal interviews as well as the eventual data analysis.

### Managing and Storing Data

Digital recordings of individual interviews and observational field notes were transferred to a dedicated hard drive secured in my home office. Transcription of digital recordings was completed by January 2011 and coding was completed by February 2011. When transcription and coding were completed, the recordings were destroyed. Any identifying information was removed from Forum discussion transcripts, interview transcripts, and all other sources of data and replaced with pseudonyms. The key linking participants' names to data was destroyed once analysis was completed.

## Data Analysis Procedures

During this study, it was important to clarify my own "assumptions, worldview, and theoretical orientation" as the researcher (Merriam, 1988, p. 170). This study was a qualitative case study in which analysis of the data set was supplemented by limited quantitative analysis (i.e., quantification of Moodle Forum transcript data). My use of qualitative methods emerged from my doctoral training in a constructivist paradigm. The ontological assumption was that reality is not universal but individualistic, and the epistemological assumption was that knowledge is socially constructed and therefore largely dependent on the social context (Duffy & Cunningham, 1995; Vygotsky 1978; Wells, 2002). No claim is made as to generalizability of the results of this study. It is the readers not the researcher who will judge any applicability to their own circumstances (Merriam, 2002, p. 179).

Across the data set, I applied and quantified the frequency of descriptive sub-codes that were generated first deductively and then inductively. For the Forum discussion transcripts in particular, I quantified the frequency of targeted sociolinguistic features. Assessing the frequency of sub-codes and sociolinguistic features represented quantification essential to data reduction in this qualitative study but was not a suggestion of a quantitative methodology. Identifying the frequency of sub-codes and sociolinguistic features was the first step in determining salient data. Put simply, I sought to determine whether the perceptions about the Moodle Forum that participants expressed in interviews correlated with their actual discourse activity in Forum discussions. For instance, if a participant perceived that posts exhibited significance and/or convergence, the sociolinguistic analysis corroborated whether or not this perception was accurate. Quantifying sociolinguistic features of Forum posts allowed me to assess the frequency of posts evidencing significance and/or convergence for participants.

While I hope that this study will contribute to a better understanding of computer-mediated communication, I recognize that a qualitative case study is restricted to the specific case at hand, and any quantitative data served to deepen, not broaden, the results of this study. One demand of my role as researcher was to manage qualitative and quantitative data. To this end, it was important to analyze each source of evidence independently before cross-referencing any results from one source of evidence with another. Each step in my analytic process is described below.

### Analysis of Forum Transcript Data

Forum discussion transcripts were analyzed for relevant sociolinguistic features. A coding system for this sociolinguistic analysis was devised in order to document forms of initiation and response that trigger or convey evidence of significance and convergence. Throughout the data collection period, Forum transcripts were printed and analyzed on a weekly basis. In this initial analysis, I applied tentative sociolinguistic master and sub-codes designed to identify forms of initiation and response assumed essential to utterances that show evidence of significance and convergence. During these coding runs, sociolinguistic deductive codes were revised as required, and additional emerging master and sub-codes were developed using an inductive approach (Strauss & Corbin, 1990).

Near the conclusion of data collection when a stable set of sociolinguistic master and sub-codes was in place, I generated a coding dictionary and coding map for analyzing Forum transcripts (Appendix N). I tested the external reliability of my sociolinguistic master and sub-code definitions by conducting an inter-reader reliability session with research colleagues who were not familiar with my data. I achieved 78% agreement in the application of codes to the transcript of a threaded discussion containing 22 entries. Inter-reader reliability was achieved in this first session, and I began sociolinguistic analysis of all Forum discussion transcripts.

### Other Data Analysis

At the onset of my study, before collecting field notes or any other data, I analyzed the results of the biographical survey and wrote an analytic memo detailing any trends in participants' experiences with technology. Subsequent analytic memos provided a context for monitoring my methodological approach in light of data collection.

A system of tentative deductive master and sub-codes was derived from the study's main and secondary questions. Midway through the data collection period, I began to apply this "start list" of codes (Miles & Huberman, 1994, p. 58) across the data set. In particular, these codes were applied to interview transcripts beginning with the first interview with primary informants conducted in phase one during the fourth week of data collection. Deductive codes were revised as required, and additional emerging master and sub-codes were developed using an inductive approach (Strauss & Corbin, 1990). Near the conclusion of my study when a stable set of master and sub-codes was in place, I generated a coding dictionary and coding map for analysis of secondary data (Appendix O). Inter-reader reliability for codes applied to secondary sources of evidence was deemed non-essential for several reasons. First, these sources were subordinate in importance to the discussion transcripts. Second, codes devised and tested for the secondary sources of evidence were similar in nature to those devised and applied to Forum transcript data. With a stable set of codes, I began analytic coding, applying master and sub-codes to the following secondary sources of evidence: observational field notes, research journal entries, analytic memos, and interview transcripts.

### Deriving Pattern Codes

The data analysis described in this section defined salient master and sub-codes for each qualitative source of evidence: field notes, individual student interviews, teacher interviews, and Moodle Forum transcripts. Once descriptive coding of the data set was complete, I converted salient master and/or sub codes into pattern codes or themes (Miles & Huberman, 1994). For each of these pattern codes, I wrote an analytic memo that explained the significance of the code.

## Establishing Trustworthiness or Validation

This study relied on three strategies to build validity: thick description, triangulation, and member checks. First, thick description is the heart of any qualitative study. Although no claim of generalizability is made for this study thick description helps to insure external validity and to assist readers in determining whether the information presented was applicable to their own situations (Merriam, 2002, p. 29). The unit of analysis in this case (i.e., the rhetorical features of significance and convergence evident in Forum transcripts) occurred in virtual space and asynchronous time distinct from the conditions framing talk in the classroom. One challenge, therefore, was to describe this online environment in ways that gave it texture, and a second challenge was to include description of the live classroom in ways that were meaningful to understanding the online context. Together, these descriptions can provide multiple perspectives on the participants and their environment that help to enrich and thicken reporting.

Second, with regard to triangulation, this study included qualitative analysis of observations (field notes, analytic memos, and the research journal), as well as interviews with primary informants and their teacher, and finally student work in the form of threaded discussion transcripts. This data set was analyzed and compared to ensure that the different sources of data were answering the intended research questions and yielding similar results. In addition, analysis of the Forum transcripts was extended by separate coding for evidence of sociolinguistic features. As suggested by Miles and Huberman (1994), this provided for triangulation both by data source and by method (p. 267).

Third, the proposed study included member checks with primary informants and with their teacher. Following Creswell and Miller (2000), I involved participants in member checks at the conclusion of my study. Miles and Huberman (2000) note that member checks during a study run the risk of changing or biasing participant behavior. Therefore, I did not conduct member checks with primary informants until after all interviews had been transcribed, de-identified, and cleansed. At that time, I arranged a member checking session with each of the primary informants. At the start of each session, I explained the purpose of member checking and I explained the ethical rationale for this procedure. Together, I reviewed with each informant excerpted interview material that I anticipated citing in the dissertation report. Each informant was advised to review this material both for accuracy and for the de-identification of any content that may jeopardize confidentiality. Corrections were made to accurately represent informants' statements. Only that content which a primary informant approved was cited in the written report. With regard to the teacher, following both the initial and concluding formal interviews, I provided the teacher with a transcript of the interview to review and correct for accuracy.

## Limitations of the Study

Prior to beginning this study, I recognized two potential limitations. First, I realized that the collection and disaggregation of Forum transcript data would be complicated to the extent that informed parental consent and student assent was *not* obtained from students in Ms. Hawthorne's period two and period six class sections. The fewer the number of participating students, the smaller would be the resulting data set. In addition, a smaller sample might create gaps in the sequence of discussion entries and limit the potential connections between Forum users available for study. From a total of 34 students in both class sections, 20 participated in this study. While it is not possible to know whether or how the 14 non-participating students might have affected the findings in this study, it is fair to note that the 20 participating students did represent the gender, socio-economic, and academic characteristics of these class sections as a whole. It is also accurate to note that disaggregation of entries by non-participating students complicated the analysis of less than 5% of the entries posted by participating students. Aside from this concern over data collection, I recognized from the outset the demand that would be placed on these secondary school participants. I have already noted that existing research involves almost exclusively post-secondary students and further that these studies report that these older students have not generally evidenced significance or convergence in their online discussion. Students in my study had been identified as under-performing, particularly regarding assignment completion. In addition, my study was located in a high school setting where it might be subject to various logistical and social factors external to the classroom. The extent to which these factors may have affected participants in this study is addressed in the following chapter.

## Conclusion

In this study, I utilized a qualitative case study design augmented by quantification of specific sociolinguistic features in Moodle Forum entries to identify and describe characteristics of online literary discussion by twelfth-grade English students, particularly evidence of their achieving significance and/or convergence in threaded discussion. Ten students in each of two class sections and their teacher, Ms. Hawthorne, participated in this study. I assumed the role of an active participant observer, assisting the classroom teacher with instruction and the students with using Moodle Forum.

Guided by my research questions, I collected and analyzed multiple data sources. These included observational fieldnotes, analytic memos, research journal entries, a biographical survey of participants, and two interviews with seven primary informants. Separate analysis of these data sources helped to inform my analysis of the primary data source: Moodle Forum discussion transcripts. I was particularly interested in the correspondence between participants' use of Moodle Forum and their perceptions of that use as expressed in interviews. Trustworthiness was established through triangulation of these data sources and by member checks and rich description. At all times, I was attentive to what was happening in participants' online discussion and how evidence across the data set contributed to understanding those discussions. The findings I report in the next chapter are the result of my analysis of user participation in online discussion situated within the hybrid context of a local classroom.

# Chapter 4

# RESULTS

The purpose of this study was to investigate the impact of an instructional intervention designed to assist participants in utilizing threaded discussion. My research and that of others indicates that participants do not attend effectively to each other in an online medium. That is, the entries users post do not evidence two features associated with rich discussion: significance (i.e., attending with consideration to what another has said) and convergence (i.e., combining the contributions of others into one's own reasoned position). Following a pilot study in which ninth-grade students evidenced a strong motivation toward discussion online, I wondered how explicit instruction might influence the content of threaded discussion, namely by facilitating the rhetorical features of significance and convergence.

My main question in this study asked how an introduction to the design elements of Moodle Forum in a twelfth-grade English classroom influences participants' threaded discussion. I constructed three sub-questions to assist me in attending to specific aspects of this main question. The first sub-question attended to the degree of participant involvement in the online context: How does an introduction to the design elements of Moodle Forum influence users' *participation* in threaded discussion? The second sub-question attended to the nature of student discussion in the online context: How does an introduction to the design elements of Moodle Forum influence participants' *achieving significance and convergence* in threaded discussion? The third sub-question attended to the role of teaching in the online context: How does an introduction to the design elements of Moodle Forum influence participants' *enactment of teaching presence* in threaded discussion? In keeping with my emphasis on introducing participants to the design elements of Moodle Forum, this study oriented toward the intersection of technology design and instructional design. On the one hand, the instructional intervention in this study considered the affordances and constraints of Moodle Forum technology. That is, the classroom teacher and I instructed students on ways to exploit the design features of threaded discussion – for example, how to use entry subject lines to appeal to potential readers. On the other hand, the instructional intervention addressed rhetorical moves associated with academic discourse. In other words, we also instructed students on ways of discussing literature in any medium – for example, how to support a stated position with textual reference. These complimentary orientations framed instruction that leveraged technology design as a means to achieve particular rhetorical objectives.

As explained in chapter three, throughout this report of findings the term "participant(s)" (or "participating student(s)") refers to one or more of the 20 students (ten in each class period) that elected to participate in this study and for whom parental consent was obtained. Data from these 20 included Forum discussion transcripts, a biographical survey, and classroom observation. The term "primary informant(s)" refers to one or more of the seven participants (four in period six and three in period two) that were also interviewed. The term "students" is used in referring to activities or other contexts involving the class as a whole without regard to study participation. Although Ms. Hawthorne was a secondary participant in the study, the term "teacher" is used throughout to distinguish data collected from her.

This chapter includes a section devoted to each of the secondary questions of my study. In each subdivision, I report respective salient themes that emerged during data analysis. One subdivision identifies findings related to users' participation in Moodle Forum. A second subdivision identifies findings related to participants' achieving, or failing to achieve, significance and/or convergence in Forum entries. A final subdivision identifies findings related to the enactment of teaching presence by both the teacher and participating students during the study. Before relating my findings, however, I present an opening section that describes the instructional intervention itself – that is, a chronological narrative of the instructional moves made in the course of this study. Included in this narrative are the specific strategies, or protocols, for the use of Moodle Forum that we introduced to students to assist in their achieving our rhetorical objectives.

In the use of any technology, *protocols* are the social or cultural practices associated with its use. Protocols embody the expectations and relationships of the technology's users and may be devised or required by authority (e.g., the teacher). In addition, participants may negotiate these protocols, formally or informally, in the context of use (Jenkins, 2008). In this study, planned instruction introduced certain protocols while others arose in the face-to-face context of classroom instruction. Because these protocols influenced participants' discussion in multiple ways, elements introduced in the following narrative will reappear at various points in the analytic subdivisions that follow.

## A Narrative Account of the Instructional Intervention

This narrative account of the instructional intervention begins by reviewing its orientation toward inquiry, as well as its method of gradually releasing responsibility to participants for the use of technology and related protocols. As described in chapter three, the instructional intervention was embedded in a 15-week unit organized around a central inquiry question: How is character shaped? The inquiry process is a common framework for instruction (Dewey, 1997) and online communication (Duffy et al., 1998; Garrison et al., 2000; Garrison et al., 2001; Gunawardena et al., 2006). The inquiry orientation served objectives at two levels. At the *macro* level of the curricular unit, threaded discussion was part of students' ongoing investigation of the over-arching inquiry question and led to certain unit outcomes. At the *micro* level of Forum activity, each discussion thread was itself an inquiry event – that is, one step forward in the ongoing discussion proceeding toward those unit outcomes. Although inquiry operated at both levels in the course, this study was oriented toward inquiry occurring at the micro level as represented by evidence of some or all of the stages of the inquiry cycle found in discrete Forum discussions. In other words, the empirical focus was evidence related to significance and convergence in participants' online posts as they inquired together into the subject of character development.

In this study, instruction framing inquiry at the macro level emphasized the gradual release of responsibility for learning to participants. As explained in chapter two, learning is most effective when it occurs in a zone of proximal development in which the learner accomplishes more independent, advanced psychological operations “under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86). During instruction, the classroom teacher and I relied on this process by releasing strategies or protocols for the use of each design element of Moodle Forum to students in four stages. In the first stage, we explained and demonstrated a design element or strategy (i.e., “I do, you watch”). In the next stage, we modeled use of the element or strategy a second time, with the help of students (i.e., “I do, you help”). In the third stage, we assisted students as they attempted the element or strategy, often in pairs or groups (i.e., “You do, I help”). Finally, we observed students as they used the element or strategy independently (i.e., “You do, I watch”) (Pearson & Gallagher, 1983).

The curricular unit for instructional intervention was divided into two phases: an instructional phase in which the design elements of Moodle Forum were introduced along with strategies or protocols for the use of these elements, and a practice phase in which students continued to apply these strategies in learning to use threaded discussion. The *instructional phase* emphasized the first three stages in gradual release. That is, during phase one we introduced and modeled each design feature of the technology along with its related protocols, and students used each feature in an activity oriented with the associated protocol. In phase two, *the practice phase*, students worked on their own or in groups with less teacher intervention in using the features and protocols we had introduced in phase one. In addition to the gradual release of responsibility for participants’ use of Moodle Forum, instruction in Moodle Forum was gradually released from me as a technology integration coach to the classroom teacher. In the narrative that follows, I distinguish instructional moves that I made from those the classroom teacher made. The first phase was one in which the teacher and I co-planned and co-delivered instruction. To describe the actual instructional activity, I use the pronoun “we” to indicate shared exchange between the teacher and me.

### Phase One: The Instructional Phase

The instructional phase took place over five weeks at the beginning of the fall semester. This phase was oriented toward introducing each of the targeted design elements of Moodle Forum: entry subject lines, discussion topics, and entry hyperlinks. However, our first task was to introduce the concept of an inquiry unit as well as the central question of character development. In lesson one, Ms. Hawthorne introduced the topic of character with an "I Am" poetry formula, asking students to examine their own personality by completing statements like "I pretend to be...I feel self-conscious when...and I wonder why..." Ms. Hawthorne and I shared our own poems, and students shared what they had written, prompting a class discussion of whether who we are is predominantly a function of something individual inside each person, the influence of other people, or the result of our upbringing and other circumstances. A second activity used problematic situations (e.g., "Is it ever okay to lie to a liar?") not just to focus on character but also to introduce students to inquiry as a process for contemplating the dilemmas we encounter in life. As students debated whether an ethical position or habit is absolute in all cases or relative to circumstances, they began to bring in examples from popular culture to bolster their positions. Following this discussion, Ms. Hawthorne explained how this kind of inquiry into character would be the central focus of their fall unit of study, including their reading of various articles, poetry, and short stories leading up to the novel, *The Great Gatsby*.

With this curricular foundation in place, we turned to initiating the class Moodle. One class meeting was devoted to registering students on Moodle and familiarizing them with how to navigate its different elements. Students also spent time composing their user profiles, including a short biographical sketch and a list of interests, as well as a photograph that would represent them beside any Forum entries they posted. By and large, students spent more time composing and uploading multiple self-portraits than they did composing their written description. Occurring as it did on the fourth day of the school year, we positioned this lesson to help build not just an online community but a general classroom community as well. For example, Ms. Hawthorne's classroom was equipped with a built in LCD projector, and as profiles began appearing on the Moodle, I displayed each on "the big screen." In this way, each student not only had a moment in the spotlight but everyone's online persona was also introduced to the whole class. One boy, for example, had posted, "I like long walks on the beach with a cool drink," which brought laughter from some girls and rolled eyes from others. When some students saw how Bailey had crafted a picture with herself in the middle and half a classmate's face on either side, they complimented her and returned to Moodle to do the same.

Technologically advanced students like Matt and Evan had photo-shopped their portraits in unusual ways or applied different font colors and styles to their biographical sketches, and several classmates asked to be shown how to do these things. This interest prompted a discussion of where to draw the line between expressing yourself in artistically sensible ways versus confusing ways for readers. Although we did not introduce the term "protocol" at this point, Ms. Hawthorne did explain that some design choices would be left to individual students, others might have to be worked out by trial and error, and still others she would require. In this way, Ms. Hawthorne hoped to begin introducing academic expectations related to Moodle beyond whatever social habits students may have brought with them into the classroom. In chapter two, I explained how one aspect of learning to use technology in one setting can involve *unlearning* ways in which it has been used in other settings. Ms. Hawthorne recognized this as a potential element of adopting online conversation for literature discussion, and she recalled student attention to this difference repeatedly throughout the study.

### ***Week Two: Introducing Entry Subject Lines***

The first design feature introduced, together with strategies for its use, was *entry subject lines*. Ms. Hawthorne continued in week two to introduce character by asking students to create a Word document with one paragraph describing an event in their lives that had influenced their own character. We introduced students to the Forum application by helping them to post this paragraph as an initiating entry to an individual thread in a Memory Forum that I had created. As anticipated, all students titled their entries with a generic phrase like “My assignment” or “My memory” or “Something that influenced me.” In other words, they used a phrase that described the assignment topic, not the topic of their own writing. Students’ generic subject lines invited an introduction to *descriptive* entry subjects. Ms. Hawthorne and I each showed our own entries, including the descriptive subject lines “How I show respect with email” and “Not so perfect parents.” After reading our entries, we asked students to suggest other subject lines we might have used given the topical focus of our entries, and, in keeping with the gradual release of responsibility model, we had them work in twos and threes to brainstorm various subject lines for their own entries. Once students had generated multiple posibilities, we introduced the criteria for effective subject lines that included being *informative* and *appealing*. We encouraged subject lines that convey some idea of what an entry is about and that peak reader interest. In addition, we suggested that one place to find a subject line is within the individual entry itself by simply lifting out a key phrase. Matt, for example, took the phrase "60 knot wind, 20 foot seas, and 40 miles out," a line that let readers know in a dramatic way that his entry recalled an experience at sea.

The concept of descriptive subject lines was reinforced and expanded to include reply entries in the second Interview Forum. For this Forum, Ms. Hawthorne assigned students to interview a relative or other individual at least twice their own age about events or other influences that had shaped the interviewee's character. As with the Memory Forum, students were asked to create a paragraph recounting one portion from their interview and to post these paragraphs as initiating entries to individual threads in the Interview Forum. This time, most students posted entries with descriptive subject lines like "Family tradition" or "Devil's half acre" or "The Janitor." The next activity was to read and reply to classmates' entries. When students selected an entry for reply, the Forum application opened a composition box with the subject line pre-filled with RE: and the subject line of the parent entry (e.g., "RE: The Janitor"). Not surprisingly, students posted their replies with this default subject line left intact. When we examined discussion threads together as a class, many students acknowledged that all of the reply subject lines were the same and therefore pointless as a way to identify or distinguish entries. I then delivered a mini-lesson in which I explained that the subject line on reply entries could be changed and, in fact, *should* be changed to reflect the content of one's own reply rather than that of the parent entry. Ms. Hawthorne and I shared examples of subject lines on replies we had written, and we had students suggest alternative subject lines for some student replies before having them work together in pairs to edit the subject lines for replies they had written on the Interview Forum. In a mini-lesson, I introduced the protocol of “erase and replace” to represent this practice of substituting a new subject line for the parent subject pre-filled by the Moodle Forum application.

By introducing the first design element of entry subject lines for both initiating and reply entries in the manner described, Ms. Hawthorne and I sought to accomplish three instructional objectives. First, we sought to introduce students to our instructional method of gradual release, first providing direct explanation and modeling before employing cooperative, guided practice. Second, we sought to underscore the importance of thoroughly understanding a design feature like subject lines – that is, knowing what *can* be done with these features beyond what may be automatically triggered by the technology. Finally, we wanted to make clear how our introduction of design features would be accompanied by protocols or strategies to assist students in using these features in more sophisticated ways related to our rhetorical objectives. With entry subject lines, the rhetorical objective has to do with appealing to and gaining an audience for our writing, and what we emphasized with students was how the protocol of “erase and replace” represented their taking control of their writing. Rather than accepting what was offered by the technology, students were encouraged to use this feature in order to represent a topically-relevant reply.

As I will report later in this chapter, subject lines themselves and the strategies we introduced for using them were readily accepted by students and continued to be used throughout the study with little additional instructional emphasis. At the same time, I should note that even though the introduction of subject lines went according to plan, the Interview Forum was the first occasion in which Ms. Hawthorne and I experienced a persistent problem that would disrupt our instructional work throughout the study. A significant number of students in both sections did not complete their homework preparation for the Interview Forum. In period two, five of fourteen students, and in period six, six of nineteen students arrived without a written paragraph based on their interview. The majority of these students (four and five, respectively) were not participants in my research study. In that respect, their failure to prepare did not directly affect my data collection. At the same time, however, the impact of students' failure to complete assignments is much more evident in an online environment than it can be in the face-to-face classroom setting. As Ms. Hawthorne and some participants later reported, a classroom discussion can and often does continue with the participation of only a few students, and we may even take for granted, perhaps rightly so, that those students who are quiet are still listening and benefitting from the discussion around them. However, when the assignment is to post and reply to classmates in an online discussion, who is and is not prepared to participate is illuminated for all to see. Admittedly, as the teacher noted in the example of the Interview Forum, she would be quite pleased to have the active participation of two thirds of her students in a typical classroom discussion. Nevertheless, when a discussion necessitates that everyone posts online, the disruption of those who are not able to do so and the teacher's need to modify the activity creates fundamental challenges.

### ***Week Three: Building the Classroom Context for Online Discussion***

By the midpoint in phase one, Ms. Hawthorne and I had introduced the inquiry orientation of the unit of study and the gradual release method of our instruction as well as the first targeted design element of entry subject lines. We then paused in week three to begin building a classroom context to support our instruction and students' online activity. Above the classroom's big screen, we posted a banner with the essential question, "How is character shaped?" We also started a bulletin board for reminders of the protocols we were introducing, beginning with "informative & appealing" and "erase & replace." We used this activity to conduct a mini-lesson around the question, "How can we reply to entries in ways that *keep a conversation going?*" First, we clarified for students the distinction between a *reaction*, like "I agree" or "Great entry," and a *response* that somehow extends the parent entry in a substantive way. We then asked students to look at a selection of reply entries that had been posted and to describe what they saw. Finally, as we had planned, we integrated student responses with the things proficient readers typically do when interacting with a text (Keene & Zimmermann, 1997, pp. 22-23). The result was three suggestions for how to extend online discussion: (1) ask a question inspired by the content of the parent entry, (2) make a connection from that content to another text or experience, or, (3) make a declaration, that is, a prediction or other conjecture stemming from the parent entry. A graphic depicting strategies for composing a reply entry was added to our bulletin board (see Figure 4.1).

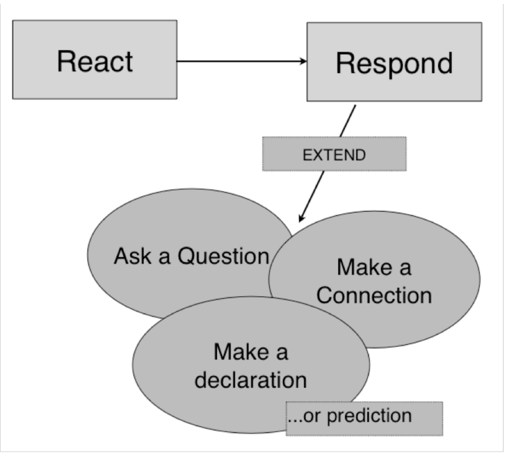


Figure 4.1. Ways of replying to a Forum entry. Graphic posted to classroom bulletin board to assist students in remembering ways to compose a reply entry that tends to keep the conversation going.

Class discussion on the topic of responding to classmates' entries was a first instance in which Ms. Hawthorne's and my understanding and use of Moodle Forum was informed by input from its student users. In period six, Ellen stated that she liked to start an entry "by saying something nice to the other person." In response, I introduced the concept of social presence, and explained that even though a reaction like "Great entry" needed more to *extend* the conversation, openers like this were instrumental in encouraging everyone to participate in the discussion. Ellen then asked if it was "alright to disagree with people" in Forum discussions. This proved to be a pivotal question as other students expressed that they often wanted to disagree but did not know how to do so without hurting others' feelings. In response to Ellen's question, Ms. Hawthorne conducted an impromptu mini-lesson on ways to initiate disagreement. This mini-lesson was subsequently conducted with period two as well. Stems for initiating disagreement were added to the class bulletin board (see Figure 4.2). As I will report later, disagreement is recognized not only in the research literature but was corroborated by primary informants in this study as an essential ingredient to extending online discussion.

That's an interesting idea...
I had never thought of it that way...
In my experience...
...Now, what I wonder is...
...I think that I would still say that...

It sounds to me that what you are suggesting is...
    ...and here's what I don't understand...
    ...but it would seem to me...
...and here's why...

Figure 4.2. Stems for initiating disagreement. Graphic posted to classroom bulletin board to assist students in remembering ways to articulate disagreement in Forum replies.

Following the introduction to composing reply entries during week three, we revisited what makes an effective subject line. Specifically, what makes a subject line *memorable* or easy to recall and access at some later time? As explained in chapter two, this is an essential capability for achieving convergence (i.e., referencing multiple entries in our own Forum posts). Class discussion on this point in both periods proved a second instance in which our use of Moodle Forum was enhanced by input from student users, who in this case explained how their entry selection and recall were based on multiple points of entry. Students in period two appeared to recognize the influence of the subject line, particularly when its language was funny, harsh, outlandish, or otherwise striking and distinct, or when its content was somehow "different from everything else." At the same time, in period six one student stated that he was more apt to be influenced by who had authored an entry. Further discussion revealed that for many students entry selection functioned at the intersection of its author and the reader's connection to that author, as well as the apparent content of the entry as embodied in the subject line. For example, in period six, Brittany said that in the Memory Forum she chose the entry "I need new friends" because she and the author of the parent entry had many friends in common, and she was curious about what the problem might be. In addition, Jean, also in period six, stated that she was influenced by whether students had "spent a lot of time talking about an entry in class." Again, discussion revealed that for some students entry selection was influenced by discussion of a topic in class, prior to their Forum activity. Such discussion might be a formal whole class event or a more informal side conversation with other students, often while engaged in composing their own entries. A subsequent discussion in period two revealed that what many students in both classes read and recalled was influenced by various factors beyond the entry subject line.

### *Week Four: Generating Discussion Topics and a Three-part Entry Format*

Having introduced the Forum design feature of entry subject lines and having addressed ways to compose reply entries, Ms. Hawthorne and I turned our attention to the second feature targeted in this study: the design of discussion topics. Instruction on this element was oriented toward the graphic “How can I start a Moodle Thread or Reply?” (see Figure 4.3). This graphic extended options we had introduced for starting a reply entry into strategies for initiating a discussion thread in response to a reading text (i.e., ask a question, make a connection, make a declaration, and make a prediction). In addition, this graphic listed a number of stems we hoped students might copy to begin initiating a discussion as well as replying to others’ entries in Moodle Forum.

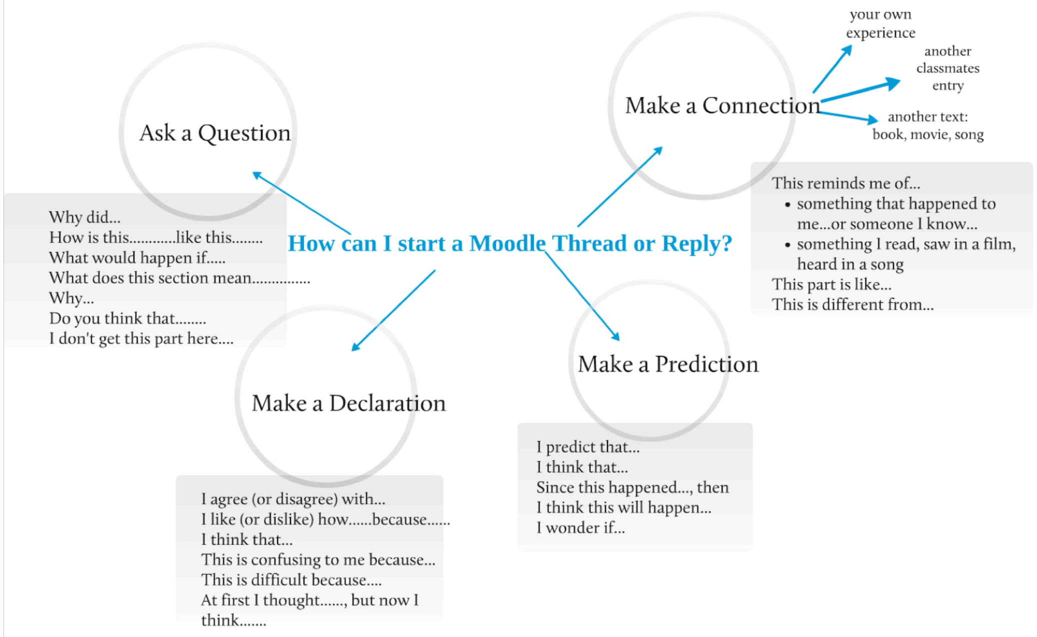

How can I start a Moodle Thread or Reply?
Ask a Question
Why did...
How is this............like this........
What would happen if.....
What does this section mean...............
Why...
Do you think that........
I don't get this part here....
Make a Connection
your own experience
another classmates entry
another text: book, movie, song
This reminds me of...
• something that happened to me...or someone I know...
• something I read, saw in a film, heard in a song
This part is like...
This is different from...
Make a Declaration
I agree (or disagree) with...
I like (or dislike) how......because......
I think that...
This is confusing to me because...
This is difficult because....
At first I thought......, but now I think.......
Make a Prediction
I predict that...
I think that...
Since this happened..., then I think this will happen...
I wonder if...

Figure 4.3. Stems for initiating a Forum entry. Graphic posted to classroom bulletin board to assist students in remembering ways to begin an initiating or reply entry in online discussion.

I introduced the stem graphic on how to start a Moodle Forum thread with a think-aloud reading of the poem “Gus” by Paul Janeczko. First, I displayed a four-square graphic organizer on the classroom whiteboard with sections for each stem category – a question, a connection, a declaration, and a prediction. Then, I displayed the poem “Gus” on the big classroom screen and read aloud. While reading, I stopped every few lines and wrote a topic idea in one of the four categories, all the while speaking aloud whatever thoughts were going on in my head. By the end of the reading, I had accumulated three or four topic possibilities in each category.

Ms. Hawthorne followed my think-aloud example with a read aloud of the short story “Thank You, M’am” by Langston Hughes (1958). This time, students were provided with the four-square graphic organizer of their own, and Ms. Hawthorne stopped periodically in her reading to allow students to add idea stems to the various squares. Following this read aloud, students worked in groups to share what they had written and to generate a topic idea using each of the four initiation strategies. Ms. Hawthorne collected these topic ideas and read them aloud, anonymously, and the class discussed which topic ideas did or did not appeal to them. During this discussion, Ms. Hawthorne sometimes had to call students back from discussing the substance of a topic to examining the quality of the topic itself. This helped students to contemplate what topics might be most appealing to participants. In addition, this partial discussion of a topic in the live setting of the classroom seemed to create interest in further discussion that might later find release in the online Forum. For example, in “Thank You, M’am” an apparently poor, working woman catches a boy who attempts to steal her pocketbook, and, in a sense, she rewards him by taking him home for supper and giving him a ten dollar bill before releasing him. In the question category, different groups of students generated a topic around whether this kindness was the right approach or whether a more physical punishment was in order. In each class period, discussion on this question was limited in duration by Ms. Hawthorne, but in each case discussion carried over to the "Thank You, M'am" Forum in a number of threads.

Following this review of possible topics by the whole class, students in both periods were given time in class to compose an initiating entry. Each student was expected to begin a separate thread in the "Thank You, M'am" Forum. However, students were welcome to help each other informally while composing their initiating entries. Before posting, students were expected to have at least one classmate read and provide feedback to their entry. Finally, students were asked, as homework, to read and reply to classmates' entries, an assignment that provided a starting point for our next instructional move.

The "Thank You, Ma'm" Forum generated a good deal of activity in both class sections. Nevertheless, Ms. Hawthorne and I shared two concerns for student entries posted to the "Thank You, M'am" Forum. A number of entries were just one or two sentences long, and many entries stated a position that was not substantiated by textual references or any other form of support. In response, we re-opened class discussion late in week four around the question of what constitute the *elements* of a quality Forum entry. Student responses in each period clustered around three characteristics, and Ms. Hawthorne and I conducted a mini-lesson in each class that converted these clusters to a protocol for constructing a Forum entry around three questions (see Figure 4.4). Statements like "state your opinion" and "make it your own" became Question One:

*What is my thought or opinion?* Statements like “make it clear” and “make it long enough” and “make it thoughtful” became Question Two: *Where does that thought or opinion come from?* Statements like “branch off” and “keep the conversation going” became Question Three: *How can I keep the conversation going?* Before long, students shortened this format to what we all referred to as the three-part protocol: State your position…refer to the text…keep the conversation going.

***What makes a good parent entry?***

0. Getting started: What gets my attention in the parent entry?

**1. What is my thought or opinion?**

**2. Where does that thought or opinion come from?**
    **How can I refer to the text?**
    ...quote...paraphrase...summarize

**3. How can I keep the conversation going?**
    ...ask a question...present a problem situation

Figure 4.4. Elements of a Forum entry. A protocol posted to classroom bulletin board to assist students in constructing a Forum entry based on three questions.

### *Week Five: Connecting Entries with Hyperlinks*

The final instructional segment in phase one introduced the design feature of entry hyperlinks and the concept of linking multiple sources, including content from classmates’ entries in one’s own Forum posts. This segment was built around the Poem & Song Lyric Forum. We asked students to bring to class a favorite song lyric related to the essential question of how character is shaped. Ms. Hawthorne and I posted a variety of poems on chart paper around the classroom, and we asked students to post their lyric beside a poem to which they saw a connection. We then asked students to articulate that connection on a sticky note, to place that note between the two pieces of text, and to draw lines from the sticky note to specific excerpts in the poem and song lyric where the connection they saw had originated. This process was designed to create a visual representation of both the technical act and the cognitive process of linking multiple sources. Students were then asked to compose the initiating entry for a Forum discussion thread by converting this visual to our three-part format: the sticky note became their position statement; sentences were added that referenced and quoted or paraphrased the lines they had identified in the poem and song; and, a sentence was added at the end that might encourage a response from others.

Ms. Hawthorne and I hoped to make elements of the three-part entry protocol as graphic as possible. Therefore, we asked students to color-code their Forum entries for the Poem & Song Lyric Forum: red for the position statement, purple for text references, and green for keeping the conversation going. Color-coding not only made visible the relative distribution of the three parts, but the *act* of color coding necessitated that students consider whether and how they were fulfilling each of the requirements of a quality entry as they had defined those elements. In other words, color coding was intended to invite students' conscious recognition of achieving each of the parts of a well-crafted Forum entry. In chapter two, I referenced researchers' recommendation that metacognitive awareness – the conscious recognition and understanding of thought processes – can facilitate effective discursive activity (Garrison, 2006; Garrison & Arbaugh, 2007). Ms. Hawthorne and I had actually introduced "metacognitive awareness" to students as early as the discussion in week one when we addressed how students select entries to read. As I will report in subsequent sections, from this point forward, students may have executed the elements of an entry with varying degrees of success, but the essential three-part protocol was one that virtually all participants used routinely throughout the remaining weeks of the study. Moreover, participants reported conceptualizing their entries in terms of the components of the three-part protocol. Simply stated, during online discussion, the three-part protocol for Forum entries became a way of thinking for these participants.

Technically, I instructed students on converting the lines they had drawn on the classroom chart paper to hyperlinks that connected words in their entry with the electronic text of the poems and songs on the Internet. These links, of course, connected to source material outside the threads of Forum discussion. We also wanted to encourage students to refer to classmates' entries. Therefore, we asked students to respond to one classmate's initiating entry with a reply that included at least one hyperlink to related material in a second classmate's Forum post. I instructed students in the technical process for installing these internal links, and Ms. Hawthorne and I provided model entries to illustrate not just color coding and the format for initiating entries but also sample connections we had made between our entries and other posts on the Poem & Song Lyric Forum. Following this introductory activity, however, participants made almost no use of the hyperlink feature.

Later in this chapter, I will acknowledge the limited degree to which participants in this study achieved convergence in their Forum entries. I will also address the complexity of the technical and cognitive demands that convergence presents. Here, I will note simply that our introduction may not have anticipated the complexity of these demands or provided sufficient practice for the task. Initial instruction included just one iteration of connecting to outside sources and classmates' entries. During the practice phase, Ms. Hawthorne and I did return to hyperlinks and the concept of convergence with two mini-lessons supported by entry models. However, we did not explicitly require that hyperlinks be used in any Forum during phase two, largely because we were oriented toward more immediate demands of collaborative topic design and the composition of individual entries. In retrospect, although our sequence leading to the introduction of hyperlinks with an emphasis on convergence seems well-reasoned, the pace at which we introduced this rhetorical feature may have mitigated student practice.

In many ways, instruction in the design feature of hyperlinks was the culmination of our five weeks of instruction. For the Poem & Song Lyric Forum, students were not simply tasked with starting a discussion thread with content on a topic and represented by a subject line that might appeal to their classmates. They were also required to think metacognitively about how their own content *plus* that of their classmates might position users to engage in further, meaningful discussion. This was the position from which we ended the first phase of instruction and began the second or practice phase.

### Phase Two: The Practice Phase

The practice phase of the study lasted ten weeks, during which the organizing, conceptual focus continued to be the essential question, “How is character shaped?” Our text during phase two was *The Great Gatsby* by F. Scott Fitzgerald (1995). We began phase two with a mini-research project in which pairs of students reported to the class on some aspect of American culture during the 1920s – music, the economy, crime, etc. This activity introduced background knowledge for the setting of *The Great Gatsby*. Even with this introduction, understanding the context of this novel would challenge students throughout the unit.

Reading *The Great Gatsby* was divided into five segments. Each segment centered around chapters in the text and followed what was essentially a four-part plan: (1) anticipatory or frontloading activity; (2) reading – communal as well as independent; (3) follow-up activity that included initiating online discussion topics; and (4) Moodle Forum discussion. For example, the first instructional segment, built around chapter one, began with an activity in which Ms. Hawthorne distributed vocabulary words, each of which connected in some way with a potential theme in the novel. For example, in the text, the word "dissimilarity" (Fitzgerald, 1995, p. 9) distinguishes East and West Egg and acknowledges how these two locations might represent socio-economic issues beyond their setting. Each student was assigned two to three words to attend to during the read aloud that followed. Ms. Hawthorne read chapter one aloud to students, stopping periodically to comment on the setting, author's style, and other contextual elements. She hoped this would further contribute to students' background knowledge and clarity of its diction and syntax.

At their next class meeting, students used the Glossary activity in Moodle to create dictionary entries of the words they had been assigned. These entries included both a dictionary definition and the student's own explanation of the word in the context of its appearance within the text. Moodle Glossary is a variation of the Forum application that allows members to add comments and discuss the posted definition. Ms. Hawthorne hoped that the Glossary would be an interactive reference for student comment on textual themes during the course of their reading. Aside from building their understanding of the text, this emphasis on vocabulary was in keeping with a core value of her pedagogical objectives. Based on their reading of chapter one, as well as their anticipatory and follow-up activity with vocabulary, the class brainstormed a number of potential topics for online discussion before coming to consensus on four topics to be posted as discussion threads to the Forum. Finally, students were assigned to post at least three entries of their own to the Forum in reply to one or more of these topics or their classmates' entries.

The instructional program for chapter one of *The Great Gatsby* illustrated a pattern that repeated for pairs of chapters through the remainder of the text. Ms. Hawthorne would introduce a two-chapter segment with some contextual activity (e.g., a selection of quotes from the text, or a what-if questioning activity that encouraged students to predict authorial moves concerning character, scene, or situation). Depending on class schedules, a portion of the chapters might then be read aloud in class, although the majority of reading was assigned over one or two days between classes. At that point, there would be a follow-up activity or discussion involving the whole class, and a collaborative activity to generate and post topics for a Moodle Forum. Finally, these topics would be posted, and online discussion would follow over the course of three to five days. As with the reading, some time was provided in class for participating on some of the discussion Forums, but students were increasingly expected to complete their online discussions outside of class time. In part, this shift represented a gradual release of Forum participation from the more closely monitored, instructional setting of the classroom to more independent activity outside class. In addition, scheduling Forum activity outside class time was an instructional decision that Ms. Hawthorne made to allow for scheduling other activities during class time (e.g., collaborative topic design, peer and teacher conferencing on college essays). In this way, Ms. Hawthorne intended to leverage the asynchronous, online nature of Moodle Forum as a homework assignment.

Within this recurring pattern of instruction, two events are important to note. First, topics for online discussion in the *Gatsby* Forums were generated almost entirely using *collaborative topic design* – that is, by students working in small groups. As described, for the chapter one Forum, the whole class generated four topics that Ms. Hawthorne posted to the Forum. For the chapter two-three Forum, pairs of students drafted topic ideas and turned them in to Ms. Hawthorne who read them aloud, anonymously, to the class. The class discussed the pros and cons of each topic and identified four they felt would generate the best discussion. Based on this class discussion as well as our own thinking, Ms. Hawthorne and I composed the final copy for initiating entries that we posted to the chapter two-three Forum. For the *Gatsby* Forums on chapters four-five and six-seven, students formed self-selected groups of three or four. Each group generated a topic within the domain of the two chapters before composing and posting an initiating entry on that topic. Prior to this work on chapters four-five, Ms. Hawthorne and I modeled the kind of face-to-face conversation that had produced our initiating entries for the chapter two-three Forum, and we debriefed on what students had observed in our performance. We also coached students as needed in composing their entries.

Our use of collaborative topic design was based on a two-part rationale. First, we wanted to reduce the number of discussion threads in each Forum from 15 to 18 generated individually to four or five. We felt it would be easier for students to follow and make connections in a more limited number of discussions. Second, we hoped that by working together students would assist each other to identify and articulate topics that would be most engaging for their peers. For the final *Gatsby* Forum over chapters eight-nine, we did return to individual topic design, asking each student to compose and post an entry initiating a separate discussion thread. This decision was due in part to unrelated scheduling considerations but was also an attempt to investigate how activity might vary between threads initiated collaboratively or individually.

The second instructional move of note in phase two had to do with entry length. Following the first *Gatsby* Forum, Ms. Hawthorne continued to be concerned by what she considered to be insufficient length in students' Forum posts, resulting from their continued failure to adequately support the positions they were taking by reference to the text. Therefore, she instituted the requirement that initiating entries be at least twelve lines long in the entry composition box and that reply entries be at least eight lines long. Ms. Hawthorne made clear to students that what was needed to meet this requirement for greater entry length was more frequent and detailed references to the *Gatsby* text, and she supported this position in class discussion and activity by repeatedly asking students, "Where is that thought coming from...where can we find it in the text?" This entry length requirement proved to be one of the most important instructional moves during this study. As reported in this chapter, the average length of individual Forum entries did, in fact, increase following the institution of this requirement. Furthermore, possible effects stemming from the requirement were reported by primary informants at multiple points in their interviews.

Aside from the two instructional moves of collaborative topic design and the entry length requirement, a third event during phase two bears noting. I have already mentioned that Ms. Hawthorne and I experienced a persistent failure by a significant number of students to routinely complete assignments in a timely fashion. This problem seemed to intensify as we progressed through the *Gatsby* unit. Increased student absenteeism, as well as a lack of preparation, seemed to have a deleterious effect, and this effect was magnified in an online context in which students' level of preparation was obvious. Phase two was conducted from mid-October through November and into December, a period that included Veterans Day and Thanksgiving holiday breaks, two half-days for parent-teacher conferences, and two teacher workshop days in addition to the usual sports commitments, the Drama Club's fall musical, seniors rushing to complete college applications, and the end of the first grading period with its attendant projects and tests. Simply stated, this was a busy and disrupted period of time for students, a fact reported by most primary informants.

As stated at the beginning of this chapter, the purpose of my research study was to investigate the impact of the instructional intervention described above on participants' threaded discussion. The remainder of this chapter is divided into three sections, each representing a secondary question of my study. The section that follows identifies findings related to user participation in threaded discussion. The next subdivision addresses participants' achieving, or failing to achieve, significance and/or convergence in threaded discussion. The final subdivision identifies findings related to the teacher's and participants' enactment of teaching presence in threaded discussion. In each section, I report respective salient themes that emerged during data analysis.

## User Participation in Threaded Discussion

This section examines key themes associated with users' participation in Moodle Forum, that is, the extent of their involvement as well as factors reported by primary informants as having influenced their readiness to participate. This section is divided into three subsections. The first subsection, *degree of participation*, presents quantified data and identifies certain patterns of participation that emerged during phases one and two. The second subsection, *factors mitigating participation*, presents circumstances or influences identified by one or more primary informant as inhibiting their participation in Moodle Forum. This subdivision includes complications arising from the general school or classroom context, as well as expectations directly related to online participation. The third subdivision, *creating a context for online discussion*, addresses two factors reported by primary informants as essential to supporting their involvement in Moodle Forum – the discussion topic and offline interaction with classmates.

### Degree of Participation

The degree to which participants took part in online discussion is important to this study in two ways. First, the instructional intervention described above was designed to assist students in achieving rich discussion in an online environment. Rich discussion is represented by evidence of participants' attending to one another (significance) and then integrating ideas from multiple writers (convergence) – two conditions considered essential to inquiry in online conferencing (Garrison et al., 2001). The argument of this study is that to achieve these conditions, students must learn and practice strategies for the use of threaded discussion technology and related protocols. Participation in and of itself—to simply go online and start talking (Duffy et al, 1998)—is not sufficient to insure rich discussion. Nevertheless, the degree to which participants join in online discussion may be a factor in positioning them to achieve these two conditions. In other words, limited or decreasing participation may reasonably be expected to restrict the opportunity for significance and convergence. In addition, a pilot study had indicated that participating high school students felt motivated to participate in relatively *unstructured* online discussion. In this study, specific demands were placed on how students used Moodle Forum. For that reason, it is important to examine what if any influence these increased instructional demands may have had on student willingness to discuss.

Degree of participation is defined here as the *extent* to which participants took part in online discussion as evidenced along three dimensions: number of postings, length of individual entries, and depth of thread (Tu & Corry, 2003, pp. 306-308). Each of these dimensions represents a particular way of entering into a Forum discussion. For this study, I devised a calculation to measure each dimension as a way to investigate user participation in each of these ways. *Number of Forum entries* represents the number of postings one or a subset of participants make to a given Forum discussion. *Length of Forum entries* measures the number of lines in participant posts. *Depth of Forum entry nesting* represents the number of levels in a discussion thread – that is, whether users are distributing entries more toward initiating posts or toward replies. In the following discussion, I introduce a quantification that treats each dimension as an indicator of the degree of user participation evident in the written transcripts of Moodle Forum. What follows are the results from quantifying these indicators in each class period across the duration of this study. A separate analysis is provided for each indicator followed by a discussion of how these indicators may relate to one another.

### *Number of Forum Entries: A Pattern of Decline*

Number of entries represents the average number of entries posted to a Forum per participant. This figure was calculated for each class period by dividing the total number of participating students into the total number of initiating and reply entries made by those students in a Forum discussion (i.e., participating students who made no entries to a given Forum *were* included in this calculation). A higher calculated number of entries for a Forum indicates the average participant has contributed to that discussion more often, whereas a lower number indicates fewer contributions per participant.

Simply stated, number of Forum entries *decreased* during the course of this study. The direction and degree of change was not consistent from start to finish or between the two periods. For example, between the last Forum in phase one and the first Forum in phase two, period two *decreased* from an average of 3.6 to 2.9 entries per user, but period six *increased* from an average of 1.4 to 3.4 entries per user. Nevertheless, the trend in both classes across the duration of the study is remarkably similar. As depicted in Table 4.1, number of entries generally decreased by half, from more than five entries per user at the beginning of the study to less than two-and-a-half entries per user by the end.

Table 4.1. Number of Forum entries expressed as the average number of postings per participant in each Forum (Calculation: total number of initiating and reply entries by participating students divided by number of participating students).

| | **Period Six Number of Entries per user** | **Period Two Number of Entries per user** |
|---|---|---|
| Memory Forum | 6.7 | 2.9 |
| Interview Forum | 6.1 | 5.2 |
| “Thank You, M’am” Forum | 3.8 | 5.8 |
| Poem & Song Forum | 1.4 | 3.6 |
| **Phase one Averages** | **4.5** | **4.4** |
| *Gatsby* Chapter 1 | 3.4 | 2.9 |
| *Gatsby* Chapter 2-3 | 3.1 | 2.5 |
| *Gatsby* Chapter 4-5 | 2.6 | 1.4 |
| Gatsby Chapter 6-7 | 2 | 2.1 |
| Gatsby Chapter 8-9 | 2.3 | 1.9 |
| **Phase two Averages** | **2.7** | **2.2** |

In addition to calculating a class average, each of the three participation indicators can be calculated for individual participants. In this way, it is possible to distinguish whether the group average was evenly distributed across its members or attributable to some participants more than others. For example, with regard to number of entries, was the average decline across the participant sample reflected equally in all participants or concentrated in a few individuals? During the instructional phase of this study, the number of entries by individual users approximated the group average – that is, each participant was contributing about the same number of entries. However, during phase two of the study, the decline in number of entries was not consistent across all participants. In period six, four of the ten participants maintained or slightly increased their number of entries on average from three to four; three of the participants declined from four entries to two, and three participants dropped from three entries to no entries at all. In period two, the change was even more dramatic. The average among four of the ten participants went from four-and-a-half to three-and-a-half, while six of the participants dropped from an average of two entries to no entries at all in the third *Gatsby* Forum. Participation by these individuals in period two rebounded somewhat in the last two *Gatsby* Forums, accounting for a slight rise in that group's average number of entries. In summary, from the instructional phase to the practice phase, the overall participant sample average of entries per user declined in period six from 4.5 to 2.7, and in period two from 4.4 to 2.2. Individual analysis indicates that some participants contributed to this decline more than others. However, individual analysis also confirms that across both periods number of entries declined for all but four of the twenty students participating in this study. Simply stated, the decline in number of Forum entries from phase one to phase two represents a general decline shared by a majority of participants (i.e., 80%) rather than a change attributable to a smaller sub-group.

### ***Length of Forum Entries: A Pattern of Increase***

Length of entries represents the average length of a single entry in Moodle Forum, expressed as the number of lines that appear when viewed in the entry composition box (not the posted screen view which may vary according to screen width). This figure was calculated for each class period by dividing the total number of lines posted to a discussion Forum by the total number of entries posted to that Forum. Initiating entries that begin a discussion thread were figured separately from reply entries that are made in response to another Forum entry. A higher calculated length of entry for a Forum indicates that on average participants contributed entries that were greater in length, whereas a lower calculated length indicates shorter entries per participant.

Simply stated, length of Forum entries *increased* during the course of this study. As with number of Forum entries, the direction and degree of change were not consistent from start to finish or between the two periods. For example, from the Interview Forum to the “Thank You, M’am” Forum, initiating entries in period six decreased in length while those in period two increased. However, the change in reply entries is just the opposite, that is, reply entries in period six increased while those in period two decreased. Despite these inconsistencies, the trend in both class periods across the duration of the study was essentially the same: the length of both initiating and reply entries increased. As noted in this chapter’s narrative account, following the Moodle Forum for chapter one of *The Great Gatsby*, Ms. Hawthorne instituted a requirement that initiating entries be at least twelve lines long and reply entries be at least eight lines long in the entry composition box. Although this move occurred during phase two, it clearly imposed a specific requirement for length of Forum entries. As depicted in Table 4.2, this requirement appears to have had a marked effect on the length of Forum entries in both class periods. Following this requirement, initiating entries increased by more than 25% and reply entries more than doubled in both periods.

Table 4.2. Length of Forum entries with initiating and reply entries expressed as number of lines in the entry composition box (Calculation: total number of lines posted to a discussion Forum divided by the total number of entries posted to that Forum). Averages for each period are calculated for those Forums that occurred before and after initiation of the protocol for entry length.

| | **Period Six Lines per Forum entry** | | **Period Two Lines per Forum entry** | |
|---|---|---|---|---|
| | Initiating | Reply | Initiating | Reply |
| Memory Forum | 9.3 | 2.1 | 7.6 | 2.9 |
| Interview Forum | 8.3 | 2.5 | 8.8 | 5.2 |
| "Thank You, M'am" Forum | 6.8 | 4.4 | 10.2 | 3.4 |
| Poem & Song Forum | 11.4 | 5.2 | 9.2 | 3.8 |
| *Gatsby* Chapter 1 | 6.4 | 3.3 | 5.1 | 4.8 |
| **Averages before length requirement** | **8.5** | **3.5** | **8.2** | **4** |
| *Gatsby* Chapter 2-3 | 12.2 | 7 | 10 | 7.7 |
| *Gatsby* Chapter 4-5 | 10.2 | 9.6 | 8.9 | 9.5 |
| Gatsby Chapter 6-7 | 11.5 | NA[1] | 10.8 | 9.5 |
| Gatsby Chapter 8-9 | 15.4 | 10.6 | 11.5 | 9.4 |
| **Averages following length requirement** | **12.3** | **9.1** | **10.3** | **9** |

[1] Note: Forum included only one entry at 12 lines.

As with number of Forum entries, length of entries across Forum discussions can be calculated for individual participants as well as the group. In this way, it is possible to distinguish whether the group average was evenly distributed across its members or attributable to some participants more than others. That is, was the increase in entry length reported for each class the result of a general increase by most participants or concentrated in a few group members? This individual analysis revealed that in period six, eight of the ten participating students increased the length of both their initiating and reply entries following Ms. Hawthorne's requirement. In period two, eight of the ten participants increased the length of either their initiating or their reply entries, or both. In other words, following the first *Gatsby* Forum, not only did the average length of entries increase in both period six and period two, but this increase in entry length was distributed across eighty percent of the participants in each period.

### ***Depth of Forum Entry Nesting: An Inconsistent Pattern***

Depth of Forum entry nesting represents the degree to which entries either begin a line of discussion or respond to others in the ongoing course of a discussion. In a Moodle Forum thread, I label the first entry posted to the thread as occurring at level zero. Those entries that reply to this opening entry are indented by one tab and considered level one entries. Each of these level one entries begins a line of discussion under the initial, level zero, discussion prompt. Replies to level one entries are indented a second tab and termed level two entries, and so on (Appendix A, Figure A3). Once level numbers have been assigned to each of the entries in a discussion thread, a calculation for depth of entry nesting can be made by dividing the sum of these level designations by the number of entries in the discussion thread (less one to discount the first entry at level zero). For example, Figure A3 in Appendix A has two entries at level one and three entries at level two. Its depth of entry nesting is therefore 1.6 (1 + 2 + 2 + 1 + 2 = 8 / 5 entries = 1.6). The higher the depth of entry nesting figure, the more deeply indented or nested are the entries in a discussion thread. In particular, the degree to which this figure is greater than "one" indicates the degree to which replies go beyond the first level of response, that is, the degree to which entries are replies to what others have written in the course of an ongoing discussion rather than a response only to the initial, level zero, discussion prompt. Simply stated, a higher calculated depth of entry nesting may indicate that participants have considered a greater number of entries in the course of their Forum participation.

In this study, the depth of Forum entry nesting *increased* from the phase one Forums to the first three Forums in phase two before falling to its lowest level in the final two Forums in phase two (Table 4.3).

Table 4.3. Depth of Forum entry nesting.

| | **Period Six Depth Of Forum Entry Nesting** | **Period Two Depth Of Forum Entry Nesting** |
|---|---|---|
| Phase one Averages | 1.1 | 1.4 |
| *Gatsby* Chapter 1 | 1.5 | 1.6 |
| *Gatsby* Chapter 2-3 | 1.8 | 1.4 |
| *Gatsby* Chapter 4-5 | 1.9 | 1.9 |
| Gatsby Chapter 6-7 | 1.1 | 1.1 |
| Gatsby Chapter 8-9 | 1 | 1 |

This pattern is more pronounced in period six, where depth of entry nesting rose from about 1.1 in phase one to about 1.7 in the first three *Gatsby* Forums before falling all the way to 1.0 in the final period six online discussion. In period two, depth of entry nesting went from about 1.4 in phase one to 1.6 in the first three *Gatsby* Forums before also falling to 1.0 in the final period two discussion.

As with the previous participation indicators, depth of entry nesting can be calculated for individuals as well as groups. In this way, it is possible to distinguish whether the group average was evenly distributed across its members or attributable to some participants more than others. That is, was the increase in depth of entry nesting reported for each class period the result of a general increase by most participants or concentrated in a few group members? In this case, only four of the ten participants in period six contributed to increasing the group average for depth of entry nesting. In period two, the increase in the group average was attributable to just two of the ten participants. In other words, even though the depth of entry nesting increased in each period during the first three Forums in phase two, this increase was not evenly distributed across participants. Rather, the average increase in each period was attributable to entries by a minority of the participants.

A higher calculated depth of entry nesting measures the extent to which reply entries are nested more deeply in a discussion thread. In theory, this measure indicates that participants have considered a greater number of entries in the course of their Forum participation—a move conducive to achieving either significance or convergence. However, calculations for depth of entry nesting should be treated with caution. Of the three participation indicators, depth of entry nesting is least subject to the individual's control because entry nesting relies on previous Forum entries. To post an appropriate reply at level one, a participant need only to have read and considered the first entry posted to a discussion thread (i.e., the level zero entry). However, for online discussion to move beyond level one, participants must have read at least some of the entries in a line of discussion. In other words, to post a cogent entry at level two, a participant would have to have read at least two entries – one at level zero and a second at level one. Of course, it is possible that a participant could enter a Forum later on, select a single entry from the midst of a discussion, and post a deeply nested reply. Nevertheless, when faced with a thread containing multiple entries at different levels, participants would likely need to at least scan a number of entries to determine where and how to fit a reply. For this reason, a participant who enters a discussion early may not be positioned to nest more deeply, and participating later in a Forum discussion should be more conducive to deeper nesting.

Interestingly, in this case participants in both class periods who *exceeded* the group average for depth of entry nesting routinely posted in the first two days of a Forum opening. With one exception, those who posted to a Forum after five days were *below* the group average for depth of entry nesting. This finding highlights how the terms “early” and “late” are relative with respect to Forum participation. That is, these terms may relate to where entries fall in the sequence of posting to a thread and not to the span of time over which a discussion is open to participation. Additional analysis of Forum transcripts in this study revealed that discussions tended to begin with a burst of discussion activity during the first two days, followed by a precipitous decline to intermittent activity for the remainder of time that the Forum was open, generally one week. Consequently, a participant might have entered a Forum during its first two days and still have posted an entry that was sequentially “late” in a thread. Tu and Corry (2003) address *discussion duration*—that is, “the time span occupied by [a] discussion” (p. 305)—as a consideration in discussion design. Later in this chapter, I will return to this topic in discussing various factors related to the scheduling of Forum discussions.

### *Net Degree of Participation: A Complex of Three Indicators*

In the above subdivisions, I have applied three measures to document participation by those involved in online discussion in this study. The first of these, number of Forum entries per participant in a Forum discussion, declined across this study from about 4.5 entries to about 2.5 entries per participating student in each class section. Analysis of individual users confirmed that this pattern of decline was generally distributed across all participants. The second indicator, length of Forum entries, increased in each class section, and individual analysis confirmed that this pattern of increase was also distributed across eighty percent of the participants in each period. The final measure of participation, depth of Forum entry nesting, increased from phase one to phase two. However, unlike number and length of entries, the increase in depth of entry nesting was not attributable to a majority of participants in either class. Rather it was demonstrated by only about a third of participants overall.

Number of Forum entries is arguably the most common indicator attended to by educators in assessing participation in threaded discussion. In my experience as a technology integration coach, number of postings is the one standard that teachers are apt to *prescribe* – for example, Each student will post one initiating entry and reply to at least three classmates. While number is one indicator of participation, I have argued in the preceding sections that entry length and depth of entry nesting represent two additional indicators of participation. It is not possible to reconcile these indicators and arrive at a net degree of participation. For example, even though number of entries declined in this study while length of entries increased, I would not suggest an inverse relationship between these factors. Requiring longer entries *may* have caused some students to reduce their number of entries. This is a possibility that Ms. Hawthorne acknowledged in her post-study interview, and one student in period six, Kirk, reported this occurrence. However, there is no evidence that other primary informants shared this position. In addition, I am not suggesting that any of these three indicators is somehow more accurate, more revealing, or otherwise better than the others. I am recommending that together, these indicators can prompt educators to consider *what kind of participation matters*, particularly in relation to their pedagogical objectives.

Tu and Corry (2003) treat number and length of postings and depth of thread as instructional considerations for online discussion. Regarding depth of thread, for example, they caution that when threads become too deeply nested they risk becoming confusing and difficult for users to follow (p. 306). Similarly, with length they note a common benchmark of one computer screen to avoid having to scroll down entries (p. 308). Messages that are too short are also apt to be abbreviated in their thinking while longer messages risk being skimmed over by readers. With regard to number of postings, Tu and Corry (2003) emphasize that an instructor's expectations should be made clear to students but that "[t]here is not a fixed number because the answer depends on the instructors' goals for the course, objectives, and ideal learning outcomes" (p. 307). In the post-study interview, Ms. Hawthorne noted that a priority for her was longer entries in which students substantiated what they wrote with textual references. This position reflects her pedagogical objectives and ideal learning outcomes for online discussion. To a degree, she was willing to trade away more Forum postings for increased length provided that length supported greater entry development. I will return in chapter five to implications stemming from different measures of participation. Here, I emphasize only that the three measures I have presented represent not only different features of student participation but also different ways for educators to consider and monitor participation.

### Factors Mitigating Participation

In this section, I describe factors that one or more primary informants in periods two and six identified as mitigating their participation in Moodle Forum discussions.

Recognizing these mitigating factors may assist in anticipating potential pitfalls to user participation. The mitigating factors I describe are divided into two categories: alternative explanations not directly related to online discussion and factors directly related to ways in which students used Moodle Forum.

### *Alternative Explanations Outside the Context of Online Discussion*

I have already noted that online discussion in a school setting does not proceed in isolation from students' live classroom or other school experience. In this study, in particular, online discussion of *The Great Gatsby* took place from mid-October into December, a period of time that included Veterans Day and Thanksgiving holiday breaks, two half-days for parent-teacher conferences, and two teacher workshop days in addition to the usual sports commitments, the Drama Club's fall musical, seniors rushing to complete college applications, and the end of the first grading period. In other words, this was a particularly, though not uniquely busy and disrupted period of time for participants. Of the seven primary informants, only Valerie and Matt in period six explicitly reported scheduling demands as interfering with their Moodle participation. Matt, for example, called November "just crazy hectic for schoolwork and stuff. Just get it done. Move on. Just cram time." Ms. Hawthorne also identified the irregular school schedule during phase two of the study as a potential constraint on students' work. She reported that students' completion of Moodle Forum assignments was equivalent to their completion of schoolwork overall at this time.

I have already noted that a third to a half of students in periods two and six routinely failed to complete assigned readings prior to Forum discussions. Ms. Hawthorne confirmed that failure to complete reading on time was an increasing problem during the *Gatsby* phase. Of the seven primary informants, three reported a lack of interest or diminishing interest in *The Great Gatsby* as a mitigating factor in their own participation, and three others identified the text as a problem for the class generally. No primary informant identified readability of the text as a problem. Two primary informants identified by their teacher as more proficient readers did claim that their classmates were not willing to do the work needed to interpret the text. Generally, however, primary informants reported their problem as *disinterest* in either the story, setting, and/or characters. Interestingly, Ms. Hawthorne selected *The Great Gatsby* for this unit as one of the most accessible canonical texts and one that had previously worked well with juniors, as well as seniors. In her post-study interview, Ms. Hawthorne maintained that the language and syntax were well within students' grasp, and she affirmed that students at different ability levels in these classes had demonstrated the capacity to read and understand this text. Nevertheless, Ms. Hawthorne acknowledged that a lack of prior knowledge presented a very real challenge to many students. She explained that the issue was not just that students had little historical knowledge of the 1920s but that they struggled generally with the demands of thinking beyond the present. Moreover, she admitted being surprised that, given regular access to computers, students were not generally more enterprising at filling in gaps in their understanding. Whether generalized or specific to the context of the reading for this unit, the extent to which students did or did not engage with the curricular material appears to have been a factor in positioning them to participate in online discussion.

Aside from the demands of the curricular material or an increasingly busy school schedule, four of seven primary informants specifically reported diminishing novelty as explanation for their declining Forum activity. After five weeks, the unconventionality of using a popular out-of-school technology in an instructional context seems to have waned. Ms. Hawthorne not only acknowledged this possibility but also noted a reduction in participation as students in her experience progress through their senior year. In other words, in the scheduling of this study, it may be that the freshness of a new school year and the originality of conducting class discussions online declined as competing interests in the school schedule increased. When it comes to technology in schools, administrators and teachers can sometimes assume an "if you build it, they will come" mentality. In other words, it is tempting to expect that teachers simply need to implement technologies and students will participate willingly and to great lengths. Mitigating factors recognized by primary informants in this study, however, make clear that the implementation of online discussion is not seamless. Simply moving students from a classroom environment to an online environment does not necessarily increase participation or change the realities of the school day. Ms. Hawthorne was quite clear on this point in her post-study interview, stating that the use of Moodle Forum is no more a "magic silver bullet" than anything else. In chapter five, I will address how teachers can respond to mitigating factors in their implementation of online literature discussions. Here, I would note simply that effective use of a technology like online discussion includes attending to, not discounting, contextual influences.

### *Mitigating Factors Within the Context of Online Discussion*

The purpose of this study was to investigate the impact of an instructional intervention in utilizing threaded discussion. This instruction made explicit demands on participants' use of six aspects of online discussion: subject lines, entry format, entry hyperlinks, entry length, the scheduling of Forum activity, and topic design. Each of these instructional demands is a potential mitigating factor in the sense that increased rhetorical demands for Forum users risk decreasing their participation. To the extent that participants were unable or unwilling to meet any of these demands, they may have participated less. Later in this chapter, each of these demands will be discussed with respect to its influence on the *substance* of participants' online discussion. In this section, discussion is limited to any evidence of the demands' effects on participation. This discussion will demonstrate that four of these demands (subject lines, entry format, entry hyperlinks, and discussion topic design) did not appear to have lessened participants' involvement whereas two demands (entry length and the scheduling of Forum activity) did appear to have mitigated participation for one or more users. For each factor, I will define the instructional demand, recount any evidence of mitigation as reported by primary informants, and briefly outline any issues relevant to managing the impact of the factor on Forum participation.

First, with regard to entry subject lines, students were asked to compose purposeful subject lines and, in the case of reply entries, to replace the default subject line automatically pre-filled by Moodle Forum technology with an original subject line of their own. Of the seven primary informants, none reported any difficulty composing subject lines. To the contrary, each described in some detail how they spent time composing subject lines, often developing two or three alternatives that might catch a reader's attention. After introducing the protocol for subject line design, Ms. Hawthorne and I provided little additional instruction on subject lines. A review of subject lines in phases one and two revealed that participants consistently followed the recommended protocol in more than 75% of their attempts. Creating original subject lines did not appear to have lessened participants' involvement in this study.

The second mitigating factor was the rhetorical demand that students compose Forum entries in three parts: a position statement, substantiating evidence, and an ending that invites conversation. Four primary informants reported that this format made it easier for them to construct a Forum entry that would meet the teacher's criteria for length, particularly the substantiation she required for whatever position they had introduced. Only one primary informant was openly critical of the three-part entry format, stating that an entry only needed to be "thoughtfully opinionated" and did not need the middle, or evidentiary part (Evan). Three primary informants did report that they found it challenging to complete either the second or third part of the format. Valerie, for example, stated that providing evidence increased the demand to reread the text, locate applicable quotes, and think about how a textual reference might be used to justify her position. Two other primary informants reported that it was often difficult to think of an original way to keep the conversation going – something other than, "So what does everyone else think?" In other words, a majority of primary informants acknowledged that the entry protocol might decrease participation for others but that it had not decreased their own participation. These results suggest that the rhetorical demand of a prescribed entry format did not appear to have lessened participants' involvement in this study.

The third mitigating factor associated with online discussion was the demand to connect entries using hyperlinks. Ms. Hawthorne and I introduced hyperlinks in the Poem & Song Lyric Forum at the end of phase one. Although we conducted additional mini-lessons encouraging their use thereafter, hyperlinks received almost no attention from participants. All seven primary informants claimed that hyperlinks were technically easy to create. Five of the seven, however, reported that they saw no purpose to hyperlinks in the *Gatsby* Forums. These five speculated that hyperlinks might be useful for research – that is, to reference outside resources in a discussion but not to link either to *The Great Gatsby* electronic text or to classmates' entries. As Kirk stated, "Why keep putting hyperlinks to something we can all get to?" It may not be surprising that participants did not use hyperlinks. As I will explain later in this chapter, the process for using hyperlinks is technically cumbersome and cognitively challenging. Moreover, after the Poem & Song Lyric Forum, we did not require students to use hyperlinks in any Forum discussion. What is striking is how these informants apparently felt no compunction about failing to use hyperlinks. Valerie, for example, stated, "Hyperlinks could help some people, I guess, but I don't see how they'd help me." In the post-study interview, Ms. Hawthorne indicated that in the future she might experiment with requiring hyperlinks as a way to induce more explicit connections between Forum entries. Promoting the use of hyperlinks in this way might assist students to appreciate the affordances associated with hyperlinks. At the same time, requiring their use might lessen participation to the extent that students continued to perceive hyperlinks as unnecessary in ways reported here. Nevertheless, in this study connecting to classmates' entries with hyperlinks did not appear to have lessened participants' involvement.

I now turn to three protocols for which Ms. Hawthorne and I increased our expectations during the practice phase: entry length, the scheduling of Forum activity, and topic design. While there is evidence that entry length and scheduling mitigated participation for one or more users, there is no evidence that requiring participants to design discussion topics did so. First, a majority of primary informants in this study reported that the instructional demand for increased length did affect participation. Five of the seven primary informants reported that it was generally more difficult for them to write the longer entries. The two remaining primary informants stated that meeting the length requirement was not a problem for them, but they were sure it was for their classmates. Two primary informants did acknowledge that longer entries made it easier for them to find something to respond to. However, four of the seven primary informants reported that it was generally more difficult for them to read longer entries. Beth, for example, routinely read every Forum entry during phase one, but on the *Gatsby* Forums she admitted, “If it was really long, I’d just kind of scan. I didn’t pay as much attention to everyone as I had with Thank You M’am.” I have previously noted that at least one primary informant (Kirk) explicitly identified the demand for increased entry length as lessening his number of Forum entries. Ms. Hawthorne recognized that some students may have been “put off by the length requirement...and it might be worth the effort to make it clear that a shorter entry will not be a zero.” Nevertheless, she was also quite clear that for her a principal benefit during this study was that more students were writing more. In this way, Ms. Hawthorne acknowledged her instructional demand for entry length as both a pedagogical goal for her and a mitigating factor in student participation.

A second instructional demand that increased during phase two concerned the scheduling of Forum activity. Scheduling denotes when and where Forum activity may occur, and involved two particular issues: the extent to which time was provided *in class* for online discussion and participants’ *access* to the Internet outside class and school. It should be self-evident that Forum participation is dependent on the availability of a Forum to its users. For example, student participation might be assured if the classroom teacher not only provides class time but also requires students to participate in the Forum at that time. Such was the context for phase one of this study. During phase two of this study, during which the number of Forum entries declined, students were afforded less time during class to participate in the Forum. Five of seven primary informants reported that it was important or helpful to have class time for their online discussions. Only one of the seven stated a clear preference *against* using the Forum during class time. Activity reports further evidence the relative importance of in-class time for online discussion. As depicted in Table 4.4, with one exception, the majority of Forum entries for phases one and two were posted during class time.

Table 4.4. Distribution of Forum discussion entries by time: percent of entries that participants posted during each of three time categories.

| **Period Six** | **During Class Time** | **Outside Class, In School** | **Outside School** |
|---|---|---|---|
| Phase one Averages | 52% | 27% | 21% |
| *Gatsby* Chapter 1 | 44% | 27% | 29% |
| *Gatsby* Chapter 2-3 | 58% | 10% | 32% |
| *Gatsby* Chapter 4-5 | 54% | 8% | 38% |

| **Period Two** | **During Class Time** | **Outside Class, In School** | **Outside School** |
|---|---|---|---|
| Phase one Averages | 61% | 22% | 17% |
| *Gatsby* Chapter 1 | 76% | 21% | 3% |
| *Gatsby* Chapter 2-3 | 65% | 13% | 22% |
| *Gatsby* Chapter 4-5 | 7% | 86% | 7% |

During phase two, the amount of time provided for online discussion in class was progressively reduced. Nevertheless, the majority of Forum entries by participants continued to be posted during class time. In other words, the distribution in Table 4.4 confirms that when time for online discussion during class was reduced, participation out-of-class did not increase to offset this reduction.

It is conceivable that Internet *access* was a mitigating factor in scheduling online discussion outside class. In their biographical surveys, five of the 20 participants reported *not* having Internet access at home, however none of these participants identified their lack of home access as interfering with homework completion. At Riverside High School, every student had at least one hour each day, outside of all classes, in which to access the Internet for assignments. Despite this access, activity reports indicate that participants were not using Moodle Forum outside class but elsewhere during the school day. With the exception of one participant, while time in class was declining, participant use of other in-school time was also falling off.

The opportunity to participate outside the physical space and real time of a classroom community represents an affordance of Moodle Forum. In this case, however, there is evidence that shifting Forum discussion outside the classroom was a mitigating factor in user participation. I have already explained the persistent problem experienced in these class periods with students' failure to complete homework assignments. Similarly, it seems clear that during phase two participants did not consider time out-of-class as either available or conducive to their online discussion. For example, three of the seven primary informants reported that supervised study was too distracting for composing on Moodle. Beth explained the relative value of in-class time for her this way:

> I'm gonna be completely honest. During the day, I don't even think about Moodle, but in English class, that's when I was hard core on it. I went straight to Moodle, straight to the Forums, because with class time you're focused on English. That's when I definitely used it the most.

As Beth makes clear, scheduling Forum activity is not simply a logistical consideration. Attitudinal factors also influence participation. While access to the Internet and the availability of time in-class to use Moodle Forum may be mitigating factors, finding a time that suits each individual may be equally important to participation. For most participants in this study, that time appears to have been in class. While the opportunity to participate at a time and place convenient to the user represents an affordance of Moodle Forum, activity records for participants and interviews with primary informants here revealed little use of this opportunity. To the contrary, for at least some of the participants, the expectation to conduct online discussion outside class appears to have reduced participation.

The final rhetorical demand that increased during phase two concerned topic design – that is, rather than being given specific discussion topics by their teacher, students were increasingly tasked with developing topics and initiating Forum discussions. It should be self-evident that any participant's degree of engagement in discussion will depend in some measure on interest in the topic. Here, I am concerned only with evidence regarding how the *task* of initiating topics generally or the approach of collaborative topic design in particular may have lessened degree of participation.

While increased reliance on student-driven, collaborative topic design during phase two coincided with a decline in number of Forum entries posted, there is no evidence to suggest that the task of designing topics was a mitigating factor on participation for primary informants in this study. To the contrary, six of the seven primary informants reported that they preferred the collaborative approach to topic design, while only one preferred teacher-generated topics. Three of the six described collaborative topic design as “easier.” These three not only reported that it was easier to generate topics by working with others but also that the student-generated topics were subsequently easier for them to access in discussion. As Kirk stated, “Working in pairs helped. It just came easier because it was in our own words, and I could interpret what Monica felt about the text sometimes better than I could Ms. Hawthorne.” Even Evan, the one primary informant who described collaborative topic design as harder, also reported it as better in ways that seemed to stimulate not mitigate discussion:

> I thought it was cool how you started to make us think about our own topics, giving us the chance to put out topics that we chose, that we thought were relevant...it was like, ‘Huh, I got to ask that question. I did that. That’s mine.’

Here Evan indicates that despite being more difficult, student-driven topic design was sufficiently rewarding to offset the increased instructional demand. His statement suggests not only that he welcomed the design activity itself but also that he had a particular interest in the topics that resulted from this approach. In the post-study interview, Ms. Hawthorne reported that she had observed frequently that while engaged in collaborative topic design, some students were content to sit back and let others do the work. This behavior may suggest a lack of interest in the topic design activity, and/or it may suggest that topic design was more difficult for some students than for others. However, this behavior was not necessarily evidence of a lack of engagement in Moodle Forum itself. Simply stated, there was no direct evidence that the task of topic design in general or collaborative topic design in particular lessened participants' degree of participation in the ensuing online discussion.

## Creating a Context for Online Discussion

In the preceding section, I detailed factors that appeared to affect students' degree of participation in online discussion. This section analyzes two factors that seemed essential to participants' online involvement. The first factor is the discussion topic, and the second is the opportunity for participants to interact and support each other in the discussion, both online and in live conversation. For each of these, I will define the factor, recount evidence, and briefly outline any issues relevant to managing the factor in Forum participation.

### *Creating a Context with Topic Design: Relevance and Contention.*

It should be self-evident that interest in a topic influences the degree of participation in a discussion. The question is, what constitutes "interest" for participants? In this study, primary informants identified two characteristics that defined an engaging discussion topic: relevance and contention. Regarding *relevance*, five of the seven primary informants reported that engaging topics were those that pertained to their current interests, particularly sports and music, what they planned to do after high school, and questions and dilemmas they faced in their own lives. Regarding *contention*, six of the seven primary informants reported that an engaging topic must have the potential for disagreement. They indicated that it was easier to write a response to someone with whom they disagreed even if, as Evan described, they were only playing Devil's advocate. Not surprisingly, these six primary informants acknowledged that topics on which everyone agreed bored them and died under a string of "I agree" and repetitive reasoning. The criteria of relevance and contention are also recognized in the research literature. As described in chapter two, various researchers have adopted inquiry as a framework for considering the dynamics of online discussion. In this model, the triggering event for inquiry is identified as a dilemma (i.e., contention) arising in one's experience (i.e., relevance) (Dewey, 1997; Garrison et al., 2001). Five primary informants specifically cited threads in the "Thank You, M'am" Forum as an example of how the opportunity for disagreement engaged them. Beth, for example, articulated how the thread "When you give respect, you may also receive it" (Appendix P) worked for period two:

> Carlton and I got into a heavy disagreement on that one. We were just completely on opposite ends. So, we explained how we felt, and we referred to the text, and by the end we kind of smooshed the two ideas together and it became one...A good discussion is like a debate. You have your opinion, they have their opinion, and you're trying to change each other's opinion. When you debate, you start with all kinds of questions, and topics, and it leads to a bigger discussion. And that gets a lot more people involved. That probably gets the whole class involved.

What Beth provides is a fairly accurate description of the inquiry cycle as represented by a discussion thread. Response to a topic begins with a question and through an exchange of opinions and information arrives at a resolution. In the example that Beth cites, five participants raised alternative suggestions for effective discipline, referred to a popular film and their psychology class, and refused to accept what others said without raising legitimate questions. In other words, given a topic on which they were strongly divided, these participants seemed willing, according to Beth, to work hard at investigating it.

As noted, the number of Forum entries declined by almost half between the instructional phase and the practice phase in this study. To the extent that participation depends on interest in a topic and given that topic interest depends on relevance and contention, what if any evidence was there that either or both of these characteristics decreased from phase one to phase two? With regard to contention, four of the seven primary informants reported that the potential for disagreement diminished in the *Gatsby* Forums. With regard to relevance, three of the seven primary informants admitted having difficulty connecting with this text, and four of the primary informants claimed that relating to *The Great Gatsby* challenged Forum participation *for their classmates*. For example, Matt stated that when he introduced "basic ideas" like the American Dream that had been discussed in his Junior Advanced Placement class, no one understood or picked up on the topic and so it just died out. Altogether, a majority of these primary informants indicated that discussion topics for *The Great Gatsby* suffered in both contentiousness and relevance. Analysis of Forum discussion transcripts seems to confirm this result.

The four Moodle Forums across chapters one through seven of *The Great Gatsby* reflected a limited range of topics. From a total of twenty-eight Forum topics across both class periods, fully half involved content addressing the romantic relations between Daisy, Tom, and Gatsby. One topic in each class addressed the romantic subplot involving Nick and Jordan, and three in each class speculated on the mystery of Gatsby's identity. Altogether, twenty-two of twenty-eight topics involved these three subjects. A limited range of topics does not necessarily indicate a lack of relevance in themes those topics embody. What it may suggest is limited diversity in thematic ideas available to those involved in topic design. In other words, relevance in the selection of discussion topics is not just participants' chosen interest. It is also a matter of background knowledge – that is, the range of interests available for participant choice. I have already recounted how Ms. Hawthorne identified lack of background knowledge as an issue for readers of *The Great Gatsby*. She further identified this lack of background knowledge as a reason for the limited range of topics they conceived for *Gatsby* Forums. Ms. Hawthorne described her concern this way:

> Most of these students are so immersed in the here and now - it's like they are hermetically sealed in their world, and of course all teenagers are going to be, but there's nothing that gets in. I hoped that even with a superficial starting point, they would dig in deeper, but they were just so fixated on whether Daisy should leave her husband. It requires more than just being mature. It requires background knowledge, understanding the world, thinking about people other than themselves. I mean, it requires them to think about being a thirty-year-old, upper-class woman in 1920. Well, if I don't know what that person would be like, then I need to do some thinking and maybe some reading, and that's a lot of work.

In Ms. Hawthorne's view, students may not be positioned for topic design in a variety of ways. In one respect, students may lack the historical knowledge required to speculate on social or economic conditions in the 1920s. More importantly, the finite experience of adolescence may prohibitively restrict students' perspective. They may not be prepared psychologically or experientially to contemplate viewpoints that arise from a difference in age, gender, or socio-economic status. According to Ms. Hawthorne, her students were not oriented toward what a thirty-year-old woman of the Twenties might do but toward what they felt she should do based on their perspective as teens in the 21st century. Moreover, Ms. Hawthorne suggests her view that students did not seek that perspective on their own. There is no direct evidence that collaborative topic design for the *Gatsby* Forum discussions narrowed the range of topics. However, if we rely on what adolescent readers perceive as relevant, we may run the risk of limiting their consideration to a shallow selection of available interests. It may be that our instruction in this case did not sufficiently develop students' background knowledge. It may also be that the instructor's topic design is an essential aspect of the instructional task of building that background knowledge.

In addition to their being limited in scope, the topics in the *Gatsby* Forums over chapters one through seven did not appear to trigger sustained reply entries, a key feature of contention. In the discussions around "Thank You, M'am," more than 40% of the reply entries expressed some degree of disagreement. In the *Gatsby* Forums, reply entries expressing disagreement dropped below 15%. While there was no direct evidence that collaborative topic design for the *Gatsby* Forum discussions contributed to this apparent lack of contention, there was a recognizable difference in entries that initiated discussion in the *Gatsby* and "Thank You, M'am" Forums. In the "Thank You, M'am" Forum, the five most active threads in each class began with a *declaration* that staked out a position on some character or event in the story. In the *Gatsby* Forums, the initiating entry in each thread posed an *open-ended question*—that is, a question that was devised *not* to trigger debate. For example, the thread "Tom says he would like to introduce his girl to Nick" posed the question, "Why would he want to do this?" This question invites speculation on any number of reasons that might be acceptable to others, rather than defining two conflicting positions – for example, "Should Nick report Tom's philandering ways to his cousin, Daisy, or not?"

Matt was one student who identified lack of contention over *The Great Gatsby* as problematic in two ways. First, he suggested that the absence of contention diminished participation in online discussion. Second, he claimed that its absence challenged their study of *The Great Gatsby* generally. He characterized the problem this way:

> It was just hard with this book because we all had the same basic idea about it. I mean, it wasn't "Thank You, M'am" where there were two distinct thoughts going in line...With *Gatsby*, it was one prominent feature, everyone hates Daisy...It was always the same, just do you agree or what do you think? If there was more controversy, you would've gotten more heated discussion. And then, you want to get back to it, even with no credit or anything, you just want to put your thought down.

Matt clearly identified contention as a key feature of online discussion. He attributed quality discussion of "Thank You, M'am" to students' advancing opposing positions, and he criticized discussion of *The Great Gatsby* as monotonous, mired in a single topic on which everyone took the same stance. In a larger sense, Matt claimed that the opportunity for disagreement provides intrinsic motivation toward learning itself, "You want to get back to it, even with no credit or anything." In this way, he recognized discussion as the inquiry process referenced above in which perturbation drives investigation of a subject among members of a group.

I noted above that Matt stated he had attempted to introduce more challenging themes to online discussion in this class but that his classmates had not been interested or able to grasp these themes. It is important to recall that Matt and one other participant in period six, Norm, had not only read *The Great Gatsby* before, but they had done so as students in Ms. Hawthorne's Junior Advanced Placement English class. As a result, these students were uniquely prepared to read and discuss this text. In fact, Matt acknowledged that it was his Junior Advanced Placement experience with Ms. Hawthorne that had "taught [him] to understand literature, to grab a quotation and just rip it apart and get something out of it." In my discussion of teaching presence later in this chapter, I will address how Matt and Norm attempted to assist classmates in undergoing this same transformation. Here, it is sufficient to note that as a participant, Matt brought a rich understanding of inquiry that his classmates did not possess, and further, that he had acquired this understanding in an earlier class. Ms. Hawthorne described Junior Advanced Placement as an environment in which students enjoyed academic support from classmates as well as from her. Matt confirmed that others in that class were motivated to participate, to think more deeply, and to challenge each other. In part, Matt attributed this success to face-to-face discussion, both because classmates could respond to each other immediately and because Ms. Hawthorne was always present to direct or spur discussion on as needed. Junior Advanced Placement English had not used online discussion, but it is apparent that Matt's vision of Moodle Forum in twelfth grade was influenced by his classroom experience the previous year.

### *Creating a Context with Interaction: Spheres of Participation*

This study focused on participants' online activity. However, participants worked in a hybrid setting that included their live classroom as well as Moodle Forum. I have previously described how discussion topics for the *Gatsby* Forums were developed primarily in collaborative groups. This was just one of the ways that student interaction *offline* intersected with their *online* participation. In this section, I address more fully what primary informants reported regarding the intersection between oral discussion in their classroom and written discussion on Moodle Forum.

In biographical surveys, participants identified a *circle of friends*, that is, three to five other students in the class that they would "most likely choose to work with on a project." Classroom observation subsequently confirmed that participants sat with these friends almost exclusively and chose to join in activities with the circle they had identified. There were at least two ways in which the opportunity for face-to-face discussion in the classroom prior to or during online discussion was important to these participants. One was the formal context of negotiating topics to be posted and other assigned group activities. For example, when Ms. Hawthorne and I introduced the strategy of helping each other to develop and select alternative entry subject lines, students partnered with members of their circle, and in fact resisted the teacher's attempts to have them work with those outside their circle. A second context was more informal. Throughout the study, participants continued to use the cooperative strategies that we introduced and to turn to their friends more spontaneously, as needed, with impromptu questions in the midst of composing for the Forum – for example, a text reference, reply phrasing, and so on. In some way, each of the primary informants in this study reported the significance of classroom interaction to support their online participation. Monica, for example, explained as follows how this informal resource in the class affected her online activity:

> With Kirk, sometimes he'll talk about, 'I don't know what to name this one,' or I'll say, 'I don't know what to name this one,' so we'll help each other. And then, the title is cool, so I'm always interested to go in and read his [entry]. I sit by Kirk and all them, so if I know what they're gonna write about, and we talk about it but I don't read 'em, then I'm always interested to go in and read what they wrote.

In this passage, Monica confirms that she both helped and was helped by this interaction in the classroom sphere to complete work for the sphere of Moodle Forum. It may be that the oral nature of the classroom sphere as Monica describes it ("we *talk* about [an entry]" [emphasis added]) may assist some students in preparing material for the written nature of the online medium. In addition, she makes it clear that interacting with others in the face-to-face context of the classroom influenced her participation in the online context of Moodle Forum. That is, aside from assisting her and others to compose written material, this interaction assisted her in deciding what material to read in her online activity.

The dynamic between the classroom and Moodle Forum was not one-sided. It was not just that classroom interaction influenced Forum participation but that the online sphere promoted a substantive difference in participants' interaction. There is evidence that participants chose to interact with different partners when participating in online discussion. I have already explained that in the context of their classroom, participants interacted almost exclusively with members of their own circle of friends. On Moodle Forum, however, participants in both periods responded more or less equally to those outside as well as inside their friendship circles (Table 4.5).

Table 4.5. Percentage of Forum replies that participants made to members within their circle of friends and to those outside their circle of friends.

| | **Period Six** | | **Period Two** | |
|---|---|---|---|---|
| | Within Circle | Outside Circle | Within Circle | Outside Circle |
| Phase one | 50% | 50% | 61% | 39% |
| Phase two | 30% | 70% | 43% | 57% |

This dispersed interaction appears not to have been overlooked by participants. In interviews, when asked to whom they had responded most on the Forum, four of the seven primary informants identified not only members of their cluster but also students outside their circle of friends. In chapter two, I explained the concept of disinhibition, which the research literature has established as a tendency in online contexts for shy students to participate more and all students to participate more freely on sensitive subjects (Grisham & Wolsey, 2006; Kirk & Orr, 2003; Lobry de Bruyn, 2004). What these primary informants suggested is that their own disinhibition related not just to what students wrote about but also to the selection of those to whom they wrote. In other words, regardless of the topic, participants seemed to have been less constrained in their selection of partners on Moodle Forum than they were in the live classroom.

Beth in particular spoke in detail about how the circle of discussion was different online from offline. While Beth described herself as a “social butterfly” that could talk with anyone, she characterized high school in general as an entrenched social hierarchy, and she explained the risks inherent in going outside one’s own group. For most students, talking with someone from a group considered lower in the social hierarchy would result in ridicule, and disagreeing with someone outside the relative safety of school could lead to being beaten up. Responding to others on Moodle, she felt, did not have these consequences. As the figures in Table 4.5 indicate, this condition may have disrupted customary relationship patterns between individuals. According to Beth:

> I've noticed a lot of people that are higher up on the social list – let's just say that. They talk to people that they normally wouldn't talk to. And that's saying a lot. It doesn't mean that they don't want to talk to them when they're outside Moodle. It just means that they feel safer talking to them through Moodle because they can't get made fun of. They can't get laughed at for talking to that certain person or replying to that certain person. They kind of take it as a safe haven.

As a primary informant in the pilot study during her ninth-grade year, Beth had spoken directly to the separation of time and space in online environments as giving her the "courage" to speak up and contribute to online discussion. Here, three years later, she distinguishes disinhibition as giving cover to anyone who might not be comfortable risking interaction with those outside their group in a face-to-face setting. As she explained it, Forum discussions would not change relations outside Moodle, but they would provide one setting for secure interaction outside students' regular fixed groups.

Primary informants in this study indicated that to them, offline discussion was important to preparing entries in the online sphere. Moreover, they demonstrated that online discussion can disrupt patterns of interaction that characterize oral communication in the classroom. Altogether, patterns of Forum activity and reports of primary informants suggested that the offline sphere of the classroom and the written sphere of the online Forum have a role to play in the degree of student participation in threaded discussion and that together these spheres present a complex of influences to be organized and managed in using threaded discussion.

### Conclusion

In this section, I have recounted what participants reported as well as what they demonstrated in their Forum activity regarding participation. In the first subsection, I introduced three indicators for the degree of user participation: the number of entries posted, the length of entries, and the level of reply nesting. In the second subsection, I addressed factors mitigating participation from both outside as well as within the context of online discussion. Finally, I described two context elements reported as significant to promoting online participation – a relevant controversy and offline interaction. Altogether, these findings indicate the multiplicity of factors that influenced users' participation in online discussion. I now turn to evidence regarding the extent to which participants achieved significance and convergence in their online discussion.

## Using Technology to Create a Context for Significance and Convergence

As stated at the beginning of this chapter, the purpose of my research study was to investigate the impact of an instructional intervention designed to assist participants in utilizing threaded discussion. In the preceding section, I reported evidence regarding the number of entries, length of individual entries, and depth of nesting. In this section, I turn to evidence indicating that participants achieved significance and convergence in their Forum entries. Significance is the act of attending with consideration to what another has expressed in a discussion (Jolivette, 2006). Convergence involves combining the contributions of more than one other participant in one's own stated position (Lobry de Bruyn, 2004). I have previously explained how the Community of Inquiry model represents online discussion as an inquiry cycle in which the middle stages of exploration and integration represent participants' efforts to uncover relevant information and to synthesize this information into tentative positions (Garrison et al., 2001). In this inquiry process, significance and convergence are two conditions that support quality discussion.

In this section, I report evidence of significance or convergence as rhetorical moves apparent either in Forum discussion transcripts or primary informant reports. In this study, Ms. Hawthorne and I designed instruction to assist students in not only recognizing significance and convergence but achieving these rhetorical moves. We assisted students to acknowledge the influence of another (significance) both in formulating their entries and in composing entry subject lines. In addition, we assisted students to synthesize multiple ideas from others (convergence) in the text of their entries as well as in the use of entry hyperlinks. In the subsections that follow, I report evidence that participants in this study achieved significance in their Forum entries but that convergence was minimal.

### Creating a Context for Significance

Significance in this study is the condition of attending to what another contributes to online discussion. I have already noted that this condition requires only that a user take another's entry into consideration. It does not necessarily require that the user explicitly reference either the other participant or the entry. In other words, participants can achieve *conceptual recognition of significance* without explicitly acknowledging another in talk or text. Nevertheless, in threaded discussion significance may be indicated by acknowledging the *antecedent* or parent entry in two ways. First, what I term *structural significance* may be achieved simply by using the reply function of threaded discussion. When one user responds to another in Moodle Forum, the discussion application inserts the user's reply entry below and indented one tab in from the parent entry. The following excerpt is taken from the discussion thread "When you give respect you may also receive it" in the "Thank You M'am" Forum (Appendix P). Entries (2) and (3) illustrate structural significance in response to entry (1).

**(1) When you give respect you may also receive it**
**BY BETH -** Monday, 08:24 AM
Mrs. Luella Bates Washington Jones shows Roger respect and it could be for the first time in his life. He takes it easily. I mean at first, like any other kid that gets in trouble, he wants to run, but after he faces what he had done he was fine with it and gave her respect back. Like the saying goes you treat others the way you want to be treated and she just wanted respect and in the end she got that and also kindness. Plus you never know if he took this lesson and told other kids about it and they learned too. It's one of those lessons that keeps going round and round. But that's a good thing.

> **(2) Re: When you give respect you may also receive it...Agreed**
> **BY MICHELLE -** Monday 09:14 AM
> I would have to agree completely with you. Respect is a very important life lesson.
>
> **(3) Re: A beating**
> **BY CARLTON -** Monday, 09:22 AM
> I believe the boy will not learning anything by being taken care of.

In this example, the Moodle Forum application designates entries by Michelle (2) and Carlton (3) as replies to Beth's initiating entry (1) by situating them below and one tab in. This automatic subordination of a reply in relation to its parent is evidence of significance achieved structurally as a result of the software's design.

Structural significance is an affordance of threaded discussion in that participants may utilize the reply function to *signal* an entry to which they are attending. However, to the extent that users rely on structural design to indicate significance they risk weakening the quality of discussion. Reliance on structural significance as a vehicle for acknowledging another does not orient writers to achieving significance rhetorically. In turn, without sufficient textual explanation, readers may not be adequately positioned to further discussion. In the above example, there is a noticeable difference between the entries by Michelle and Carlton. Carlton's reply relied on structural significance to connect with Beth's entry. There is no evidence in his subject line or text space that directly acknowledges Beth or her position. Readers must review his entire entry and infer that Carlton disagreed with Beth. Essentially, Moodle's design achieved significance for him. As a result, Carlton risks what Duffy et al. (1998) term "talking past each other – posturing with their ideas, or simply trying to get an idea out that struck their fancy at the moment" (p. 75). When the composition of an entry fails rhetorically to achieve significance, entries become separate arguments instead of interactive discussion. Carlton's ensuing entries (5) and (7) illustrate this phenomenon.

> **(3) Re: A beating**
> **BY CARLTON** - Monday, 09:22 AM
> I believe the boy will not learning anything by being taken care of.
>
>> **(4) Re: A beating**
>> **BY BETH** - Monday, 09:25 AM
>> It's called R-E-S-P-E-C-T Carlton. You don't have to "Smack a kid" or give them a beating just to teach them what they need to learn. If that was the case then a lot of people would be getting beaten. Like that commercial that shows how people are helping each other and then another person sees and wants to pass on the help to another – it's like that. She wanted to help him not hurt him.
>>
>>> **(5) Re: A beating**
>>> **BY CARLTON** - Monday, 09:34 AM
>>> THAT BOY DESERVES A WHIPPING OF A LIFETIME :P
>>>
>>>> **(6) Re: A beating**
>>>> **BY BETH** - Monday, 09:36 AM
>>>> Well you may feel that way but I don't because to me it wouldn't be right.
>>>>
>>>>> **(7) Re: A beating**
>>>>> **BY CARLTON** - Monday, 09:36 AM
>>>>> Well I'm not sure but I think that he may still be a crook.

In entries (5) and (7), Carlton persisted in relying on structural significance to indicate his response to Beth. In entry (5), he shouted at Beth with capital letters, yet the text of his entries continued to state his position without addressing what Beth had written. Michelle’s entry (2) – ”I would have to agree completely with you. Respect is a very important life lesson.” – is different. Michelle did rely on structural significance to confirm that the “you” to whom she responds is Beth. However, she began her entry by explicitly stating the nature of her connection with Beth – agreement. Then, she hooked to a specific word in Beth’s entry (respect) and went on to explain that what they agree on is the importance of learning respect in one’s life. As simple as it is, Michelle’s reply illustrates an entry that uses but does not rely on structural significance. Instead, she also uses the composition of her entry to articulate the significance she achieved.

While structural significance is effective at identifying the parent or antecedent entry to a Forum reply post, it is not a rhetorical feature that enhances the quality of online discussion. What I term *compositional significance* is a second, more descriptive way to represent significance in threaded discussion. Users achieve compositional significance in their own entries by referring to the author or content of another entry – for example, “I agree with your statement, Bailey, that Gatsby is like Boo Radley.” In this example, the text or composition of the entry explicitly acknowledges the author (Bailey) as well as the content of the antecedent entry (a comparison of Boo Radley and Jay Gatsby). Furthermore, the text introduces the respondent’s perspective in considering the parent entry – namely, agreement. Following this simple introduction, the depth of the entry as well as the significance it represents will be determined by additional explanation. Compositional significance varies in both degree of specificity and level of sophistication. Each of these dimensions may affect the depth of an entry’s contribution to the discussion, and each will be presented separately.

With respect to *specificity*, the composition of an entry may be more or less explicit in identifying its antecedent author or content. Beth's entry (4), above, is relatively explicit in responding to Carlton. First, Beth identifies Carlton by name – "It's called R-E-S-P-E-C-T *Carlton*" (emphasis added). Also, she includes Carlton's subject line ("A beating") in the text of her entry – "You don't have to "Smack a Kid" or give them *a beating* just to teach them what they need to learn" (emphasis added). Interestingly, "Smack a kid" refers to the subject line from Carlton's entry in a different thread on the "Thank You, M'am" Forum, thereby providing added compositional significance. In this way, Beth provides an example of explicit compositional significance in which the respondent refers directly to another user and to ideas in that user's entry. Compositional significance may also be embodied in the subject line of an entry. For example, the subject line in Michelle's entry (2) above represents compositional significance by repeating Beth's subject line and adding a single word – "When you give respect you may also receive it...*Agreed*" (emphasis added). Michele's subject line not only identifies Beth's entry as its parent but also conveys the perspective of her own entry in responding – namely, agreement.

Examples in the preceding paragraph are relatively explicit as to author and antecedent content. Compositional significance can also be *implicit* in that an entry may respond topically to a parent entry. Rather than directly citing the author or quoting the content of the parent entry, users may achieve compositional significance by expressing thematic relevance to what is stated in the parent entry. Carlton's entry (10) is an example of implicit compositional significance.

> **(4) Re: A beating**
> **BY BETH -** Monday, 09:25 AM
> It's called R-E-S-P-E-C-T Carlton. You don't have to "Smack a kid" or give them a beating just to teach them what they need to learn....
>
>> **(9) Re: Respect**
>> **BY LANEY -** Monday, 09:37 AM
>> I completely agree with you. It's just like when a child does something bad. The parent can either spank them, or sit them down and explain to them what they did wrong and why they are going into time out. There is a better way of learning a lesson then by getting it "spanked" or "beat" into you. I think talking is a perfectly good way of getting the point across. And once a child sees that you are being kind and civil to them, they will pick up those characteristics as well. What do you think?
>>
>>> **(10) Re: Respect**
>>> **BY CARLTON -** Monday, 09:40 AM
>>> But the problem is what if the kid won't listen to the parents?
>>> Then what are you supposed to do to them?
>>> You can't really try to explain again because they will just ignore you.

In his entry (10), Carlton does not name Laney nor does he explicitly declare that he disagrees with a specific statement in her entry. Instead, he takes up the theme of evaluating verbal discipline. The entries are related topically around “talking” (Laney) and “listening” (Carlton), the parent-child or kid relationship, and the usefulness of “explaining” wrongdoing. Although Carlton does not name Laney or quote her content, relating his entry (10) to its antecedent is not nearly as inferential as his earlier entries (3, 5, and 7, above) that relied entirely on structural significance – for example, “THAT BOY DESERVES A WHIPPING OF A LIFETIME :P.” Nevertheless, Carlton is not as explicit as the earlier examples by Michelle or Beth in identifying the antecedents of his own writing. Compositional significance does not require explicit identification of its parent entry. However, as the acknowledgement of significance becomes less explicit, the risk increases that meaning will also be less clearly articulated for the writer as well as the reader. As Duffy et al. (1998) and Perkins (1997) suggest, discussion is often hampered by respondents’ failure to specify let alone explain the connection between their own statements and the preceding contribution of another. Compositional significance is intended to combat this shortcoming by describing that connection. Numerous others have made the case for writing as a path to understanding one's own thinking (Britton, 1972; Murray, 1984, 1996; Zinsser, 1988). In text-based, online discussion, when writers are explicit in identifying significance, it may assist them as well as their readers to represent their understanding with more detail. In this way, degree of specificity in compositional significance may affect the quality of online discussion.

The above examples illustrate how compositional significance may be more or less explicit in identifying its antecedent. Compositional significance may also be more or less sophisticated in developing the connection it recognizes. For example, Carlton's entries (3), (5), and (7) were not just inexact in identifying their antecedent. They were also simple position statements. He did not articulate the relationship between his position and Beth's, nor did he explicate the relationship with supporting evidence. Michelle's entry (1) was explicit in acknowledging Beth as well as the content of her entry, but Michelle made a relatively simple and undeveloped connection. She did not exemplify or otherwise add to the topic that Beth had introduced. By contrast, Beth's entry (4) and Laney's entry (9) are examples of deeper compositional significance that not only identified but also extended the discussion with illustrations that either counter (Beth) or reinforce (Laney) the parent entry.

> **(4) Re: A beating**
> **BY BETH** - Monday, 09:25 AM
> It's called R-E-S-P-E-C-T Carlton. You don't have to "Smack a kid" or give them a beating just to teach them what they need to learn. If that was the case then a lot of people would be getting beaten. Like that commercial that shows how people are helping each other and then another person sees and wants to pass on the help to another – it's like that. She wanted to help him not hurt him.

> **(9) Re: Respect**
> **BY LANEY -** Monday, 09:37 AM
> I completely agree with you. It's just like when a child does something bad. The parent can either spank them, or sit them down and explain to them what they did wrong and why they are going into time out. There is a better way of learning a lesson then by getting it "spanked" or "beat" into you. I think talking is a perfectly good way of getting the point across. And once a child sees that you are being kind and civil to them, they will pick up those characteristics as well. What do you think?

In entry (4), Beth stated how her position is different from Carlton's ("It's called R-E-S-P-E-C-T..."), and Beth provided an authoritative example of how the helpful approach she advocates has extended benefits ("that commercial that shows people...pass on the help..."). Similarly, in entry (9) Laney added context to her argument by introducing parental discipline and the time-out option. In each of these reply entries, the response was not simply longer, nor was it repetitive. Instead, Beth and Laney composed entries that demonstrated the depth of significance they had attached to the parent entry by making a relevant and substantive addition to the original point. Beth, for example, disagreed with Carlton, and despite his short answer she countered with new evidence. Laney agreed with Beth, and yet she strengthened the argument with added support. In each case, the text of the reply achieves richer compositional significance and thereby enhances the discussion.

In this study, I define rich compositional significance as an entry that not only identifies its parent textually. It also either includes multiple points of reference to its antecedent or it modifies, extends, or contends with the position expressed by its antecedent. I have already noted how explicit textual significance may assist writers as well as readers to deepen online discussion. By definition, achieving rich compositional significance represents a level of sophistication that enhances the quality of online discussion. As explained, online discussion is an inquiry process involving exploration of new information and integration of emerging ideas. Compositional significance represents users' efforts to assist each other through these stages of inquiry. Throughout this discussion, compositional significance has been correctly situated as response to a parent entry or antecedent. It should be clear that the quality of compositional significance may be influenced by its antecedent. That is, in the course of any inquiry through Forum discussion, creating a context for significance includes attention to how antecedents *invite* response in the composition of their text. Therefore, it is reasonable to ask what characteristics of Forum entries may tend to invite not just a reply but compositional significance from other participants. It may be that the entry subject line creates or contributes to the context of significance by attracting the reader's interest and then the entry invites the response by its content. In the following subsections, I address first the entry subject line and then the Forum entry as two elements of Moodle Forum entries that primary informants identified as inviting response.

### *Creating Entry Subject Lines that Invite Compositional Significance*

From the outset, this study has represented online discussion as interactive inquiry between participants. Compositional significance represents the consideration of others that is elemental to this inquiry process. Compositional significance not only communicates attentive response but also supports the thoughtful response of others. Forum structure may point out significance, but users' reliance on structural significance jeopardizes the quality of their discussion. In this study, Ms. Hawthorne and I designed instruction to assist students in achieving compositional significance. In particular, we emphasized the composition of Forum entries and entry subject lines that acknowledged their antecedents and were sufficiently detailed to clarify the relationship of their own thinking to that of others.

Entry subject lines were included in this study as an underutilized design element. My experience as a technology integration coach had indicated that users were apt to compose generic subject lines (e.g., "My reading response") rather than subject lines specific to the content of their entry (e.g., "How Gatsby reminds me of Boo"). Moreover, I found that in reply entries users routinely accepted rather than personalized the default subject line provided by the Forum application. In other words, evidence of significance existed only because the Moodle Forum's design achieved it for the user. What the findings reported in this section confirm is that following our instruction participants used original rather than generic or default subject lines to achieve rhetorical objectives. Put simply, users' entries showed evidence of utilizing the text of the entry subject line to acknowledge the antecedent and to invite reader interest.

The protocol that Ms. Hawthorne and I introduced was that subject lines should be "appealing and informative." That is, our instruction emphasized that subject lines should capture a potential reader's attention and/or relate an entry to the text of its parent entry. To determine how the composition of subject lines compared with the expectations of this protocol, I analyzed Forum transcripts for the duration of the study following introduction of the "appealing and informative" protocol. In general, subject lines may be divided into five functional categories. Four of these categories are illustrated in an excerpt from a discussion that Norman initiated in period six during the *Gatsby* Forum over chapters four and five (Figure 4.5).

The first functional category for entry subject lines is *restatement* – that is, a subject line that either restates the assignment (e.g., “My reading response”) or copies verbatim the subject line of its parent entry. In Figure 4.5, Ellen illustrates restatement in entry (2), where she simply accepted the default subject line provided by the Moodle Forum application. The second functional category of subject lines is *reaction*. In our discussion of Forum entry quality during week three, Ms. Hawthorne and I distinguished reaction as an evaluation or emotional expression following another entry – for example, “I agree!” or “Nice entry!” (see Figure 4.1). Similarly, Jean’s subject line in entry (3) (Figure 4.5) identified her evaluation of Ellen’s entry (2), but did not indicate where she intersected in her thinking with Ellen. Restatement and reaction are the simplest and most generic categories of subject entry lines.

The third and fourth functional categories for subject lines relate directly to the protocol of “appealing and informative.” Subject lines that *appeal* are oriented toward attracting the attention of potential readers in a creative way that does not necessarily involve a substantive connection to the content of either the parent or child entry. For example, Bailey’s subject line in entry (6) used an amusing cliché, “Crocodile Tears,” even though the text of her entry did not accurately conform to the meaning of this phrase (i.e., that Daisy’s tears are insincere). Subject lines categorized as *content* do make a substantive reference to the text of either the antecedent or reply entry. Content-oriented subject lines may also identify the point of connection between the two entries. For example, Valerie used the subject line “Regret” in here entry (7) to identify the position she shared with Matt’s entry (5)—that Daisy is crying because she wishes she had waited for Gatsby rather than marrying Tom.

**(1) *Initiating Entry:***
**Gatsby wants to live "The American Dream"**
by Norm - Thursday, 02:22 PM
Gatsby moved into West Egg. He knew that Daisy lived close by. Is it just a coincidence that Gatsby bought a house directly across the water from Daisy or did he do it for a reason? He is the one who chose to come back into Daisy's life; with the help of his money and Nick he was able to see her again. During the time that they spent at Gatsby's house, she began to cry. “Daisy bent her head into the shirts and began to cry stormily.” (98). Why is she crying?

> **(2) *Restatement:***
> **Re: Gatsby wants to live "The American Dream"**
> by Ellen - Friday, 02:19 PM
> This is a very good question. I think that she is crying because she is torn. Maybe she made a wrong decision, or she now knows that she is still in love with Gatsby. Maybe she sees that she would be happy with Gatsby, and not Tom. We really do not know what is going on in Daisy's head. She doesn't make it clear, and there aren’t any hints to see what she might be thinking.
>
> > ***(3) Reaction:***
> > **Re: True**
> > by Jean - Saturday, 02:28 PM
> > What you said is very true about Daisy not showing how she felt. I believe she is confused and may never figure out what she really wants.
> >
> > ***(4) Content:***
> > **Re: tears of joy**
> > by Norm - Saturday, 02:58 PM
> > No we don't get any hints at all. We understand that she is happy. I believe that she is crying due to being so happy. Imagine if you had the love of your life and you saw her for the first time in years. What would you be like? Would you be so happy that you would be in tears of joy?
> >
> > > ***(5) Restatement, Content, Appeal:***
> > > **Re: tears of joy…*Not***
> > > by Matt - Sunday, 09:56 AM
> > > I really don’t like this girl. I find her VERY fake. I don’t believe she was crying out of pure joy to see her long lost love (who she left almost instantly when he shipped off to war). I think that she realized what she *could* have had if she just stayed loyal.
> > >
> > > But to answer your other question: I would definitely be crying if I had the love of my life and I had seen her for the first time in years. It would be amazing for sure! But Daisy didn’t just lose contact with Gatsby. She left him. I think that makes a big difference.

Figure 4.5. Functions of subject entry lines as illustrated by a discussion thread from the *Gatsby* Forum over chapters four and five in period six.

Figure 4.5. (Continued)

***(6) Appeal:***
**Re: Crocodile Tears**
by Bailey - Sunday, 07:13 PM
I agree with you. I think she realizes that she's made a mistake. She left Gatsby when he went to war for Tom, a man who came from money. And then, Gatsby STILL chose to find her and reconnect with her...And he has money! All that he does, he does for her in one way or another. I wonder if Gatsby chose to become so wealthy *for* Daisy because he knew that all she cares about is wealth, looks, and standards? I don't see why Gatsby would even want to see Daisy again in the first place. He's got this image of her in his head of this perfect person who can't ever do wrong. Hopefully he will eventually realize how she truly is.

***(7) Content:***
**Re: Regret**
by Valerie - Monday, 04:23 PM
You might be right Matt. I had completely forgotten that she left him when he went to war. She probably was crying because she regrets leaving him and she probably wishes that she just would have toughed it out while he was at war…waited until he came back, and lived happily ever after.

The fifth functional category of subject entry lines is *rhetorical*. Rhetorical subject lines indicate moves in the text of an entry to influence the course of discussion, most commonly by asking a question that takes the discussion in a new direction. Evidence of rhetorical subject lines was rare during this study, but one example occurred in “Keeping a low profile,” a period six *Gatsby* discussion of chapters two and three. This discussion addressed why the character of Gatsby might choose to remain aloof from guests at his parties and keep his background a mystery. Late in this thread, Norman titled his entry “Re: Why do we need to know about Gatsby in the first few chapters?” This subject line does convey the content of Norman’s entry—a discussion of authorial intent. At the same time, it signaled a rhetorical shift that Norman encouraged away from considering Gatsby’s motivation and toward examining Fitzgerald’s purpose in structuring the novel.

The functionalities of entry subject lines are *not* mutually exclusive. For example, a subject line may use intriguing language to convey entry content, or a reply subject may restate the parent's subject line with an appealing or informative addition. For example, in Figure 4.5 Matt's subject line in entry (5) combined restatement, content, and appeal. First, Matt accepted the default subject "tears of joy" from Norm's antecedent entry (4). Then, Matt added the word "*Not*" to indicate that on the point of why Daisy is crying, he disagrees with Norman. Finally, by delaying the word "not" to the end, Matt structured his subject line to appeal by utilizing a conversational word order that suggests sarcasm.

The five subject line functions are not mutually exclusive, but they are progressively more difficult to achieve. That is, restatement requires the least amount of original thought, and a subject line that is simply outlandish is easier to compose than one that makes a substantive connection to either entry. Analysis of Forum transcripts for the duration of the study following introduction of the "appealing and informative" protocol revealed that 70-75% of subject lines were original rather than generic or by default. Of these original subject lines, about half were oriented toward appeal, 30% were oriented toward content, and 20% blended the two. In other words, rather than relying on default or generic subject lines, participants seemed to title entries to attract potential readers. Secondarily, their participation indicated that they were also using subject lines to relate the content of reply entries to their antecedent. Rhetorical moves were represented in just 3% of entry subject lines.

During interviews, primary informants seemed to confirm the distribution of subject line functions that entries had evidenced in Forum transcripts. First, primary informants were unanimous in their report that a subject line should be appealing – that is, something that attracts the attention of a reader. All seven primary informants reported that as readers, they gravitated to subject lines that stood out from the rest – that is, subject lines that were clever, funny, mysterious, shocking, or intriguing. Secondarily, four of the seven reported that they favored subject lines that were thoughtful, including showing that the author cared or explicitly asked for a response. Also, four of the seven reported that they selected entries that connected with their interests. Kirk exemplifies how these factors influenced his entry selection for the “Thank You, M’am” Forum. Reviewing the parent replies to which he had responded, Kirk noted:

> Personally, ‘a criminal at work,’ I’m going into the criminal justice field, so that one kind of drew me in. ‘A beating,’ I mean, kind of just sucks you in there, something about a beating, you kind of went, *What?* ‘Smack you kid’ is funny. And, ‘What would you have done,’ that’s an automatic win because it’s your opinion.

Of the subject lines to which Kirk responded during this phase one Forum, he noted those that were successful in attracting his attention: one subject line was directly relevant to his interests after high school, two inspired curiosity, and one solicited his opinion. In other words, his selection represented each of the factors cited by primary informants generally in this study.

Clearly, primary informants found subject lines instrumental in assisting them to select what they read and what might invite their response. In addition, they seemed to transfer this understanding as readers into their work as writers. Six of the seven primary informants reported that they tried to compose subject lines that would stand out from the rest and attract a reader, again by being unique, curious, funny, clever, shocking or otherwise distinctive. In other words, as writers, they seemed to appreciate that their entry would be one of many competing for attention and that the subject line was essential to getting read. As Valerie said, “ I want [my subject line] to look unique and not be like anybody else’s, so they’ll want to read mine.” For these six primary informants, creating the subject line was recognized as a foundational move to make compositional significance possible. That is, subject lines helped to create the context for significance by capturing the attention and earning the consideration of readers. Rhetorically, participants were making their appeal to an audience of one or more, and that audience was respecting the author at least in part on the author’s capacity to make the appeal successfully.

In the post-study interview, Ms. Hawthorne acknowledged the perspective these primary informants expressed on subject lines as fundamental to her pedagogical goals. In her view, considering audience is essential to effective writing, and the entry subject line provided an organizing element that prompted students to address their audience. She stated that subject lines “put audience in the spotlight for these guys in ways that a lot of times it hasn’t happened before because we don’t often have a mechanism for real audience.” In her estimation as well as that of participants, the composition of subject lines was instrumental in initiating the relationship between reader and writer. That is, participants both wrote and read subject lines to assist one another in identifying entries that would engage and invite response. In this way, the text of subject lines helped to create the context for significance and to encourage further discussion.

### *Creating Discussion Entries that Invite Compositional Significance*

In this study, primary informants identified two characteristics of Forum entries that invited their response: an opportunity to disagree and sufficient length to engage them in thought. I have previously addressed the importance of contention as a characteristic of discussion *topics*. In addition, six of the seven primary informants in this study identified the potential to disagree with individual Forum entries as the single most compelling factor in calling forth a response. These primary informants reported that they struggled to respond whenever they agreed with others. In such instances, either they were not able to think of something new and different or the prospect of being repetitive left them disinterested. However, when participants disagreed with another user's ideas, six of seven reported that it was easier to respond. As Beth stated, "It adds fuel to your thoughts if you disagree." While none of the participants referred directly to the concept of significance in individual interviews, all but one identified contention as essential to response generally.

In this chapter's opening narrative, I explained that during phase one students asked in class for instruction in how to express disagreement in Forum entries and that Ms. Hawthorne and I provided sentence stems for doing so. In addition, without instruction from their teacher or me, students themselves introduced a strategy of beginning entries with a statement of agreement before introducing a point of disagreement. In the following excerpt, the shaded portion of Laney's response is an example of this pattern.

> **(10) Re: Respect**
> **BY CARLTON -** Monday, 09:40 AM
> But the problem is what if the kid won't listen to the parents?
> Then what are you suppose to do to them?
> You can't really try to explain again because they will just ignore you.
>
>> **(11) Re: Listening**
>> **BY LANEY -** Monday, 09:44 AM
>> Yes, there is some truth to that. But if the kid has respect he will automatically listen to the parents. I mean there is some punishment with the talk as well. There are the options of time-out, taking away a toy, taking away television or game privileges, or just no contact with anyone for a half hour or so. But with hitting you can make the kid turn violent, either on you or friends during play. What would you do if the kid starts to hit you back?

In this example, Laney began her reply by acknowledging that Carlton might be partially correct ("there is *some* truth to that") before turning ("But...") to point out where she considered him incorrect. Laney's opening statement of agreement is an expression of social presence that helps maintain a trusting environment before expressing disagreement for a textual claim. This use of agreement and disagreement was a pattern utilized in both class periods and became a standard protocol for introducing alternative positions. Primary informants acknowledged in interviews that disagreement was important to inviting response to Forum entries. In the agree/disagree pattern, participants appear to have devised a protocol for composing entries that assisted them to comfortably introduce disagreement by simultaneously maintaining a trusting social environment.

The second characteristic of individual Forum entries that primary informants identified as inviting their response was sufficient textual length to engage them in thought. I have previously described how, following the first *Gatsby* Forum, the classroom teacher instituted a length requirement in response to entries she considered too short and, in particular, too weak or thin in supporting evidence. I further explained that a majority of primary informants reported that the requirement for increased length challenged their participation: more than half reported that it took more time and effort to read longer entries and/or to compose a response that was itself longer. The increased demand was largely because longer entries required them to process more material, to reference more material, and generally to think longer and in more depth. Nevertheless, five of the seven primary informants reported that the protocol requiring more length was a *positive* influence on their online discussion.

How is it possible that participants could report the instructional demand for length as both negative and positive? Simply stated, these primary informants acknowledged that to the extent they observed the teacher's demand for greater length, it was easier to meet this demand with longer entries from which to work. Of the five primary informants who characterized greater length as a positive feature of an entry, three primary informants reported that reading longer entries provided a greater variety of ideas or more details about a single idea and that this increased information helped them to respond. In addition, the demand for longer entries assisted participants to write entries that provided a richer context for the consideration of potential readers. Four of the five primary informants who characterized longer entries positively also reported that having to *write* longer entries resulted in posts that were more thoughtful and in-depth. Carlton summarized the relationship of longer entries to compositional significance in this way:

> Well, the longer ones take more time [to read], cause if you want to really get in there and see what they're talking about, then sometimes short ones aren't good enough. There's not enough detail or there's not enough explaining to you what they're trying to tell you....and [the length guideline,] it did make me write longer but that was also just thinking about what I'm writing more about, like details and stuff. So like it's a win/win, I guess, or a lose/lose (laughs).

What Carlton expressed was the relationship for him between entry length and significance: more substantive entries ("enough detail or...explaining") encouraged him to make the effort ("to really get in there") of attending with consideration to another writer ("what they're trying to tell you"). In other words, for Carlton longer entries provided sufficient material to justify his consideration – specifically, a context for reading that supported his conceptual recognition of significance whether or not he ultimately referred to the other's writing in his own response. Furthermore, Carlton recognized that as a writer the entry length protocol caused him to include the kind of substance ("details and stuff") that he had identified as important to his own consideration in reading entries. What Carlton characterizes as "a win/win" is a cycle in which sufficiently long and detailed entries create a context that positions respondents to contribute their own more substantive response. As a majority of primary informants reported, the entry length requirement promoted entries that were sufficiently rich to reward their consideration, and it assisted them to compose entries that would merit the consideration of others.

I have previously reported that the length of Forum posts, especially reply entries, did increase after the classroom teacher introduced the entry length protocol. Here, a majority of primary informants identified the teacher's protocol as important to creating entries that were not just longer but also sufficiently detailed and thoughtful to invite response. These findings prompted me to wonder what, if any, evidence there was in Forum discussion transcripts that entry length had supported significance, particularly deeper compositional significance. To address this question, I analyzed discussion threads in each period for the *Gatsby* Forums over chapters two through seven – three Forums immediately following introduction of the length protocol. In this analysis, I identified deep compositional significance as an entry that not only identified its parent textually but also either included multiple points of reference to its antecedent, or it somehow modified, extended, or contended with the position expressed by its antecedent.

Analysis of these *Gatsby* Forums did indicate that longer entries supported deeper compositional significance. Of the reply entries posted to these Forums, 45% achieved deep compositional significance. Of these entries, 90% met the entry length requirement and 76% were made *in reply to* an entry that met the entry length requirement. These findings appear to confirm what primary informants claimed: reply entries that achieved deep compositional significance tended to be in response to longer entries and were themselves apt to have met the entry length requirement.

The excerpt below is from the *Gatsby* Forum over chapters four to five in period six. This excerpt provides an example of increased length achieved by including both textual reference to *The Great Gatsby* and intertextual reference to *To Kill a Mockingbird*, a text these students had read as tenth graders. Shaded portions of this excerpt illustrate rich compositional significance between multiple entries as Bailey and Valerie elaborate and extend the claim that Gatsby's character is reminiscent of Boo Radley.

**Keeping a Low Profile**
***Initiating entry***: Why does Gatsby keep away from guests at his parties? What does he have to gain from keeping such a low profile? Does this fuel speculation about his past?

> **RE: What seems isn't always what is**
> **BY BAILEY -** Monday, 01:50 PM
> No one really knows much about Gatsby, yet everyone goes to his parties. Maybe Gatsby wants to keep a low profile and let all of his life experiences stay private. It is possible that he has a "secret" past life, but it's also possible that Gatsby is just a quiet, contained man. "But I didn't call to him for he gave a sudden intimation that he was content to be alone.."(25). This quote made me get the feeling that Gatsby is more of a reserved person; he likes to keep to himself. At first, Gatsby's character almost reminded me of Boo Radley from "To Kill A Mockingbird." ...I think many people want to know more about Gatsby's life and the skeletons, if any, in his closet but no one will confront him about it.

> **RE: Assumptions**
> **BY VALERIE -** Monday, 02:06 PM
> Wow, great minds think alike!!! This chapter also reminded me of the novel *To Kill A Mockingbird*. In the novel, Boo Radley was a recluse and he didn't feel like going out of the house. People made fun of him, and thought over the top reasons about why he wouldn't come out of the house. In *The Great Gatsby* Mr. Gatsby isn't really seen a lot, and no one knows the real reason as to why he doesn't come out to introduce himself. When I was reading this chapter I seriously thought of *To Kill A Mockingbird*, too!!
>
> > **RE: Assumptions**
> > **BY BAILEY -** Monday, 02:18 PM
> > YAY! I'm glad someone else understands what I'm talking about with that comparison. It really is a lot alike. People have their own opinions about Mr. Gatsby and why he doesn't socialize with people as much as everyone else does. There's rumors going around about him killing a man and being a "German spy during the war."(48) You really don't know what to believe. The same situation was going on in "To Kill A Mockingbird." There were so many different stories going around about Boo Radley, his family, and why he never left his house. But, the only way to really *know* someone's "story" is by getting to know them.

In this excerpt, Bailey begins by tentatively introducing the provisional claim that Jay Gatsby may be like Boo Radley – "...Gatsby's character *almost reminded me* of Boo Radley" (emphasis added). Valerie confirms Bailey's claim about Gatsby's character and extends the claim with two sentences noting how Gatsby and Boo are each reclusive before inviting speculation from others about their background. This, in turn, leads Bailey to reply with her own more detailed and specific examples of how the two are alike. In this excerpt, Bailey and Valerie demonstrate how substantive reference to reading as evidence for a claim may not only make their Forum post longer, it may also provide a hook that assists others to expand their own thinking and composition. In other words, this example illustrates how increased, purposeful length may provide a context for significant response in the composition of ensuing entries.

### Creating a Context for Convergence

Convergence is the act of combining contributions from multiple sources into one's own reasoned position. As with significance, users may achieve *conceptual recognition of convergence* without acknowledging the influence of others. That is, a writer may incorporate what multiple others have said into an entry without explicitly citing the source. Nevertheless, in threaded discussion convergence may be indicated in two ways. First, *structural convergence* may be achieved using the hyperlink design feature of threaded discussion. A user may insert a hyperlink in an entry to create a direct connection and acknowledge an explicit reference to another entry in any Forum thread within a class Moodle. Second, users may achieve *compositional convergence* in the text of an entry by including references to the author or content of other entries – for example, "Although they seem to disagree, I would argue that Matt and Norm are both correct in their analysis of Daisy..." In this example, the direct reference to character analyses in separate entries by Matt and Norm is the foundation for the author's own additional analysis. Multiple references may also be unambiguous without being explicit as to author – for example, "The reference to *To Kill a Mockingbird* reminds me of the comparison made earlier in this Forum discussion to *Huck Finn*." In this example, reference to other entries is identifiable by content rather than by an author's name. In each of these examples, compositional convergence could be confirmed structurally by inserting hyperlinks – for example, the names "Matt" and "Norm" might be hyperlinked to the text of their entries. Each of the examples provided is an introductory statement that indicates relatively simple compositional convergence. Deeper compositional convergence would follow to the extent that the author elaborates, extends, or contends with the connections identified in the two antecedent entries. For instance, does the second example go on to articulate how the reference to *To Kill a Mockingbird* is reminiscent of the reference to *Huck Finn*, and if so does the new entry introduce new points of interest relative to the class reading of *The Great Gatsby*? Either compositional move would deepen convergence.

The concept of convergence and the use of hyperlinks were introduced to students in the Poem and Song Lyric Forum. As explained in the opening to this chapter, students were asked to associate a song lyric of their choice with one poem from a selection that Ms. Hawthorne and I provided, and students were asked to compose a Forum entry that explained the association they saw. Students were then assisted to create hyperlinks in two ways. First, I instructed students to add hyperlinks that connected their entry with the electronic text of the poems and songs they were referencing. Second, Ms. Hawthorne and I asked students to respond to one classmate's initiating entry with a reply that included at least one hyperlink to this classmate's Forum post. Strictly speaking, this introduction to the use of hyperlinks did not require convergence as defined in this study. That is, the Poem and Song Lyric Forum did involve hyperlinks to multiple sources of input (i.e., poem, song lyric, and one classmate's entry), but it did not require connecting multiple entries by other participants. I have previously noted that participants in this study made almost no use of the hyperlink feature that we introduced in the Poem and Song Lyric Forum. During the practice phase, Ms. Hawthorne and I did return to hyperlinks and the concept of convergence with two mini-lessons supported by entry models. However, we did not explicitly require that hyperlinks be used in any Forum during phase two, largely because we were oriented toward more immediate demands of collaborative topic design and the composition of individual entries as well as the continuing failure of students to complete reading and Forum assignments. Across all *Gatsby* Forums in phase two, there were no examples of convergence in period two. In period six, there were at best four examples that might be acknowledged as rudimentary convergence, only one of which included use of a hyperlink. In retrospect, although our sequence leading to the introduction of hyperlinks with an emphasis on convergence seems well-reasoned, the pace at which we introduced convergence appears to have undermined results.

The technical and cognitive demands that convergence presents are significant. As an experienced Forum user, I appreciate the role of convergence in advancing inquiry through online discussion. Moreover, as an instructor I naturally feel a special obligation to model convergence in my own participation. Despite this special interest and experience, however, I continue to find convergence extraordinarily difficult, both complex and arduous to achieve. To achieve convergence, writers must identify multiple entries in a Forum as sources of input. Additionally, participants need to manage and relate these multiple sources, a condition that significantly increases the cognitive demands of response. Simply stated, the more discrete and multiple the sources of information, the more difficult achieving convergence becomes. The complexity of controlling multiple sources of information may also depend on whether or not a *schema* or structure is in place for organizing these elements (Pass, Renkl, & Sweller, 2003). In other words, convergence demands that users organize information (by comparison, contrast, hierarchical order, etc.). The difficulty of achieving convergence increases with the number of entries under consideration, the multiplicity of concepts in these entries, and the extent of dissimilarity among these concepts. In short, convergence in online discussion is a huge conceptual task. Our instruction appeared not to have anticipated the complexity of these demands or provided sufficient practice for the task. In this section, I address elements of technology design and instruction that participants or their teacher identified as tending to confound users' attempts at convergence. Specifically, their explanations pointed to two constraints posed by online discussion in this study: the technical design of Forum navigation and the instructional design of scheduling Forum participation.

### *Forum Navigation as a Context for Convergence*

In phase one exit interviews, all seven primary informants claimed that creating a hyperlink in a Forum entry was technically easy for them. Only Monica admitted that the process was new, though not particularly difficult for her. Nevertheless, in the *Gatsby* Forums that followed, five of the seven primary informants reported hyperlinks as unnecessary or purposeless. These five primary informants speculated that while hyperlinks might be useful for connecting to outside resources in research, they were not useful for connecting to their electronic text of *The Great Gatsby* or to classmates' entries. Transcript data collected during phase two also indicated that no primary informants generated a hyperlink to integrate multiple internal and/or external sources. A key question emerged in this study: Why was an element perceived as an affordance by Moodle designers viewed as a constraint by primary informants?

What convergence requires is a context that enables a user to simultaneously perform two functions: writing a reply entry as well as navigating and viewing others' entries. In order for users to reference the written record of a discussion *while in the act* of composing their own entry, they must be able to move seamlessly between these two venues. If the technology requires users to leave one venue (e.g., writing an entry) in order to undertake the other (e.g., reading other entries), then the design of the technology disrupts attempts at convergence. This is the case with Moodle Forum's default technology. As explained in chapter two, when a user selects the reply option to an entry, a text box opens for composing the reply, and the view of the other entries changes. The parent entry remains visible in its entirety; any other replies to that parent entry are collapsed into "threaded" format in which *only* the subject line of each entry and the name of its author remain visible; and, any other entries in the thread that are not in reply to this parent entry disappear altogether (See Appendix A, Figure A4). In this configuration, a user in the process of making a reply is oriented only toward the single parent entry – a design that supports significance, but not convergence. The point of convergence is to connect outside the immediate parent-child entry relationship, and in this respect the design of Moodle's Forum application does not create a context for convergence.

One primary informant in particular addressed this deficiency in technology design. Evan, the most technologically experienced participant in the study, noted that "[initiating] posts are fine, but replies are a bit more complicated....you have to change the screen so it's a link that you can copy." During my introduction to creating hyperlinks, Evan discerned this problem and suggested an alternative. Rather than navigating away from one screen to access another, he suggested opening multiple browser windows, that is, opening one window for reading Forum entries and a second window for composing the reply text. In this way, users could navigate entries in the

Forum on one hand while simultaneously composing a response on the other. As Evan and I talked later, we determined it would be preferable if Moodle was designed to provide a *floating* text composition box that would ride over the main screen without requiring the user to flip back-and-forth between multiple windows. Among other things, Evan pointed out that under this floating configuration, instead of jumping from one entry to another, users "would be able to not just see [one other entry] but what's around it, as well." In other words, Evan recognized the importance of viewing discrete sources of information in context. He emphasized that even with hyperlinks a reply should explain how and why a linked connection is important. "I'm not trying to belittle the ability to go to outside sources and other posts, but I think taking stuff out of context can be an issue sometimes when it comes to that sort of thing" (Evan). As Evan expresses, convergence is more than connecting isolated points from independent entries. Convergence involves organizing information so that the relationship of ideas is clear. Whether by work-around or by re-design, a technological configuration that displays a participant's composition along with, not apart from, reading and reviewing others' Forum entries would create a context that directly leverages the written text of online discussion to support convergence.

#### ***Scheduling Forum Activity as a Context for Convergence***

Inferential and explicit evidence suggested that the scheduling of Forum activity was a second factor that may have confounded convergence in online discussion. I have previously addressed scheduling as mitigating participation. Informant interviews as well as Forum activity reports indicated that participants in this study did not consider time out-of-class as either available or conducive to their online discussion. In my discussion on depth of entry nesting, I also noted that Tu and Corry (2003) identified duration as one consideration in the design of online discussion. Tu and Corry (2003) point out that a one-week discussion cycle is most common but that a longer time span may be important in fully online environments. Given the lag in asynchronous communication, up to two weeks may be needed to allow for "thorough dialogue" (p. 305). In their discussion of frequency of participation, Tu and Corry (2003) suggest that how users distribute their entries within the discussion cycle may affect the quality of interaction between the participants. A single visit is apt to involve interaction with discussion content but not with their peers or the instructor. At the same time, Tu and Corry (2003) note that too many posts by a participant may overwhelm others and monopolize a discussion (p. 305). For the discussion that follows, I have devised three indicators to measure how participants organized the time they spent in Forum discussion: timing, periodicity, and continuity. These indicators more finely distinguish the complex and sometimes conflicting decisions users make in distributing their entries within a discussion cycle.

*Timing* represents how promptly participants entered a Forum discussion, that is, whether they joined in soon after a discussion opened, or waited until entries accumulated. Timing has a direct effect on creating the context for convergent response. Because convergence is a function of reading and referring to multiple entries, achieving convergence depends to some extent on the number and diversity of existing entries prior to response. If participants enter a Forum discussion early on, they may not be positioned to achieve convergence. There may simply be too few entries to offer sufficient opportunity for multiple connections. A context for convergence requires multiple entries for a user to consider and connect, and this necessarily implies that users come to the Forum late.

In this study, all seven primary informants acknowledged that their Forum participation depended to some extent on the availability of others' posts. Six of the seven primary informants reported some preference in the timing of their participation: two of the six preferred to enter discussion early, two preferred to wait until late, and two reported reasons for participating both early and late. Analysis of Forum activity reports confirmed that with one exception, primary informants generally timed their entry as claimed in their interviews. Interestingly, the reasons these six articulated for timing their participation fell into two distinct groups without regard to their stated preference on timing. The first group included Matt and Valerie who said they preferred to enter early and Carlton who said he preferred to enter late. Each stated that their preference somehow made it more convenient or easier to complete the assignment. As Matt explained:

> I'd rather get in early and get it done, but the way it is, we have to wait on those other kids. I think for most of them it's basically the day before it's due. They just do it at home, the night before or whatever. So you might as well wait till the day before because you can actually reply to people.

Matt acknowledges that his Forum participation is dependent on others' entries. However, in this statement, Matt is oriented toward completing his Forum assignment as expeditiously as possible ("get in early and get it done"). Here, the nature of his language – "we have to wait on those other kids" – suggests that regardless of timing Matt views others as someone to whom he replies and not as contributors to his thinking. In other words, Matt views their entries as instrumental to his schoolwork but not to his learning.

A second group of primary informants included Kirk who said he preferred to enter late and Beth and Evan who acknowledged value in entering both early and late. Rather than being oriented only toward completing their Forum assignments, each of these noted that their own work might benefit from the antecedent contribution of others. Beth, for example, stated:

> If I feel comfortable with the Forum itself, then I will reply right off the bat. If not, then I do tend to wait until I hear what other people have said, and then...I understand a lot more and I feel more comfortable with what I'm going to post.

What Beth expresses is an attitude toward timing that is essential to a context of convergence. First, she acknowledges that others are not simply those to whom she replies but that they may also contribute to her understanding. Second, she recognizes how she is sometimes positioned to participate early, a necessary role to building the context for convergence by initiating conversation. Finally, she recognizes how later participation may take advantage of this context by assisting her to respond in a more informed way. While it is true that an accumulation of entries is required for users to achieve convergence in later Forum visits, as Beth recognizes, it is also necessary to establish the context for convergence by contributing entries during earlier visits.

Tu and Corry (2003) list “frequency of participation” as a consideration for instructors in organizing online discussion. *Periodicity* is an indicator that represents frequency as the number of visits users make to a discussion Forum to read and/or write. The design of Moodle Forum allows an administrator to trace when students visit the

Forum – for example, whether a student visits the Forum only once to complete assigned work or returns on multiple occasions to read and/or write. In this study, six primary informants acknowledged timing as a factor in their response, but only Evan and Beth reported that periodically checking back was elemental to their participation. The five remaining primary informants did not view periodic response as central to Forum discussion. Two primary informants reported that they liked to go back to a Forum but only to see if anyone had responded to their own entries, and two primary informants explicitly stated that they preferred to go onto a Forum one time and get their work done.

In this study, I calculated both class averages and individual averages for periodicity across the "Thank You M'am" and *Gatsby* Forums. This calculation was made by dividing the total number of occasions on which participants signed on to these Forums by the number of Forums in which they participated. For example, Evan made a total of eight visits to these six Forums (i.e., 2 + 1 + 2 + 1 + 2 + 0 = 8). Only those Forums that he visited are included in the calculation. Therefore, Evan's average periodicity across these Forums was 1.6 (8 / 5 = 1.6). A periodicity of "1.0" would indicate that a user made only single visits to these Forums, a periodicity of "2.0" would indicate an average of two visits per Forum, and so on. In this study, Forum analysis revealed that average periodicity was 1.5 in period six and 1.6 in period two. As indicated in Table 4.6, median periodicity for the seven primary informants was comparable to median periodicity across the larger sample of 20 participants.

Table 4.6. Median periodicity across "Thank You, M'am" and *Gatsby* Forum discussions.

| | **Period 6** | **Period 2** | **Combined** |
|---|---|---|---|
| Primary Informants (7) | 1.3 | 1.6 | 1.4 |
| All participants (20) | 1.25 | 1.5 | 1.4 |

An affordance of Moodle Forum is the evidence it provides regarding participation, not just to researchers but also to practitioners and others (e.g., students, parents, administrators). In this case, it was interesting to note that what primary informants reported in interviews did *not* coincide with their Forum activity. In period two, Beth and Evan reported that participation both early and late was important, yet their periodicity was 1.4 and 1.3, respectively—both below the class median. Valerie and Carl, on the other hand, reported a preference for making only one visit to a Forum, yet the periodicity for each was 1.8—above the class median. Matt and Kirk reported that periodicity was not particularly important, but they did like to check back to see if anyone had responded to their own entries. Nevertheless, their periodicity was below their class median at 1.2 and 1.0, respectively. These findings regarding periodicity corroborate my pilot study: what students report about Forum participation does not necessarily reflect what they are doing.

The relationship between periodicity and convergence is not direct. An individual user might achieve convergence during a single visit, especially a visit timed to occur later in a Forum discussion when sufficient multiple entries are available for consideration and use in constructing a response. However, in all probability a pattern of single visits across a group is not conducive to creating a context for convergence in Forum discussion. The cycle of inquiry as depicted in chapter two is characterized by two recursive practices. In the middle phases of exploration and integration, participants move back and forth between divergent and convergent thinking, and they move into and out of group discussion, alternating between their own private reflection and interaction with other group members (Garrison et al., 2001). There are no established benchmarks for periodicity, but some measure of recurrent participation would appear to be important in carrying out this inquiry process. In this case, Ms. Hawthorne appears to have considered periodicity a significant contributing factor in participants' failure to achieve rich discussion. Of the three scheduling elements that support convergence, this classroom teacher identified periodicity as her biggest concern. She was not satisfied that students were returning frequently enough over the course of a Forum discussion. In her estimation, even those students who were conscientious about Forum assignments viewed the Forum strictly as schoolwork. They posted entries as assigned but did not seem to exhibit motivation beyond task completion:

> Getting them back to the Forum to look at replies is the issue. Once they have posted, I'm pretty sure they all think they're done. They don't have any reason, there is no motivation, there is no intellectual curiosity. It's a lack of, I don't want to say taking it seriously, because some of them do take it very seriously, but it's the way they view it....the way they look at a lot of schoolwork. It's an assignment [that] exists in this artificial construct of school, it's not real. So, I need a mechanism, some assignment that requires them after a certain period to go back, and look at this or look at that, to do something, because they're not going back.

Ms. Hawthorne recognized convergent thinking as integral to authentic discussion, that is, discussion in which participants are genuinely invested in exploring what others have to say on their way to a reasoned position. Moreover, she endorsed periodic contributions over time as central to achieving convergent response. Her concern was that these students did not seem to consider attending to others over time let alone convergent thinking as vital to their involvement. In her view, the problem was not that students are careless about Forum discussion "because some of them do take it very seriously." Rather, it was a matter of the way in which students have come to understand the nature of school. Perhaps as a result of years of schooling, participants were simply oriented toward task completion in such a way that orienting instead to learning from one another may have been a foreign request for which the purpose was unclear.

Tu and Corry (2003) state that frequency of participation is apt to be "overlooked" by practitioners as an instructional consideration (p. 306). These researchers maintain that unless students are required to participate both early and later in a discussion, they may interact with content but they will not interact with peers or their teacher in ways that help to construct understanding. In this study, Ms. Hawthorne identified structural protocols, specifically the entry length requirement, as instrumental in introducing students to the benefits of an instructional objective. In the above statement, she not only acknowledged the importance of periodicity but also indicated that an instructional requirement might be similarly effective in assisting students to achieve convergent response. In other words, she contemplated a protocol that would require periodic response as a way of introducing participants to a strategy she considered essential to quality discussion. As regards the scheduling of Forum activity, only two primary informants, Beth and Evan, consistently characterized other users' entries as important to formulating their own response. In considering timing and/or periodicity, the other five in some way depicted others as essential to completing rather than contributing to their assignment – a view that aligned with Ms. Hawthorne's account. Nevertheless, in discussing other interview topics, six of seven primary informants reported that classmates had somehow influenced or helped their understanding during Forum discussion. In addition, participants did evidence a higher level of periodicity on the "Thank You, M'am" Forum that they had identified as particularly engaging. It may be that sufficiently relevant or contentious discussion topics rather than a structured assignment are needed to engender periodic Forum participation. The extent to which additional protocols may assist users to achieve quality online discussion will be addressed more broadly in chapter five. Here, it is sufficient to note that while primary informants may not have connected periodic response to purposeful, convergent thinking in this case, there is no evidence to indicate they might not do so given additional or different instruction.

The third element of scheduling is *continuity*. Unlike periodicity, which involves returning to a discussion on multiple occasions, continuity involves reading multiple posts in a Forum discussion during a single visit. What sufficient continuity provides a user is a degree of immersion necessary to detect connections across a thread or Forum. Even if participants frequent a Forum over time (periodicity), if these visits are short or involve reading only one or a few entries, users may not integrate enough sources to support convergence. In chapter two, I introduced the "unread entry pattern" in which participants return to a Forum and read only those entries they have not previously read.

This is a particular pattern that disrupts continuity by discouraging participants from taking earlier as well as new entries into account. In my own experience as a Moodle Forum user, I have not been able to achieve convergent response without continuous reading of multiple entries within an uninterrupted Forum visit. Moodle activity reports do not indicate the specific entries or number of entries that a user views during a visit to a Forum. It was therefore not possible to quantify continuity in user participation.

Two informants did report that they routinely read all of the entries on every Forum in their class – Valerie in period six and Beth in period two. This represents a foundational move toward continuity. Reading multiple entries is a prerequisite for incorporating those entries into one's own position. Beth, for example, explained how she read and wrote in a fashion that supports convergence:

> I tried to read all the entries as much as I could, so I could get a sense of what everyone else was feeling, and then if I felt like I had a strong enough reply that actually went with what everyone was saying, and also put my own opinion in there, then I would reply.

In the follow-up member checking interview, Beth confirmed that when she immediately understood a topic and had a response, she would enter the Forum and post an entry without waiting to read others. However, when she did not understand a topic or have a response, she would enter the Forum and read a variety of responses to assist her in constructing an entry. She claimed that she would draw on points from those other entries in composing her own. As previously noted, students may undertake convergence without acknowledging other entries that have gone into their own posting. Although not reported by other primary informants, Beth's description illustrates how continuity can play a role in convergent response.

### Conclusion

In this section, I have recounted what participants reported as well as what they demonstrated in their Forum activity regarding the use of Moodle Forum to achieve significance and convergence in online discussion. In the first subsection, I introduced the concepts of structural and compositional significance. I explained how a user's reliance on structural significance may weaken discussion while compositional significance assists writers to enrich discussion. Specifically, I identified entries with sufficient length and contention as well as original entry subject lines as instrumental to inviting significant response. In the second subsection, I addressed evidence regarding participants' failure to achieve convergence in Forum entries. I explained how Forum navigation encourages attending to single rather than multiple entries. I also explained how organization in the timing, periodicity, and continuity of Forum participation may have worked against convergent response.

In the first analytical section of this chapter, I explained how user participation was subject to multiple influences. That is, engaging in Moodle Forum involved more than just posting a number of entries. Similarly, findings in this section indicate how achieving significance or convergence was subject to an array of factors. The central finding was that participants achieved significance but that convergence was minimal. Additional findings demonstrated that *achieving* either rhetorical feature involved more than simply recognizing the concept. I now turn to the role of teaching presence as it relates to the degree of participation or quality of discussion in this study.

## Enactment of Teaching Presence in Threaded Discussion

In chapter two, I introduced teaching presence as a condition central to the Community of Inquiry model for online discussion. Teaching presence encompasses the functions traditionally associated with the position of an instructor, namely designing and managing the educational experience (Anderson, et al., 2001). In chapter two, I also argued for a distinction between teacher presence (TrP) and teaching presence (TgP). TrP (teacher presence) signifies the person of the instructor in online discourse, whereas TgP (teaching presence) represents the functions of an instructor without regard to who performs those functions. This section addresses the third sub-question in my study: How does an introduction to the design elements of Moodle Forum influence participants' *enactment of teaching presence* in threaded discussion? A central issue underlying this question is whether teachers reserve the functions of teaching presence to themselves and/or release ownership of these functions to students. This section reports evidence on this issue in three subsections. The first subsection relates evidence of the teacher's presence – that is, the degree to which the teacher, Ms. Hawthorne, participated in Forum discussions. The second subsection reports evidence on the participants' and teacher's enactment of teaching presence, and the final section addresses factors that appeared to mitigate the teaching presence assumed by participants. Sources of evidence included Forum discussion activity reports and interview reports of primary informants.

### Evidence of the Teacher Presence (TrP)

This subsection is concerned strictly with the extent to which Ms. Hawthorne took part in Forum discussions as indicated by Moodle activity reports and the perceptions of primary informants. A teacher's participation is considered central to online discussion in two respects. First, participation in online discussion is an opportunity for the teacher to direct the course of the discussion. Directing, for example, includes encouraging some lines of discussion and discouraging others, introducing material not typically available to the participating students, or identifying effective and ineffective student responses (Anderson, et al., 2001). Second, teacher participation is an opportunity to indirectly influence discussion by modeling appropriate user behavior and rhetorical moves (Anderson, et al., 2001; Garrison, et al., 2000). Therefore, in addition to reporting primary informants' perception of their teacher's frequency of participation, I will also report their comments on whether and how her participation was important to them as Moodle users.

Simply stated, Ms. Hawthorne's number of Forum entries in Forum discussion over the duration of this study was limited. In phase one, Ms. Hawthorne posted a total of five entries to the four instructional Forum discussions, and in phase two, she posted a total of three entries to the five *Gatsby* Forums. Primary informants seem to have recognized the limited degree of their teacher's presence, but did not seem to have been troubled by it. When asked to "describe Ms. Hawthorne's participation in Forum discussions," two of the seven primary informants explicitly reported that "she really didn't participate that much," and five reported that they could not *remember* her participating. However, no primary informant expressed being upset, disappointed, or otherwise critical of Ms. Hawthorne's participation. Instead, primary informants tended to explain her degree of participation within the context of their learning environment. Kirk, for example, pointed out that her participation online was not as important because the class was using both Moodle and classroom discussion where she was "obviously participating a lot." Matt explained that limited participation is Ms. Hawthorne's style even in class discussions. "She lights a match [by introducing an issue or asking a question], and we go from there."

Although primary informants were not critical of Ms. Hawthorne's participation, when I asked them about teacher participation in online discussion generally, four of the seven primary informants did label her participation as important. Of these four, two explained that what was important to them was personal feedback or evaluation. That is, Valerie and Beth wanted to know whether Ms. Hawthorne was satisfied with their work and how they needed to improve. As Beth said, "It doesn't really phase me if she doesn't [participate], but sometimes you like feeling that you're doing a good job, and when she does comment, I feel better because then I feel extremely comfortable with what I'm saying." Monica and Evan spoke in more general terms. They described the role of a teacher as contributing and shaping a discussion in ways beyond the capacity of students. Their views emphasized teacher presence (TrP) as elemental to a discussion. Evan, for example, explained that teachers can play an important role by knowing the material a lot better and pointing out things that will keep a discussion going. Monica said, "I like it when [teachers] participate....Sometimes they notice things that us kids wouldn't notice...and relate things to other things like I never did...It makes me look at things in a different way." Collectively, regardless of the importance they placed on the teacher's participation, the seven primary informants identified three common functions a teacher might perform in online discussion. Two primary informants reported a teacher might raise things students don't know or provide a different perspective. Three noted the teacher might encourage students to get involved or to deepen their thinking. Chiefly, four of the seven primary informants stated that a teacher might get a discussion going or keep it going, largely by asking questions “like she does in class” (Kirk).

For her part, Ms. Hawthorne reported two reasons for her limited participation. The first reason was pedagogical. She made a decision to limit her participation in order to limit her influence. In other words, she hoped that less teacher presence would encourage students to take more responsibility for the discussion. That is, she hoped students themselves would manage the course of discussion rather than relying on her to do so, as they often seemed to do in the live context of the classroom. Anagnostopoulos et. al (2005) identify “de-centering” as a limiting effect on teachers’ contributions in online discussion. *De-centering* is a tendency by participants in online discussion to ignore or otherwise marginalize contributions made by their teacher. In a sense, Ms. Hawthorne was hoping to leverage the effect of de-centering by withdrawing from online discussion from the outset. She hoped that her absence would motivate students who might then feel a greater sense of ownership and responsibility for the Forum discussions.

> My original thought in refraining from participation in the Forums was to provide students with a place where they could learn to carry on real academic discussion of their own. I thought if I was too *present*, the discussion couldn't be anything but “teacher-centered” – that students would see the discussions as just another “hoop” to jump through.

For Ms. Hawthorne, a central objective in learning to discuss literature is for students to take not only an interest in participating but also a sense of responsibility for conducting the discussion. Her position, at least initially, seemed an attempt to distinguish Moodle Forum as a space where students would be less inclined to rely on her to manage the discussion. In her second interview, Valerie made the following observation about Ms. Hawthorne and in-class discussion.

> She's funny because some people don't read the book like they should, and Ms. Hawthorne just tells them everything that had happened, when they should be responsible for what they do, but, I mean, she doesn't want them to do bad, so she just tells everything that happened in the chapter so that helps them in a way, so they'll know what it's about so they can write better.

What Valerie describes is in-class discussion in which the instructor is central to the management and content of discussion. I have previously described disinhibition as the absence in online environments of certain cautious behaviors that typically constrain face-to-face contact, and I have applied this concept to students' willingness to discuss certain topics or choose certain discussion partners. In this instance, the disinhibition characteristic of an online environment may have afforded Ms. Hawthorne the opportunity to press students into taking a degree of responsibility and authority they have not taken in the classroom.

Ms. Hawthorne had a second, more logistical concern regarding her Forum participation. She was particularly concerned about responding to all of her students more or less equally. She did not feel that she needed to respond to each student during each Forum but that she should be careful to do so over the course of a few online discussions. In an interview conducted at the end of phase one, Ms. Hawthorne indicated that she planned to maintain a chart of her responses and reply to students in roughly equal measure across the term of the curricular unit. In addition, she recognized the value of the internal messaging system in Moodle, a function that allows the teacher to send messages to individual students. Ms. Hawthorne indicated that she considered the messaging system a mechanism for providing the kind of feedback and evaluation that Beth and Valerie had suggested. Ms. Hawthorne anticipated that she could periodically comment on students' progress, and more importantly, provide prompt and explicit individual instruction. In Ms. Hawthorne's view, the messaging system would complement her Forum participation, which was oriented toward the group's process, either by direct instruction or modeling.

In her pedagogical objectives, Ms. Hawthorne described what Vandergrift (2002) termed *restrained presence* – that is, a "balance" of refraining from and joining into discussion "that seems to encourage students to make the online class their own" (p. 83). On the one hand, Ms. Hawthorne intended to minimize or step back from Forum participation as a way of encouraging students to take greater control and responsibility. On the other hand, she acknowledged the value of teacher participation in her planned method of individual response. Although Ms. Hawthorne voiced the balance that Vandergrift defined, her participation did not match this objective. Neither routine use of the messaging system for individual feedback nor the charting and regular Forum participation, equally distributed or otherwise, materialized. Various researchers have reported how the demands of teaching in an online environment generally and managing online discussion in particular may involve increased work for the teacher (Bailey, 2000; Kirk, 2003). As Tu and Corry (2003) point out, depending on class size, a tremendous volume of postings are generated that may "overwhelm" the instructor (p. 305). It may be that a formal, albeit self-imposed expectation to respond equitably to all students exacerbated these demands for Ms. Hawthorne.

Ms. Hawthorne's concern for responding evenly appears to have been misplaced, according to primary informants in this study. None of the primary informants reported that it was important for the teacher to respond evenly to all students. To the contrary, two of the seven primary informants recommended that their teacher should respond in a differentiated fashion, either attending to those who needed more help in formulating their discussion entries or encouraging more involvement from students who were not participating. What these two primary informants identified is the affordance online discussion presents for differentiated instruction. The messaging system provides one line of instruction that may be directed to individual students. In addition, the written nature of online discussion provides the opportunity for a teacher to model or coach specific rhetorical moves *in context*, where and when students' conversation indicates the need. For example, if students are not including sufficient textual reference in entries, a teacher may respond by posting an entry that includes textual reference or by posting a reply that asks for textual proof of one or more student claims. In this way, strategic intervention rather than widespread participation may align with Vandergrift's (2002) concept of restrained teacher presence.

### Evidence of Teaching Presence (TgP)

In the preceding subsection, I reported on the teacher's anticipated and perceived participation (TrP) in Forum discussion. In this subsection, I turn to evidence on the enactment of teaching presence (TgP) either by participating students or by the classroom teacher. In online discussion, the functions of teaching presence may be divided into three categories. The *design and organization* category includes teaching that plans and manages discussion structures and activities. The *facilitating discourse* category involves entering the discussion itself in ways that influence the course of the discussion generally or directing individual participants specifically (Anderson, et al., 2001). As noted below, these were the functions that primary informants in this study identified as teaching presence. The third category of *direct instruction* involves introducing subject matter knowledge or discussion leadership skills that are beyond the experience of learners. This subsection is divided into three subdivisions, each of which reports evidence related to teaching presence (TgP) for one of these three categories. In the presentation, I distinguish teaching presence evidenced by the teacher, by participants, and by the interaction of the two.

### *Evidence of Teaching Presence (TgP) for Design and Organization*

The first category of teaching presence is the design and organization of learning structures and activities. I have previously noted that the instructional intervention in this study was oriented toward certain design elements of Moodle Forum, as well as protocols for the use of these elements. As I explained in chapter two, these protocols may be enacted by the teacher or they may be negotiated, either formally or informally, by all participants (Jenkins, 2008). In the first instance, Ms. Hawthorne enacted teaching presence in her instruction of and expectations for the the entry length requirement that she implemented following the first *Gatsby* Forum. In the second instance, students invented the response pattern of beginning a reply entry with a statement of agreement before introducing a point of disagreement. This protocol was originated by students in period six and subsequently adopted by students in period two following a mini-lesson by Ms. Hawthorne. In this instance, the teacher recognized, honored, and disseminated knowledge arising from student users.

The function of teaching presence identified as design and organization included creating the protocols for the use of Moodle Forum and the activities used to introduce and practice those protocols. For example, Ms. Hawthorne and I created the protocol of “erase & replace” by which students substituted an original subject line of their own for the pre-filled subject line provided by the Forum application. In the Interview Forum, we initially allowed students to post their replies without changing the default subject line provided by the Forum application. In this way, we demonstrated how this design feature represented all of their replies with an identical subject line that failed to distinguish the content of their individual entry. With this point established, we then had students revise their initial subject lines to something more original and purposeful. Of the three categories of teaching presence, design and organization is aligned most closely with a teacher’s authority because it is oriented toward planning and preparation that must be undertaken before online discussion can begin. Nevertheless, even the execution of design and organization can be negotiated by more than one individual.

Protocols for online discussion designed and introduced by the teacher were subject to three reactions from participants: acceptance, resistance, and negotiation. “Erase & replace” is an example of a protocol that was received with acceptance, as evidenced both by its level of use throughout the study and by the endorsement of primary informants reported above – namely, six of seven primary informants reported original subject lines as elemental to attracting potential readers. Resistance to the teaching presence of an instructor may be exhibited either by the group as a whole or by individuals or sub-groups. Ms. Hawthorne’s and my enactment of teaching presence in the design and organization of entry hyperlink use was an example of a protocol that was resisted by the whole class in both period six and period two. Following our introduction, participants did not utilize hyperlinks in any of their *Gatsby* Forum entries. In individual interviews, primary informants described hyperlinks as unnecessary and purposeless at least in the manner we had designed.

The entry length requirement is an example of a protocol that was resisted on an individual basis. Evan, for example, reported that the teacher's demand for increased entry length influenced him to participate less readily, and that when he felt compelled to respond, he was apt to ignore the protocol.

> I'm a lot less eager to participate. I will if I feel strongly enough...Half the time, I just say forget you and your stupid ideas of making it longer...I'll go back to my original way of doing things. I'll go in, find something interesting, and write back, but *not* (emphasis added) in the elongated format that she wants. I just let it be shorter.

During his second interview Evan repeatedly identified the entry length protocol as having discouraged his participation in *Gatsby* Forums. As Evan described it, he was capable of explaining himself in a "simplistic way," and when he tried to lengthen entries, it just felt like "rambling." Evan appreciated that Ms. Hawthorne wanted longer posts as a way of encouraging students to put more thought into what they were expressing, but he claimed that "not everybody is like that." He admitted that length had always been a problem for him but maintained that writing longer made his entries repetitive, not more thoughtful. I have already reported how number of entries in *Gatsby* Forums declined among all participants in period two following Ms. Hawthorne's introduction of the entry length protocol. Despite his aversion to this requirement, Evan's number of Forum entries was third highest among participants in this class period. At the same time, the length of Evan's entries increased only slightly (+7%) and fell well below the average for participants in his class. For example, Evan's reply entries averaged three lines per entry versus the class average of nine lines. Although Evan was clear in identifying the entry length protocol as a deterrent to his participation, he did not simply stop participating. Instead, he appears to have resisted the protocol by continuing to post entries that were shorter than the stated protocol.

Ms. Hawthorne seems to have appreciated the point of view Evan articulates. In the post-study interview, she noted that the entry length protocol may have "put some students off." More importantly, she admitted that she herself usually resisted imposing requirements for the length of assigned writing. Instead, she emphasizes how skilled writers adjust the length of their work to suit its objective. In this instance, however, she felt the demand for increased length was central to achieving her pedagogical objectives.

> [Assigning length in writing is] something I had always shied away from. 'How long does it have to be, Ms. Hawthorne?' 'As long as it has to be to say what you have to say.' But in this case we saw how useful it was. When we instituted entry length parameters, they didn't just write more, it wasn't just the length of the entries that improved, it was also the quality, for the majority of the students.

In Ms. Hawthorne's view, establishing a measurable criterion for entry length assisted students to write with sufficient detail to achieve depth in their Forum posts. She maintained, as my Forum analysis confirmed, that what increased in Forum entries was the extent of textual reference. Furthermore, Ms. Hawthorne asserted that students were not simply inserting quotes but were spending more time reviewing the text and relating what they read to their own thinking. The quote above suggests a tension in Ms. Hawthorne's teaching practice. On the one hand, she recognized length as a question of audience and purpose rather than completing an assignment. On the other hand, she considered assigning a minimum length in this instance as instrumental in assisting students to improve their Forum posts.

The instructional intervention in this study did involve instances when students negotiated protocols. It is in these instances that there was evidence of participants' enactment of teaching presence in the design of discussion structures and activities. The three-part entry format was an example of a Forum protocol that was formally negotiated by teachers and students. Ms. Hawthorne and I did not design and impose this format. During week four of the introductory phase, when we entered the discussion of "what makes a good entry" with both periods, we were not planning to arrive at a format or protocol. Rather, we were opening an authentic discussion of what constitute the elements of a quality contribution to online discussion. Admittedly, we approached the subject from our own rhetorical objectives, but we had an equal interest in our students' input. As I have recounted in the opening narration in this chapter, following the "Thank You, M'am" Forum Ms. Hawthorne and I were concerned that Forum posts were both too short and unsubstantiated by textual reference. Therefore, we invited discussion in each period on the elements necessary to a quality Forum entry. In these discussions, students called out their criteria for a Forum entry. Ms. Hawthorne wrote students' ideas on the classroom whiteboard, grouping similar statements together and sometimes adding her own wording. For example, in period six, Matt said, "Make it thoughtful," and

Valerie added, “Make it hearty or beefy.” Ms. Hawthorne bracketed these two ideas and wrote “sufficient to deal with the topic thoughtfully.”

When students’ brainstorming was exhausted, Ms. Hawthorne suggested identifying three groups of criteria to provide a beginning, middle, and end for an entry. Together, she and students assigned each item to one of these three categories. After each class, Ms. Hawthorne posted the results of this exercise to the class Moodle so that students could review the suggestions overnight. The following day, Ms. Hawthorne conducted a second discussion in which students in each class developed one summary statement for each of the three categories. Finally, Ms. Hawthorne was left to merge these summary statements into common wording for both classes. For example, “support your opinion” from period two merged with “make it beefy” from period six to become the question *Where does that thought or opinion come from?* In addition, Ms. Hawthorne asked that they add the sub-question, *How can I refer to the text?* to the second part of the format as a reminder that support in literary discussion should consider their reading. The result of these discussions was an entry format that incorporated students’ ideas as well as their teacher’s priorities. In each period, seven of the ten study participants contributed to development of this protocol.

Developing the three-part entry format was an activity in which teachers and students formally negotiated the design of a discussion protocol. Collaborative topic design was an example of informal negotiation in the context of use. Ms. Hawthorne introduced the framework for collaborative topic design: students would self-select groups of three to four students, each of which would generate and post the initiating entry for one thread in a Forum domain defined by a section of *The Great Gatsby* text (e.g., chapters four-to-five). Groups were allowed twenty to thirty minutes of class time to complete this task. Topic design proceeded according to the instruction provided during week four of the introductory phase, including the use of the sentence stem graphic on “How to Start a Forum Topic” (Figure 4.3). Ms. Hawthorne and I circulated among these groups to monitor progress and to join or assist their discussions. Also, groups sometimes brought their topics or entries to one of us for feedback, although this was not required.

While visiting a group, Ms. Hawthorne and I were apt to introduce guiding questions or invite ideas from different members. However, we did not attempt to direct or impose a conference process on any group. Rather, each group’s design process was negotiated amongst the members of that group. As a consequence, different groups operated in different ways. For example, in period two one topic design group included Beth, Carlton, and Michelle. This group functioned in a cooperative fashion with equal input from all members. In their discussions, different members took the leadership role at different times (e.g., asking a question or suggesting entry wording). A second group that included Laney and other non-participants functioned differently. Laney was consistently the leader, introducing ideas and asking questions to draw contributions out from others. Other members of this group would respond to her leadership, but for the most part they were content to let Laney direct their activity and formulate any final product. Not only did these two groups function differently, but I observed that Ms. Hawthorne functioned differently when present in each group. In the first, more collaborative group, Ms. Hawthorne tended to contribute ideas to the discussion in essentially the same way as the student participants. In the second group, she seemed to assist Laney by asking questions or otherwise attempting to draw other members into the process.

These groups illustrated two points with regard to the enactment of teaching presence in design and organization. First, this was an instance in which students provided teaching presence in organizing topic design – an activity central to online discussion and one traditionally associated with the instructor. These groups were assigned an objective of initiating a Forum discussion thread; however, students were expected to design and organize their own process for meeting this objective. Because these groups were self-selected, members were positioned to function and relate to one another in familiar ways. Therefore, each group readily arrived at its leadership roles. Nevertheless, each group identified one or more individuals to fulfill the teaching presence function in this activity. Second, Ms. Hawthorne allowed each group to determine its leadership as well as its design process on its own. She assisted but did not interfere with any group's design choice. The work product from the two groups depicted here was essentially the same. That is, the entries they composed were approximately the same in length, made comparable use of textual reference, and tended to conclude by posing an open-ended question. Development of the three-part entry format was an example of formal negotiation in which both the instructor, Ms. Hawthorne, and students achieved teaching presence in the design and organization of a discussion protocol. Collaborative topic design was an example of informal negotiation, first between teacher and students in that Ms. Hawthorne permitted students to design their group process for completing the task, and second between students who negotiated their group process and leadership. In each instance, one or more students took that leadership to provide teaching presence in the design and organization of an instructional task.

### *Evidence of Teaching Presence (TgP) for Facilitating Discourse*

The second category of teaching presence is *facilitating discourse*, and this is the category that primary informants appear to have associated with the role of an instructor in online discussion. Facilitating discourse involves posting entries that encourage participation, identify agreement and disagreement, seek consensus or understanding, prompt discussion with comments and questions, set climate, and assess the group process (Anderson, et al, 2001). These functions may be divided into two subgroups. Functions like identifying agreement and disagreement, seeking consensus or understanding, and assessing the group process require a user to consider and relate multiple entries in formulating a facilitative response. For example, identifying or assisting others to reach consensus necessarily involves reconciling two or more positions. The function of promoting discussion with comments and questions, however, is different. This function may be undertaken in response to a single entry or even with regard to no other entry at all. For example, in a discussion of why Gatsby throws lavish parties but keeps a low profile, Laney posted a reply to Beth in which she began by agreeing that Gatsby was not hiding from his guests. Laney concluded this entry by raising a question unrelated to any other entry posted to the Forum: “What I want to know is why Gatsby decided to [introduce himself to] Nick, but then he took Jordan into his library and told her a whole bunch of stuff. Why her?” When asked what functions of online discussion they associated with a teacher, primary informants listed getting students to participate or to go more in depth, asking questions, and keeping the conversation going. In other words, the functions that primary informants identified as teaching presence not only fell into the facilitating discourse category, but they also belonged to the subgroup that does not require convergent processing of multiple entries.

Analysis of the *Gatsby* Forum transcripts in phase two of this study seemed to confirm what these primary informants had claimed. These discussion transcripts contained no examples of facilitating discourse from the category of functions that require consideration of multiple entries. Instead, each entry identified as facilitating discourse was an attempt to keep the conversation going by asking a question (see Table 4.7). Some questions were generic and might have been used with any entry (e.g., What do you think? or Does anyone agree?). Others were substantive in the sense that they were framed around the content of the entry in which they appeared (e.g., Why would Gatsby take Jordan into his library for a private chat instead of Nick?). As primary informants had indicated, to the extent participants achieved teaching presence (TgP) in facilitating discourse, they did so by asking questions in an attempt to promote further discussion.

Table 4.7. Entries that promoted discussion by asking a question that was either substantive or generic in a review of the *Gatsby* Forums during phase two.

| | **Substantive** | **Generic** | **Total reply entries coded** |
|---|---|---|---|
| Period Six | 17 | 16 | 109 |
| Period Two | 13 | 2 | 91 |

Of the seven primary informants in this study, two reported their belief that students were not able to achieve teaching presence, at least not in their class period. Matt explained that students in his Junior Advanced Placement class had taken on the role of the teacher in discussion, “but *not* in this class.” Valerie stated simply, “I can’t see students criticizing others." The other five primary informants reported that students in their class had executed functions that they associated with a teacher. I also asked these five primary informants to identify students they felt had executed these functions. In period two, Evan and Beth, identified themselves as undertaking the teacher's role in these ways. Evan also identified Callie, and Evan and Carlton each identified Laney as undertaking the teacher's role. In period six where Matt and Valerie claimed that students were incapable of teaching presence, Monica identified Bailey. No primary informants identified themselves. In the post-study interview, Ms. Hawthorne identified four students as having attempted teaching presence: Matt and Norman in period six and Beth and Evan in period two.

These identifications by primary informants and the teacher are critical to distinguishing teaching presence in online discussion because of the close association of teaching presence with social presence. The language of facilitating discourse is largely the same as the language of social presence (Anderson, et al., 2001). What separates the two may be whether the author is a teacher or a student. For example, what distinguishes a student's inviting response ("I'd love to hear what others think about this point.") from a teacher's encouraging participation ("I'd like to see more of you weigh in on this question.")? Is it strictly a difference in the author's position as either the teacher or a student? Or, is it a difference in composition, and if so is the language of the preceding example ("I'd like to see more of *you* weigh in...") available to a student? Anderson et al. (2001) recognize that creating an inviting atmosphere for discussion is a responsibility of students as well as the teacher (i.e., social presence). However, they seem to restrict facilitating discourse to the instructor: "...only the social aspects of the teacher's messages that directly relate to the content contributions from the student are included in the teaching presence category" (Anderson, et al., 2001, p. 4). I would agree with Anderson, et al. that teachers have a higher measure of responsibility for facilitating discourse (p. 7). Nevertheless, I would argue, as I have before, that achieving teaching presence by facilitating discourse is represented in the function of the entry, not the designation of its author as a teacher.

Social presence supports participation generally. Facilitating discourse embodies some purposeful objective toward advancing discourse and/or learning. Therefore, while I maintain that facilitating discourse is a function of teaching presence that may be achieved by any participant, including students, I would also allow that to achieve teaching presence requires intent on the part of the participant. In other words, a move that facilitates discourse is only teaching presence when the user is oriented toward advancing the discussion or learning as opposed simply toward promoting a personal position. In the example given above, it is certainly inferential as to whether Laney achieved teaching presence by asking why Gatsby would single Jordan out for a private chat. In terms of the inquiry cycle, Laney may have recognized that discussion in this thread had stalled on repetitive speculation as to why Gatsby might hide from guests at his parties. In response, Laney may have introduced her question in an effort to move discussion in a new direction. If so, this might constitute a purposeful move to facilitate discussion (TgP). It may also be that Laney was simply asking a question that intrigued her as a participant. While distinguishing the intent of Laney's question is inferential, there is clear evidence that she is one of two students whose questions represented substantive attempts to facilitate discussion. From a total of 30 substantive questions in both periods (Table 4.7), Laney contributed six in period two and Norman contributed eight in period six. No other participant contributed more than three.

In considering the facilitating discourse category of teaching presence, the reports of primary informants as well as Forum transcript analysis indicated several results. Across the board, primary informants associated the category of facilitating discourse with their perspective of teaching presence in online discussion. Further, primary informants considered asking questions to promote discussion as the elemental teaching function within this category. In their Forum discussions, participants did not evidence those teaching presence moves that require convergent processing (e.g., identifying agreement and disagreement, seeking consensus or understanding, and assessing the group process). As discussed earlier with the use of technology to achieve convergent response, it may be that the design of Moodle Forum was not conducive to achieving these functions. The move to facilitate discourse that participants did appear to make was asking questions to promote discussion. As discussed earlier with the use of technology to achieve significant response, it may be that the design of Moodle Forum is oriented to support this move by directing the attention of reply composition to the single parent entry. More importantly, it may be that our instruction was oriented to assist students in attending to this particular teaching presence function. To "keep the conversation going" was a specific element of the three-part entry format, and students were provided instruction including sentence stems to achieve this element by asking questions.

### *Evidence of Teaching Presence (TgP) for Direct Instruction*

The third category of teaching presence is *direct instruction*. Anderson, et al. (2001) define direct instruction as two functions beyond the experience of student members in a learning community. First, introducing subject matter knowledge involves providing background information and other content, including information resources, that contextualize or otherwise inform student understanding of a discussion topic. For example, in considering *The Great Gatsby* a teacher might add perspective to a discussion of Daisy's dependence on her husband by explaining economic opportunities available to women in the 1920s. Second, what Anderson et al. term "scholarly leadership" (p. 8) involves directing student thought or discussion in ways associated with academic inquiry generally or a particular field of study. In this case, the most prominent example of scholarly leadership was Ms. Hawthorne's emphasis on the role of textual reference in literary discussion. In chapter two, I argued for a redefinition of teaching presence not as something the teacher does or provides, but as specific functions that any member of a learning community may assume responsibility for if they deem it necessary, particularly to support other less capable members. In this study, evidence was minimal that participants provided direct instruction to their classmates in ways traditionally associated with the classroom teacher. Nevertheless, three findings with respect to direct instruction by participants or their teacher did emerge.

As noted, Ms. Hawthorne's participation in Moodle Forum discussions was limited throughout the study. As a result, her presence as a teacher offering direct instruction during online discussion was minimal as well. Nevertheless, there is evidence that the influence of her direct instruction *in the classroom* did carry over into the online environment. A concept central to Ms. Hawthorne's reading pedagogy was authorial intent, that is, the idea that skilled authors like Fitzgerald do nothing by chance or without thought. Instead, every narrative move or detail of character is purposeful. In support of this concept of authorial intent, Ms. Hawthorne demanded textual reference in classroom literature discussions. She prompted students in class discussion to substantiate what they claimed by explicit reference to their reading. The influence of this appeal for textual reference was clear in students' online discussion. When the entry length protocol was initiated, students met this requirement by increasing the length of the second part of the entry format, that is, by increasing textual reference. Increased entry length was evident in Forum transcripts, and four of the five primary informants who characterized the entry length protocol as a favorable requirement reported that they had lengthened entries by including more of what Ms. Hawthorne called substantiation, especially textual references to the *The Great Gatsby*.

Not surprisingly, one area in which students provided direct instruction to others was technology use. For example, during the development of user profiles and later in learning to create hyperlinks, various students assisted their classmates to complete technological aspects of these tasks. The strongest example of direct instruction in technology use by a student was the instance of Evan, a primary informant in period two who introduced an alternative protocol to compose reply entries that include an internal hyperlink to a classmate's entry. I have previously explained that Moodle Forum is designed to encourage attention to a single parent entry when users open the reply composition box. I have also noted that this design feature complicates a user's navigation between entries in order to install internal hyperlinks. To complete this process in a *single* browser window, users must locate the entry to be linked, copy its URL web address, open a reply composition box, compose the hyperlink text, and highlight and create the link to that text. If users decide to add a hyperlink in the midst of composing a reply, they must post their unfinished entry, search and locate the entry to be linked, and then re-open and edit their posted reply to include the link – a cumbersome process even for experienced users. In my introduction of internal hyperlinks, I used the big classroom screen to display and direct students through these multiple steps. Toward the end of my instruction, Evan who was sitting at a table immediately in front of me, said, “There’s another way you could do this.” When I asked him to explain, Evan stated, “If you open more than one screen, you can write [your reply] in one and use the other [screen] to find whatever [other entry] you want.” Although this made immediate sense to me, I invited Evan to come forward and use the big screen to take his classmates through creating a hyperlink using this method. As with other technical procedures, various students supplemented Evan’s whole class presentation by providing one-to-one assistance to their less capable peers.

Direct instruction by students in the course of their online discussion was minimal. However, it was not limited to teaching technological aspects, but included rhetorical moves as well. The most persuasive example of this involved Matt and Norm in period six. These two students had previously read and studied *The Great Gatsby* in Ms. Hawthorne’s Junior Advanced Placement English class. Consequently, they were privy not only to the text but to thematic subject matter associated with the text. In the following entry, for example, Norman replied to a classmate who could not understand why Gatsby would move to West Egg when “all the rich people live in East Egg.” Norman introduced a theme that Ms. Hawthorne had raised with the Junior class, namely that East Egg and West Egg represent different social strata based on established versus newly-acquired wealth. In this entry, Norman attempted to suggest how this differentiates Gatsby's character from Tom. Shaded text indicates Norman's instructional language directing classmates to attend to the theme of the content he is introducing.

> **Re: Money can change things**
> by Norman - Friday, 02:23 PM
> I liked how you brought up the topic of why [Gatsby] would live in West Egg compared to East Egg. I think that if he moved and lived in East Egg then he would be looked at and many of the rich people would not like him. We have to think about how money plays a role in this. The people that live in East Egg have a lot of money just like Gatsby does, but it's different because Tom and all the other people that live in East Egg have old money. This is, money that is from generations also known as passed down money. Gatsby's money is new money meaning money that he got. Do you see the main reasons behind the new vs. old money? Do you think that if Gatsby had no idea where Daisy lived he would find her?

The symbolic differentiation in setting between West and East Egg was not discussed in the twelfth-grade English class, nor was it discussed online beyond this entry. Nevertheless, Norman's entry represents an attempt to introduce a particular literary analysis of textual content to his classmates, the first function associated with direct instruction.

As a result of their Junior Advanced Placement English course, Norman and Matt also appear to have acquired oral protocols for discussing the text in a manner not evidenced by the Forum entries of their twelfth-grade classmates. As noted, Ms. Hawthorne demanded textual reference in literary discussion in order to emphasize authorial intent, a concept central to her teaching practice. Rather than simply following their teacher's explicit instruction in referencing texts, Matt and Norman instructed classmates in online discussion to observe her requirement and instruction as well. For example, the following post is in response to an initiating entry that asked why Gatsby would choose to live across the bay from Daisy and ended by asking the question, "Is it just a coincidence?" Shaded text indicates language Matt used to acknowledge his teacher and provide direct instruction in authorial intent.

> **Gatsby wants to live the American Dream**
> **Re: How to strut your stuff**
> **BY MATT -** Sunday, 09:57 AM
> I'm going to start this off by saying something Ms. Hawthorne has been saying for a while since we've been reading this book. "F. Scott Fitzgerald did not just throw this book together the night before it was due. He's a great writer and writes with Intent!" Gatsby didn't just happen to find a house that was close to his long lost love, and this house didn't just happen to be *directly* across from her house. He did it to try to impress her. Money is no object to Gatsby. He is trying everything he possibly can to catch the eye of this girl. When Daisy goes with Gatsby into his room and Gatsby shows off all of his material items, Daisy begins to weep. She is an extremely materialistic girl, and is crying because she realizes that all of these things could have been hers. She already is insanely rich, but is so selfish that she would cry over knowing she could have more...Does anyone agree with me?

In Matt's view, the initiating question of whether Gatsby's location was a coincidence is essentially invalid. As Ms. Hawthorne would say, in the hands of a skilled author, nothing is coincidental. Matt made the point that we may disagree on what Fitzgerald's intent was, but we cannot disagree that as an author he had intent of some kind. In this instance, Matt was attempting to *direct discussion* toward a particular concern of literary analysis. As such, his rhetorical move illustrates one indicator of direct instruction identified by Anderson et al. (2001) (See Appendix D).

In the above passage, Matt explicitly invoked the identity of his classroom teacher to accredit his instruction on authorial intent. His "I'm going to start this off by saying something Ms. Hawthorne has been saying" was what Bakhtin (1981) terms "ventriloquation" (p. 293-4). According to Bakhtin, ventriloquation is the act of one speaker expressing the voice of another – that is, "...the process whereby one voice speaks *through* another voice or voice type in a social language" (Wertsch, 1991, p. 59). Strictly speaking, ventriloquation positions the speaker as an agent expressing the meaning of another in both language and intent. In the above Forum entry, Matt cited

Ms. Hawthorne and appeared to both articulate and situate the concept of authorial intent as he believed she would herself. There were also instances in which Matt or Norman expressed this perspective on authorial intent without explicitly citing their teacher. The following entry by Norman, for example, appeared in a discussion of why Gatsby keeps such a low profile, avoiding most guests and essentially absenting himself from his own lavish parties. In this entry, Norman did not speculate as to what Gatsby's motivation might be for his actions. Instead, Norman explained why he believed the author, Fitzgerald, might have positioned Gatsby in this way. Shaded text indicates Norman's reference to authorial intent.

> **Re: Why do we need to know about Gatsby in the first few chapters?**
> **BY NORMAN-** Monday, 05:47 PM
> I think that the author chooses not to talk too much about Gatsby at first because if you think about it we really don't need to know that much about him. In the first few chapters his name does come up but not that often. We have some other names that come up and it helps to know more about them before we know about the great Gatsby. We need to know about Nick and where he comes from. If we didn't know about Nick and Tom, I think we would be confused. The author made it like this for a purpose. I think we will learn and see much more of Gatsby in the next chapters. Think about the book if the author changed things around and we didn't know about say Nick and Tom. Would you be confused as much as I would be?

In this entry, Norman did not cite Ms. Hawthorne directly, let alone quote her as Matt did. Nevertheless, Norman's attention to authorial intent is unmistakeable in his use of "the author chooses" and "the author made [the text] like this for a purpose." In chapter two, I explained how learning is a process of *appropriation* in which the learner does not acquire an exact copy of a cultural artifact or psychological operation. Rather, a learner reconstructs what is acquired through social interaction in a more or less individual way (Wells, 2002). Appropriation is also a term Bahktin used with regard to ventriloquating language. Accordingly, appropriation is a process of moving from what Bakhtin terms "authoritative discourse" to "internally persuasive discourse." Authoritative discourse is relatively dependent, that is, a “reciting by heart” that accepts and relies on the authority of the original voice. Matt’s entry is an example of authoritative discourse in that he acknowledges repeating his teacher’s idea in her own words (“...something Ms. Hawthorne has been saying for awhile”). Norman’s entry, however, may be an example of more “internally persuasive discourse.” That is, he may have achieved a “telling in one’s own words” that represents greater independence in controlling and utilizing what he has acquired from his teacher. In taking the stance that Fitzgerald structured his novel “for a purpose,” Norman took responsibility for the concept of authorial intent without relying on the authority of his teacher, a move that represents increasing ownership of the concept. As Cazden (2001) notes, the internally persuasive word is still “half ours and half someone else’s,” yet it enables the speaker to use the other’s voice in new and independent ways (p. 110).

The extent to which Norman may have appropriated the language and concept of authorial intent from his teacher is admittedly inferential. Nevertheless, there is clear evidence that Norman, and to a lesser extent Matt, attempted direct instruction in their Forum discussion posts in ways their classmates did not. Analysis of *Gatsby* discussion transcripts indicated no instances of direct instruction by participants in period two. In period six, four participants posted a total of nine entries identified as direct instruction. Matt and Norman each contributed two entries identified as direct instruction of classmates in authorial intent. One entry by each explicitly ventriloquated their teacher, and one did not. Monica and Brittany each contributed one entry that referenced authorial intent. Finally, Norman contributed three additional entries identified as direct instruction according to indicators defined by Anderson et al. (2001): one entry diagnosed a misconception, one provided thematic subject knowledge, and one focused discussion on a specific issue (See Appendix D). I have already noted that Matt and Norman were two students that Ms. Hawthorne identified as having achieved teaching presence in Forum discussions. In her post study interview, Ms. Hawthorne observed that having the Junior Advanced Placement background "was a good experience for Norman. It enabled him to take an academic role, a leadership role [in twelfth-grade] that was new for him, and that he did not exhibit [in the Junior class]." Ms. Hawthorne's observation seems to confirm what analysis of Norman's Forum entries suggests, namely, that his Forum participation included attempts to instruct classmates according to knowledge he had acquired in the earlier study of *The Great Gatsby*. In the following section on factors that mitigate student capacity to enact teaching presence, I will address how Matt and Norm were uniquely positioned in their class to provide direct instruction in the study of *The Great Gatsby*.

### *Conclusion: Enactment of Teaching Presence (TgP) by Participants and their Teacher*

In this section, I have presented evidence on the enactment of teaching presence by participants as well as their teacher in each of three categories identified by Anderson et al. (2001). In the category of design and instruction, there was evidence that participants negotiated the design of discussion protocols and the organization of activities both formally and informally with their teacher in the context of the live classroom. For example, the three-part entry format was designed by students and their teacher in formal classroom activity while Ms. Hawthorne allowed students to modify her collaborative topic design structure as appropriate in different small group activity. In the category of facilitating discourse, there was no evidence that participants achieved those functions that require convergent processing of online discussion (e.g., seeking consensus, identifying agreement, or assessing group process). However, there was evidence that participants achieved the facilitative function that primary informants reported associating with teaching presence, namely, promoting discussion by asking questions. As discussed, it may be that the design of Moodle Forum was not conducive to the more convergent functions. It is also true that asking questions as an element of composing Forum entries that keep the conversation going was a part of the instructional intervention. Finally, in the category of direct instruction, there was clear evidence that Ms. Hawthorne's classroom instruction influenced participant's online activity in the degree to which they incorporated textual reference into their Forum entries. Evidence of participants themselves achieving direct instruction in their online activity was, however, limited primarily to Norman and Matt, two students with prior experience with *The Great Gatsby* text in their Junior Advanced Placement class.

Anderson, et al. (2001) maintain that "...it is only through active intervention of a teacher that a powerful communications tool such as collaborative computer conferencing or cooperative learning becomes a useful instructional and learning resource" (p. 5). Certainly, in Forum discussions during this study there were occasions when no student stepped in to provide the teaching presence needed to move a discussion in more sophisticated directions or even to correct a simple misconception. Nevertheless, there does appear to be evidence in this study of participants enacting teaching presence. It also appears that participants' enactment in each category was assisted by their teacher's instruction or modeling of the teaching presence function. In the final section on teaching presence, I now turn to those factors that appear to have mitigated the enactment of teaching presence (TgP) by participants.

### Factors Mitigating Teaching Presence (TgP) by Participants

In the preceding subsection, I described instances in which participants demonstrated teaching presence in Forum discussion. In this subsection, I report evidence related to whether primary informants were positioned or felt they were positioned to assume this role. Certainly, taking on teaching presence depends, in part, on the degree to which students are motivated to do so. In the post-study interview, Ms. Hawthorne indicated that taking up the teacher's role in a discussion can be a challenging expectation for high school students. Developmentally, adolescents may lack confidence that they can design and organize the structure of learning, facilitate discussion, or explicitly instruct others. Moreover, if they possess confidence in their own ability they may still not be motivated to display these functions. That is, students capable of enacting teaching presence may not assume the risk involved in exerting leadership. As Ms. Hawthorne described, "Some [students] have no problem saying, 'Wait a minute...' But others would be reticent to put themselves out there, 'Who am I to say...' Some are ready, and some aren't and may never be, but they could be encouraged to try."

In the post-study interview, Ms. Hawthorne also maintained that to enact teaching presence is about more than interest, self-confidence, or academic motivation. In her view, it's not enough simply to say, "Oh, I want to be a teacher." It is also about the extent to which the context of learning positions students to be a teacher. Ms. Hawthorne stated that as she continues to work with Moodle Forum, she intends to consider how her instruction could assist students not just to participate effectively but also to enact teaching presence. Speaking with respect to facilitating discussion in particular, she explained:

> I think that more of them are able to [lead in discussion] than believe they are, and I think part of the issue is expectation. I'm not sure they understand the role of moderation or discussion leader well enough. I'm going to keep at it—perhaps more front loading...maybe engaging in the Forum fully in the beginning, providing modeling and feedback as well as encouragement, and gradually releasing the students to conduct the Forums independently, or partially independently.

From the outset, a principal objective for Ms. Hawthorne in using Moodle Forum was for students to conduct literature discussion with diminishing dependence on her direction. In this passage, she recognizes that our instruction may not have been explicit or thorough enough to position students to facilitate peers' discourse.

In their definition of direct instruction, Anderson et al. (2001) identify two mitigating factors to students' enactment of teaching presence: lack of subject matter knowledge and lack of requisite scholarly process skills. I would argue that the first mitigating factor, lack of subject matter knowledge, encompasses prior background knowledge, as well as the capacity to access the reading text or other curricular content. Of the seven primary informants in this study, only one, Kirk, reported that the readability of *The Great Gatsby* was an impediment to his engagement, including engagement with peers in online discussion. Two other primary informants, Monica and Evan, did not identify the text as difficult to read, but they routinely failed to complete the assigned reading and were therefore not prepared for timely discussion either in class or online. Three primary informants (Valerie, Carlton, and Beth) reported that at one time or another disinterest in the story lessened their inclination to complete reading as assigned. Along with Matt, these three also claimed that while they did not have difficulty with reading *The Great Gatsby*, they believed the text posed problems for their classmates. Altogether, each of the seven primary informants reported that reading the text was at one time or another a problem for them and/or their classmates. In addition to reading difficulty, I have previously addressed the issue of prior background knowledge as a mitigating factor to general participation. Although Ms. Hawthorne did not agree that the diction or syntax of *The Great Gatsby* was inaccessible for these students, she did recognize a lack of historical background as a challenge to their reading and discussion of this text. In particular, a limited knowledge of the historical period of the 1920s and inexperience relative to more mature or adult themes restricted the scope of discussion topics students were positioned to initiate. Ultimately, these factors appeared to diminish students' capacity to enact teaching presence in any of its functions.

The second mitigating factor suggested by Anderson et al. (2001) is the lack of process skills required to lead discussion in a scholarly domain like literary analysis. In the preceding section, for example, I described instances in which Norman and Matt directed classmates' attention to the concept of authorial intent. As members of Ms. Hawthorne's Junior Advanced Placement class, these students were familiar with the entire text of *The Great Gatsby* as well as related thematic material, and they had prior experience with oral protocols for literary discussion in her classroom. This experience prepared Norman and Matt to direct and facilitate discussion in their twelfth-grade class. For example, they knew from the outset what the implications might be of Gatsby's mysterious character or his living in West Egg. Although Norman and Matt were able to enact teaching presence to a greater degree than their classmates, they were not fully prepared to complete the task. For example, Matt admitted that when he introduced certain ideas from his junior class (e.g., the American Dream theme), his classmates did not take up these ideas, and so he “gave up.” In this situation, Matt either did not have the commitment to continue in the face of peers’ reaction, or he did not have alternative process skills that he could apply in overcoming the initial failure. Forum transcript analysis indicates that the enactment of direct instruction by either Matt or Norman did not trigger discussion from classmates. It may have been that Matt and Norman did not have adequate skill to engage others. It may also have been that as students their authority was not sufficient to invoke a response from peers, or, indeed, that they were ignored by classmates *because* they attempted to take on teaching presence. In sum, evidence here suggests that participants’ enactment of what Anderson et al. term scholarly leadership may have been mitigated by more than their motivation or prior content knowledge. The extent to which students’ process skills are more or less developed may also govern their preparedness, however interested, to undertake teaching presence.

A final mitigating factor worth noting is the design of the technology. I have previously explained how certain teaching presence functions require convergent processing. Functions associated with facilitating discourse in particular cannot be achieved without considering and relating multiple entries (e.g., identifying agreement and disagreement, seeking consensus, and assessing group process). The design of Moodle Forum does not preclude these functions. However, to the extent users view as cumbersome the steps required to access multiple entries, their inclination to complete these functions can be mitigated.

### Conclusion: Enactment of Teaching Presence

At the beginning of this discussion of teaching presence (TP), I introduced the concept of de-centering, a tendency reported by Anagnostopoulos, et al. (2005) according to which participants in online discussion ignore contributions made by their teacher. In this case, Ms. Hawthorne's limited participation in the online context of Moodle Forum prevented investigation of that tendency. However, Anagnostopoulos, et al. also report the countervailing tendency of participants in online discussion to act according to their vision of a "generalized teacher present in the prescribed tasks" (p. 13). That is, while participants in their study may have marginalized their own instructors they continued to observe familiar instructional habits. Anagnostopoulos, et al. was a study involving ten graduate students in the online course "Teaching Literature through Discussion in the Middle Grades." Members of this course were teachers from various locations, although six of them were simultaneously enrolled in a face-to-face cohort with these researchers. Assignments in the online course included asynchronous discussion in response to assignments that included a brief topic introduction followed by a list of questions based on related course readings. Anagnostopoulos, et al. found that students tended to import "recitation, a conventional, teacher-centered discourse" model into their discussion entries (p. 12). That is, they structured their discussion posts by re-stating and then answering in order the questions their instructors had listed in the assignment. In sum, these students appeared to have simultaneously ignored the individual postings of their teacher, yet conducted themselves in accordance with what they perceived to be the expectations of their instructor or instructors generally. My own study took place in a face-to-face classroom where students shared the instruction of the same classroom teacher. For most, this was their third year in this teacher's classroom. It is therefore reasonable to expect that participants had a clear and consistent understanding of Ms. Hawthorne's expectations regarding literary discussion. Consistent with Anagnostopoulos, et al., then, it is reasonable to expect that without regard to Ms. Hawthorne's online participation, these participants would import to their Forum discussions common practices based on her classroom instruction and example.

The findings reported in this section do appear to confirm that to the extent participants enacted teaching presence it was in accordance with their teacher's classroom practice. With respect to facilitating discussion, participants promoted discussion by asking questions, the one function in this category that was emphasized in their teacher's instruction. With respect to direct instruction, Matt and Norman seemed to introduce scholarly leadership beyond the capacity of their classmates based on their experience in Ms. Hawthorne's Junior English class. Even with respect to design and organization, participants were assisted to enact teaching presence by negotiating discussion protocols with their teacher in the live classroom. In each respect there is an apparent connection between participants' enactment of teaching presence and Ms. Hawthorne's influence in classroom instruction. At the same time, there was evidence that the design of Moodle Forum may have confounded participants' enactment of teaching presence. Most notably, the design of Moodle Forum does not appear to encourage convergent processing by supporting easy consideration of multiple entries. Consequently, this Forum design tends to constrain participants' enactment of those teaching presence functions that relate to assessing and directing the entirety of an online discussion.

Earlier, in discussing Ms. Hawthorne's limited participation in Forum discussion, I noted that she had hoped to provide a place where students "could learn to carry on real academic discussion of their own." In the post-study interview, Ms. Hawthorne reported that this was still her objective and that she would continue to explore how her instruction could assist students not just to participate effectively, but also to enact teaching presence. In the post-study interview, Ms. Hawthorne characterized her role as a complex balance of online participation and offline instruction. She seemed to rethink her online participation while emphasizing her commitment to complementary classroom instruction, especially with her high school students.

> In some discussions students benefit from going solo, but I can also see how my participation both within online discussion, and then in a debriefing mode in face-to-face discussion afterwards would be very helpful. So, I think it's not that I will always be in discussion or I always won't be...there has to be a combination of the two, at least at the high school stage...Most students at the high school stage are not ready for an entirely online world. For me, the important thing is to have a combination of online and face-to-face for my goals in what they need.

In Ms. Hawthorne's view, face-to-face discussion can be not only a way to prepare students for online activity, but also a way to learn from that activity by "debriefing" their online participation. Elsewhere in the interview, she identified examining student work on the Forum as a teaching and collaborative activity that might take place in the classroom as a bridge between preceding and continuing online activity. While the enactment of teaching presence by participants in this study was limited in most respects, findings reported here support what Ms. Hawthorne suggests: classroom practice may be leveraged to assist students in enacting teaching presence. The above passage recognizes what was not addressed by the teacher's limited online participation here, namely, how online contributions by the teacher may serve to support what is introduced in the classroom.

## Conclusion

In this study, findings emerged in three categories with respect to the influence of instruction on participants' online discussion. Across these categories, findings indicated how online discussion presented a *complex* of elements – that is, a network or interrelated considerations for using and managing Moodle Forum. Beginning with respect to users' degree of participation, three indicators (i.e., number of posts, length of entries, and depth of entry nesting) represented different kinds of user participation as well as different ways for educators to consider and monitor participation. Factors that mitigated participation were present both outside and within the context of online discussion. Two factors were particularly important to creating this context – a controversial discussion topic and the opportunity to interact with others offline in the classroom as well as online in discussion.

The second category of findings involved multiple factors affecting the quality of online discussion, specifically with respect to achieving compositional significance or convergence. In this respect, entry subject lines as well as entries with sufficient length and contention to engage others were instrumental to participants' achieving significance. On the other hand, navigational design as well as the scheduling of Forum activity (i.e., timing, periodicity, and continuity) tended to confound users' achieving convergence.

The third category of findings involved the degree to which participants, including the classroom teacher, enacted teaching presence. In this respect, participating students achieved a degree of teaching presence but were limited in doing so by a lack of subject matter knowledge and by undeveloped analytical skill. The teacher's presence in the classroom influenced ensuing online discussion. However, by her own admission Ms. Hawthorne's absence from online discussion invited reconsideration of how restrained the teacher's presence should be. As with participation and quality of discussion, the results of instructional design and practice with respect to teaching presence indicated the variety and potential interdependence of elements involved in using and learning to use threaded discussion.

# Chapter 5

# IMPLICATIONS

The research study reported here arose from my personal as well as professional experience. The initial trigger was my son, Nick, choosing to text, not talk, in conversation with friends at an all-night charity rock-a-thon. This event inspired my wondering whether and how students might engage with schoolwork if given the chance to use online discussion in a school environment. In a pilot study that followed, ninth grade students evidenced a strong motivation to participate in Moodle Forum. That experience with relatively unstructured use of threaded discussion encouraged me to wonder what might happen if a classroom teacher asked students to do more than simply go online and start talking – that is, what would be the effect of asking students to use Moodle Forum according to certain protocols in support of specific rhetorical objectives.

Coincident with the pilot study, I was learning to use various applications as a technology integration coach. I discovered that my capacity as an educator to apply emerging technologies in diverse and extensible ways was directly proportional to my grasp of those technologies. Realizing that I could rewrite the default subject line in a Moodle Forum reply was a revelatory moment for me, *not* because I had a cool, new technology trick but because I had a powerful, new rhetorical protocol for titling an entry. My experience as a technology coach as well as the pilot study brought me to this research study. On the one hand, I was interested in how structured expectations for the use of online discussion would affect participation. On the other hand, I wondered how informed and explicit instruction in the use of Moodle Forum would affect the quality of online discourse, specifically participants' achieving significance and convergence, two features considered essential to rich online discussion. In the pilot study, the classroom teacher and I had been content to accept the convenience of a default subject line provided by Forum designers. In the study reported here, however, we made more reflective and intentional use of such features.

In this chapter, I discuss implications arising from the findings in chapter four. These implications are divided into four sections: those having to do with online literature discussion, with the use of online discussion in the hybrid environment of a secondary classroom, with online discussion as inquiry in a secondary school, and finally those implications having to do with teaching presence in online discussion.

## Implications for Learning to Discuss Literature Online

Instruction in this case introduced students to certain design features of Moodle Forum as well as protocols for the use of these features. For example, participants learned that they could "erase and replace" the default subject line provided by Moodle Forum, and they were assisted to compose original subject lines that were appealing and informative. Forum transcripts revealed that participants created original subject lines in 75% of reply entries. Moreover, primary informants demonstrated that they understood the rhetorical value of subject lines in selecting which entries to read and in making an appeal as writers to potential readers of their entries. In other words, what had been provided by the Forum application as a structural feature for organizing entries became a rhetorical feature for enriching discussion. In a fashion similar to entry subject lines, Ms. Hawthorne and I introduced internal hyperlinks not only as a tool for connecting Forum entries but also as a way of representing convergence in composing an entry. However, Forum analysis revealed that participants made almost no use of entry hyperlinks despite our repeated attempts to encourage and model their use. Moreover, primary informants described hyperlinks as without purpose or value in referencing their classmates' entries.

Technology integration involves more than understanding and introducing the design features of an application. It also involves formulating and adopting protocols for the use of those design features. Not all of the elements associated with online discussion in this study were built into the design of the Forum application. Entry length and the three-part entry format, for example, were protocols constructed by the classroom teacher and/or students. Forum transcript analysis revealed that each of these protocols was adhered to by a majority of participants, and primary informants by and large reported that each influenced their Forum participation. These constructed protocols appear to have taken on a force equivalent to the design features of the application. Participant response to design features and protocols has implications for achieving significance and convergence in online discussion and for technology integration generally.

### Implications for Achieving Significance

Evidence in this study confirmed that participants did achieve significance in their Forum entries. In practice as well as informant interviews, participants demonstrated that entry subject lines were a convenient, simple, inviting, and effective means to support their attending to individual parent entries. One implication of participants' acceptance of entry subject lines is that the design features of an application like Moodle Forum can effectively support rhetorical objectives to which they are well matched. Furthermore, the better users understand the affordances of an application in the context of use, the more effectively they will be able to use that technology to achieve rhetorical objectives. By design, Moodle Forum provides subject lines as an indexing tool. In this case, subject lines were positioned as a rhetorical feature for assisting writers to direct the content of their entries to an audience. It is clear that a majority of participants both recognized and utilized this affordance. Participants also demonstrated acceptance of constructed protocols like the three-part entry format. Informants acknowledged that this format assisted them to include textual support in their entries. The implication of this response is that protocols for the use of a design feature can also be constructed to support the rhetorical objective of significance.

Participants' acceptance of both design features and constructed protocols has implications for instruction as well as use. What constructed protocols share with design features is their *visibility*. In other words, because of the text-based character of online discussion, students and their classmates as well as their teacher were able to see clearly and immediately the extent to which participants were using design features and observing related protocols. Ms. Hawthorne and I designed our instruction to support or scaffold students' achieving significance in their use of design features and protocols. The textual visibility of Forum entries was elemental to our method. Because learning proceeds from the concrete to the abstract (Vygotsky, 1978), effective scaffolding should be "concrete, external, and visible" (Wilhelm, Baker, & Dube, 2001, p. 19). In essence, the text-based nature of threaded discussion is itself a design feature that supports protocols to promote significance. Teachers can capitalize on the visibility of online discussion to illustrate, review, analyze, and otherwise support their instruction and student practice with rhetorical features.

In this study, I have distinguished structural from compositional significance. Structural significance is an affordance of threaded discussion in that participants may utilize the reply function to signal an entry to which they are attending; however, to the extent users rely on structural design to indicate significance they risk weakening the quality of discussion. Compositional significance, on the other hand, strengthens discussion to the extent that users are explicit and sophisticated in articulating the connection made to another entry. For teachers, this distinction has implications for instructional design. As stated, design features and constructed protocols may provide valuable support for learning to discuss literature online. In doing so, the emphasis on compositional significance makes greater cognitive demands on students, and this increased demand necessitates that teachers offer students discussion strategies beyond what the Forum affords. In this study, for example, Ms. Hawthorne and I introduced ways of initiating disagreement (Figure 4.2). While online discussion invites disinhibited response, the sentence stems we supplied assisted participants to achieve a central rhetorical objective of contending on controversial issues. The implication is that equal care must be given to what the online medium affords, what literature discussion demands, and where the two intersect.

### Implications for Achieving Convergence

Evidence in this study confirmed that participants did *not* achieve convergence in their Forum entries. In practice as well as informant interviews, participants rejected the use of hyperlinks as both technically flawed and rhetorically unnecessary. As explained in chapter four, Moodle forum has the technical capacity to support convergence by enabling links from one entry to multiple other entries. In the context of use, however, this capacity was not an affordance because the design of Moodle Forum did not support users' related requirements for achieving convergence, namely, the simultaneous viewing of others' Forum entries while in the midst of composing their own entry. The implication of these findings on hyperlinks is that the design features of an application like Moodle Forum will *not* support rhetorical objectives to which they are *not* well matched. Even though hyperlinks technically enable convergent response, Moodle Forum did not conveniently or practically support convergence for participants in this study. Stated differently, a design feature like Forum hyperlinks is not an affordance when it is not *perceived* as such by users. In this case, the constraints of Moodle's navigational design undermined the linking feature and disrupted the rhetorical objective of convergence. Not surprisingly, the implication of this finding is that a technical capability of an application is not necessarily an affordance if it is not perceived as convenient or otherwise effective in supporting a rhetorical objective *in the context of its use*. A further implication of the findings on hyperlinks is that affordances do not operate in isolation. In this case, the technical affordance of linking entries was countermanded by the constraints of navigating the Forum to view multiple entries.

Participants' failure to achieve convergence has implications for instruction as well as use. As explained in chapter two, failure to achieve a rhetorical objective in the use of online communication may be attributable to either of two explanations. It may be that an application *as it is designed and used* does not support a rhetorical feature or pedagogical objective, *or* it may be that the desired rhetorical outcome is simply unrealistic no matter how the application is formatted or introduced (Swan, 2006). The finding of this study is that Moodle Forum does not support users' consideration of multiple entries by other participants. This suggests that using Moodle Forum to support convergence may necessitate a redesign of the technology in the manner suggested by

Evan – that is, a floating composition box that enables simultaneous viewing of existing entries as well as one's own composition. It may also be that different instruction would be required to assist users in achieving convergence. For example, I have identified three elements in scheduling Forum activity that tend to support convergence – timing, periodicity, and continuity. In this study, the entry length requirement had a direct effect on participants' entries, and it may be that a similar requirement for scheduling would effect convergence. On the other hand, I have documented the importance of discussion topics to engendering participation, and it may be that different text selection or otherwise influencing topic design would be a less direct but equally effective path to convergence. I will return to these possibilities later in this chapter. Finally, it may be that the complexity of synthesizing multiple sources of information (i.e., convergence) is simply beyond the capacity of secondary school students. The requirement to view all entries in all threads, synthesize ideas in their head or on paper, and then compose their own entry is a daunting conceptual task. Presumably, better Forum design would help to support this task. Nevertheless, this study raises a question as to whether achieving convergence is a realistic expectation for secondary students. Indeed, Lobry de Bruyn (2004) found no instances of convergent response in her study of online discussion involving *college and graduate students*. Accordingly, practitioners interested in pursuing convergence would be advised to consider the challenge it presents and to explore both technical and instructional supports that may address that challenge.

### Implications for Technology Integration

Findings in this study have implications for technology integration generally, beyond the objectives of achieving significance and convergence in online discussion.

Tu and Corry (2003) repeatedly note the absence of rules governing the structure and use of online discussion. In my own report of findings, I emphasized how the many aspects of online discussion from design features like subject lines to protocols like entry format are *instructional considerations* in managing the use of online discussion. The overriding implication of the findings on our explicit introduction of design features and related protocols is that educators' capacity to leverage technology in their own practice is directly proportional to their understanding of its design features in the context of their own use. Even in this case, Ms. Hawthorne and I did not anticipate the effect that challenges to navigating Moodle would have on achieving convergence. It was in the context of use that we realized that what we had predicted as an affordance of the technology in support of a rhetorical objective proved instead to be a constraint. Accordingly, practitioners should be reflective in adopting technologies into their own practice, rather than accepting technologies routinely, as presented. What's more, designers and technology integrators should be cautious in the assumptions they make about how a technology will be used. In this case, I coached Ms. Hawthorne and her students almost daily throughout half their school year. As a result, both Ms. Hawthorne and I came to understand the affordances and constraints of Moodle Forum in new and profound ways. An implication of this study is that continued progress toward rich technology use demands this kind of embedded coaching. Working side-by-side, those charged with technology design come to understand the effect of their work on real applications, and practitioners realize the full potential of a technology like Moodle Forum in relation to their own pedagogical objectives and challenges.

## Implications for Online Discussion in the Hybrid Context of a Secondary School

In the post-study interview, Ms. Hawthorne reported that a *combination* of face-to-face and online discussion was essential to her teaching practice. In addition, she claimed that high school students were not ready for discussion in a strictly online learning environment. Students who participated in this study seemed to substantiate their teacher's position that time *in class* was important to online discussion in this secondary school setting. Forum transcript analysis indicated and primary informant interviews confirmed that classroom interaction was elemental to participants, both socially with respect to participation and academically with respect to the quality of discussion.

With respect to assisting students to achieve rich literature discussion, explicit instruction in the use of Moodle Forum was provided in the classroom and practiced online. In addition, rhetorical protocols that were *emphasized* in the classroom were evident in Forum discussion. For example, the teacher's demand for increased length in Forum entries was principally met by adding textual reference, a strategy Ms. Hawthorne used and encouraged in classroom discussion. I have also noted how the combination of online and offline spaces worked directly to inform instruction and support student online discussion. For example, based on our review of entries in the "Thank You, M'am" Forum, Ms. Hawthorne and I invited discussion in class regarding what constitutes a quality Forum entry. This discussion led to the three-part entry format which students then used to compose entries online.

With respect to participation, I documented in chapter four how the majority of primary informants preferred to conduct their online discussions during class time. In period six, for example, Kirk and Monica described how face-to-face interaction in the classroom helped them to compose Forum entries and influenced them to read what others had posted. Moreover, Forum transcript analysis indicated that a decline in number of Forum posts during phase two was coincident with a reduction in class time for Forum discussion. Despite this decline in number of postings during phase two, in her post-study interview Ms. Hawthorne maintained that students were contributing more to Moodle Forum than they were accustomed to contributing to in-class discussion. My own classroom observation compared with Forum activity reports appeared to confirm this claim. In other words, online discussion provided a space for additional student practice in rhetorical strategies. In chapter four, I also reported three ways in which disinhibition in online discussion altered customary patterns of interaction occurring in the classroom. First, as corroborated by other research, students addressed sensitive issues more freely in the online context (Grisham & Wolsey, 2006; Kirk & Orr, 2003; Lobry de Bruyn, 2004). Second, on Moodle Forum, participants interacted as much *or more* with students outside their customary circle of friends. Third, while managing discussion in class was apt to be Ms. Hawthorne's responsibility, online she exhibited a restrained presence that left managing discussion to students.

With respect to participation, one implication of the findings in this study is that online discussion provides not just an additional space for practicing rhetorical strategies. At least for some students, Moodle Forum provides a *more conducive* space for practicing these strategies. The individualized pace and text-based format appears to accommodate different processing styles, and disinhibition seems to enable students to engage more freely with classmates. Notwithstanding the benefits of going online, a second implication is that utilizing Moodle Forum during class time is important to students in a secondary setting.  Logistically, time in class for online discussion overcomes scheduling obstacles, and students here demonstrated how they will support each other's use of Moodle Forum with classroom interaction.  Taken together, these implications suggest that the use of threaded discussion in a hybrid environment enables participants to move between two mutually supportive spaces.  They can enter the online space to reflectively read and write discussion entries and return to the classroom space as needed for assistance with those entries.

The mutually supportive relationship of the online and offline spaces has implications for learning as well as participation.  One implication is that in a hybrid setting the classroom is more than a space in which to instruct students in elements of online discussion.  Certainly, the explicit teaching of rhetorical strategies offline supports online discussion.  Additionally, teachers can expect that whatever rhetorical strategies they *emphasize* in the classroom will be used by students in the online space.  This was true of participants' reliance on textual support in this case.  A second implication is that what occurs in online discussion can inform a teacher's further classroom instruction.  Because Moodle Forum provides a written transcript, teachers can carefully monitor and respond to whole class and individual student progress.  A third implication, then, is the importance of taking time offline to debrief rhetorical features, constraints, and affordances apparent in online discussion.  In particular, it seems critical for teacher and students to debrief entries that illustrate what "significance" and "convergence" look like and how one enacts these moves.  Taken altogether, these implications suggest that a cycle of instruction is made possible by the interdependence of offline and online spaces in a hybrid environment. First, formal instruction and informal modeling in the classroom introduces students to rhetorical strategies. Then, the individualized pace and written nature of online discussion promotes student practice and teacher assessment. Finally, classroom debriefing provides responsive intervention that assists participants to examine the record of their discussion before returning again to the online space. Because students' online discussion was not regularly or fully debriefed offline in this study, further research is needed with respect to cycling instruction between these two spaces. Later in this chapter, I address the implications of the teacher's restrained online presence. However, I would note here that to the extent a teacher wishes to limit her online contributions, active intervention in the offline stages of this cycle can be particularly important to assisting students' online discourse.

The asynchronous nature of online discussion allows practitioners to move discussion outside the classroom. Indeed, it may be tempting to gain valuable class time by relocating discussion entirely online. Findings in this case, however, demonstrate that secondary students are more apt to benefit from embedding online discussion within the classroom space. Certainly this does not suggest that Moodle Forum should never be used independently outside the classroom. Nevertheless, it does suggest a particular perspective on technology *integration* in which adopting technology is not adding technology onto existing practice but combining the online and offline spaces into a unified whole. A fully integrated environment achieves synergy between the online and offline spaces in which each is more robust than it would otherwise be on its own.

## Implications for Online Discussion as Inquiry in a Secondary School

In this study, primary informants described online discussion variously as “just like schoolwork” (Evan) or as “a debate with all kinds of questions...that lead to a bigger discussion” (Beth). At times online, participants engaged each other in an attempt to reach understanding on a topic they valued. More often, they appeared to enter the Forum to complete their schoolwork as expeditiously as possible. In other words, there seems to have been a tension for these participants between a task completion mindset and an inquiry attitude, two different perspectives or frames that organized their perceptions of the purposes associated with online discussion. A *frame* is best described as a “structure of expectations” (Wine, 2008, p. 1) that prompt members of a community to act in specific ways (Goffman, 1974). As a frame that affects how participants perceived and enacted online discussion, the *task completion* mindset rewarded completing tasks quickly, pursuing tasks for the purpose of a grade, and working in isolation with minimal input from others. The *inquiry attitude*, on the other hand, was a perceptual frame that emphasized recursive problem solving, pursuing tasks for purposes of intrinsic need, and working collaboratively to achieve deep thinking that no single member might have achieved. Although I have acknowledged inquiry as the frame for online discussion, as Evan and Beth suggested (above), task completion and inquiry competed to govern participation and interaction on Moodle Forum.

Matt was a primary informant who recognized these competing frames in his interview at the end of phase two. At one point, Matt identified his objective as completing Forum assignments as efficiently as possible: “I’d rather get in early and get it done, but the way it is, we have to wait on those other kids.” Here, Matt characterized

Forum participation as a task to be discharged. His apparent intention was to satisfy the teacher's requirements by posting the necessary entries, and classmates were simply those to whom he responded. Later in the same interview, Matt reported that under the right circumstances, he had been motivated to discuss without regard to the parameters of the assignment. Specifically, he identified controversy as the essential ingredient for naturally engaging discussion. In Matt's view, the opportunity to disagree was responsible for the success of the "Thank You, M'am" Forum and the failure of the *Gatsby* Forums: "If there was more controversy [in *The Great Gatsby*], you would've gotten more heated discussion. And then, you want to get back to it, even with no credit or anything, you just want to put your thought down." What Matt identified as essential to quality discussion was the discussion topic. Not surprisingly, why they were engaging in discussion was of principal importance to these students. Primary informants identified contention as the single most important characteristic of a discussion topic as well as the most compelling factor in prompting them to respond to an entry. Like Matt, most primary informants characterized their "Thank You, M'am" discussion as more controversial than the *Gatsby* Forums. Furthermore, Forum transcript analysis confirmed a significant decline in disagreement expressed in *Gatsby* Forum entries as compared with "Thank You, M'am" Forum entries.

From the tradition of frame analysis, the instructional intervention in this study was more than an attempt to shift the context of discussion from offline talk to online correspondence. It was an attempt to introduce a new frame for envisioning what participants should think, value, and do. The use of Moodle Forum in this study was intended to frame discussion as inquiry. This objective was naturally complicated to the extent that students had acculturated to the task completion frame through years of practice in the school setting. For those who perceive teaching and learning from a “task completion frame,” the teacher is paramount in articulating explicit goals for the task, managing student progress, and evaluating student production. Ms. Hawthorne and I hoped to assist students to achieve an inquiry frame by their taking a greater role in designing topics, attending with consideration to what classmates wrote in discussion, and incorporating others’ input as appropriate in the articulation of their own postings. Instruction toward these ends proceeded in three ways. For example, the teacher *imposed* an explicit requirement for entry length, she *modeled and coached* the use of textual reference, and she *collaborated* with students to negotiate the three-part entry format. Each approach produced a specific change in participants’ use of Moodle Forum; however, the perspective on each change varied among participants. For example, Evan and Kirk viewed the entry length requirement as a teacher-directed task to be completed. Matt and Valerie, on the other hand, reported that longer entries helped to make what they read and wrote more thoughtful.

One implication of these findings is that any instructional decision that teachers make on what students should do in online discussion risks tilting students into the task completion frame. The entry length requirement appears to have had just this effect on Evan and Kirk. Overall, however, findings on the relative impact of teacher-directed and negotiated protocols were inconclusive. As noted, Matt and Valerie welcomed the entry length requirement. In the post-study interview, Ms. Hawthorne indicated that the results of introducing the entry length requirement encouraged her to consider a similar requirement for periodicity – that is, requiring students to participate in a Forum on separate occasions over time.  This proposition begs consideration of when teacher-directed protocols take control of the process to the point that task completion is all that students can see in what they are doing.  It may be that constructing knowledge by returning to discussion over time can be achieved more cooperatively – for example, by the kind of entry debriefing that I suggested in the preceding section.  Presumably, *any* increase in requirements for how to complete a task poses this jeopardy: What teaching moves emphasize posting entries as task completion, and what teaching moves emphasize online discussion as inquiry?

One clear and consistent finding in this case was that the opportunity to disagree was essential to online discussion for these secondary students.  The implication of this finding is that a controversial topic is the one factor sufficiently influential to overcome the task completion frame and engage students in inquiry during discussion in a secondary school setting.  As explained in chapter two, the Community of Inquiry model for online discussion recognizes "a factor of marked disagreement" (Dewey, 1997, p. 7) as the trigger to inquiry (Garrison et al., 2001).  This suggests that it is not necessarily the teacher's moves themselves that emphasize task completion or inquiry.  Rather, it is the relationship or perceived relationship of those moves to addressing the inquiry problem under discussion.  When instructional moves are well correlated to the needs of participants in the context of a particular discussion, the prospect of their acceptance will be enhanced.  This correlation recommends developing protocols in a discussion review (as suggested above) or otherwise in the midst of purposeful, engaged discussion.   As Postman (1995) points out, for a student who has an adequate *why* almost any *how* or *what* will do (as cited in Wilhelm, et al., 2001, p. 47).  That is, students need to see a purpose in their discussion. Whether teacher-directed or negotiated, protocols have meaning and gain acceptance when they serve a purpose students value. When purpose is present as it was in the "Thank You, M'am" discussion Forum, inquiry will take hold and supplant students' entrenched perspective on schooling as a series of task completion events. In the following section, I address implications with respect to positioning participants for generating topics that provide an effective trigger to discussion. Here, it is sufficient to acknowledge that whether through text selection or the composition of initiating entries, introducing a point of disagreement is essential to rich literature discussion.

## Implications for Teaching Presence in Online Discussion

The difference in participant response to "Thank You, M'am" and *The Great Gatsby* invites consideration of how students were differently positioned to design controversial topics for these Forums. There are notable differences between these two pieces of literature, and there were significant differences in the way students read and devised topics for each text. "Thank You, M'am" is a short story that was read entirely aloud in class with the teacher's support (e.g., stopping periodically to note key details). *The Great Gatsby*, on the other hand, was read largely independently over the span of several weeks. As a result, discussion of "Thank You, M'am" took place in one Forum *after* reading while *The Great Gatsby* was discussed in multiple Forums *during* reading.

In chapter four, I documented how "Thank You, M'am" was a more accessible text for these secondary students. Their understanding of *The Great Gatsby* was challenged by a lack of historical knowledge on its 1920s setting (e.g., what it might be like to be a woman in the 1920s) and by insufficient maturity for recognizing certain adult themes (e.g., what it might be like to be a *thirty-year-old* woman in the 1920s). This lack of knowledge may, for example, have been responsible for participants' inability to appreciate the complex implied relationship between Daisy and Tom – specifically, the role of socioeconomic status in their lives. Absent a sufficient understanding of the relationship between these two characters, students could not appreciate Daisy's situation as a relevant controversy open to debate. By comparison, students' personal experience positioned them to recognize and contend on the issues in "Thank You, M'am." They seemed to identify with the young boy in "Thank You, M'am," to appreciate the conflict between that boy and the woman in the story, and to understand thematic issues of trust or upbringing that Hughes introduces. In other words, *The Great Gatsby* is not just longer than "Thank You, M'am." It is also considerably more complex. In chapter four, I documented instances in which Matt and Norm as well as other students took on teaching presence. They helped to design protocols, to promote discussion, and to encourage each other to provide textual support. However, it is clear that their capacity to fill the teacher's role in learning to analyze *The Great Gatsby* was limited. Furthermore, although Ms. Hawthorne addressed the relationship between Daisy and Tom in classroom discussion, students' failure to fully comprehend that relationship was evident in their online discussion.

In addition to the subject texts and the way in which they were read, topics for "Thank You, M'am" were generated individually while topics for *The Great Gatsby* were developed in collaborative groups. Following our instruction and modeling, Ms. Hawthorne and I reasoned that students in groups might assist each other in learning to compose topics they would find engaging. Forum analysis revealed a significant difference in the initiating entries for online discussion of these texts. On the “Thank You, M’am” Forum, individual authors tended to begin threads with a declaration – that is, a personal position statement. For *The Great Gatsby*, groups tended to compose an initiating entry that ended in an open question – that is, a question on which sides might be taken but which did not itself stake out a particular position.

### Implications for Student Enactment of Teaching Presence (TgP)

Findings with respect to participants’ response to “Thank You, M’am” and *The Great Gatsby* have implications for how students may be positioned to enact teaching presence. Text selection and reading as well as the introduction of teaching presence itself may affect their readiness to achieve this role. One implication is that students will more likely *learn* to enact teaching presence when its elements are addressed individually. Teaching presence requires various content and procedural skills. For the *Gatsby* Forums, students were simultaneously learning to design discussion topics (a rhetorical process skill), acquiring essential background information (content knowledge), and coming to understand complex implied relationships (a literary analysis skill). With “Thank You, M’am,” content knowledge and analysis of the character relationships was already within students’ zone of proximal development. This freed students to concentrate on designing effective topics and conducting their discussion. In retrospect, this suggests that instruction in designing topics with relevant controversy would have proceeded more effectively from additional short stories for young adults and articles on current issues affecting adolescents. Practice with these more accessible texts may have prepared students to design topics with a more complex reading like *The Great Gatsby*.

With respect to text selection, a second implication is that it is easier to develop meaningful discussion topics once a text is read in its entirety. Without knowing the whole story, it may not be possible for students to identify topics that will sustain interest or that the text will inform. With respect to reading a text prior to discussion, the implication from this study is that reading aloud, in class, can assist secondary students to identify narrative and thematic information essential to recognizing topics of interest and disagreement in preparation for designing discussion topics.

A comparison of “Thank You, M’am” and *The Great Gatsby* also has implications for method of topic design. Topics for “Thank You, M’am” were designed individually while topics for *The Great Gatsby* were developed in collaborative groups. The implication for topic design is that individual authorship is more effective than collaborative topic design at introducing topics that generate controversy and invite engaged discussion. It may be that the format of a declaration was more provocative to participants while an open question was more amenable to multiple suggestions. It may also be that individual authors were more invested in defending their position while members of a collaborative group had a tenuous sense of responsibility toward its topic. Finally, it may be that the cooperative process of collaborating on a topic diluted the final product. Six of the seven primary informants reported that they preferred collaborative to individual topic design. This preference may justify further study of collaborative topic design particularly as a scaffold in learning to develop topics. It may be that groups can assist individual student moderators in initiating discussion topics or that a protocol or heuristic may be devised to assist groups as well as individuals to articulate controversial topics. Notwithstanding the stated preference of informants for collaborative topic design, however, the implication of discussions on “Thank You, M’am” and *The Great Gatsby* here is that individual topic design is more effective at engendering controversy and engaged online discussion.

### Implications for Teacher Presence (TrP)

Aside from how students may be positioned to enact teaching presence, findings in this study also have implications for the teacher’s own presence. I have already described the degree to which the teacher’s presence in the offline space of the classroom influenced participants’ online discussion. In addition, I have noted that the classroom teacher in this study was almost entirely absent from discussion in the online space. Other researchers maintain that the teacher’s presence (TrP) is needed *during* online discussion as a way of providing subject matter knowledge and scholarly leadership skills that student participants cannot provide (Anderson et al., 2001; Garrison, 2006; Garrison & Arbaugh, 2007; Shea, 2006; Swan, 2006; Swan et al., 2008). The implication of findings here is that the teacher’s presence during online discussion is, at least on occasion, irreplaceable. Certainly, online discussion provides an additional and substantively different venue in which to monitor and assess student progress. Moreover, participating in online discussion provides the opportunity for teachers to contribute carefully considered modeling or direct instruction in a different context. As Shea (2006) suggests, “...a strong and active presence on the part of the instructor” (p. 41) can be elemental to both participation and student learning in online discourse. For the teacher to attend frequently as an observer and take part as needed to introduce subject matter knowledge or process leadership does appear to be beneficial if not crucial.

## Conclusion

In this chapter, I have presented various implications arising from the findings in this study. One implication seems to apply across the discussion in all sections, namely, that learning to discuss literature online is a complex and lengthy undertaking. Unpacking the technology in context...assimilating rhetorical strategies...cycling through instruction and practice in the offline and online spaces...shifting from the efficiency of task completion to the untidiness of inquiry...allowing for student enactment of teaching presence and preparing them to do so, each of these steps demands patience and determination from students and teacher alike. Learning to discuss literature online cannot be accomplished in part of a school year because it involves more than simply adopting an application like Moodle Forum. It requires the integration of two strong entities – technology and rhetoric – into one unified whole, and that takes time.

This study documented findings only with respect to online discussion in the hybrid context of two sections of a high school English class. As noted throughout this chapter, the findings reported here indicate the need for further study of online discussion in secondary schools, particularly with respect to the effect of online discussion on ensuing face-to-face discussion in the classroom and the degree to which students may assume teaching presence, especially with topic design. Of course, the results of a qualitative study are not generalizable. In particular, the findings and implications noted here may not be applicable to a post-secondary context or to fully online applications in a secondary setting.

From the outset, I noted that there has been little research regarding online literature discussion, and even fewer empirical studies in secondary school classrooms.

As a researcher, I recognized a variety of logistical challenges in arranging and completing a study in a secondary school classroom. Nevertheless, I was impressed at all times by how open, honest, and interested participants were to share their experience and thinking. Students have ideas to share, and we owe it to them to listen with consideration. I hope that in this study I have done just that.

# REFERENCES

Anagnostopoulos, D., Basmadjian, K. G., & Mccrory, R. S. (2005). The decentered teacher and the construction of social space in the virtual classroom. *Teachers College Record*, *107*(8), 1699-1729.

Anderson T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing environment. *Journal of Asynchronous Learning Networks*, *5*(2), 1-17. Retrieved from http://communitiesofinquiry.com/teachingpresence

Bailey, Y. S., & Wright, V. H. (2000, November). *Innovative uses of threaded discussion groups*. Paper presented at the Annual Meeting of the Mid South Educational Research Association, Bowling Green, KY. Retrieved from ERIC, http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED446716

Bakhtin, M. (1981). *The dialogic imagination*. Austin, TX: University of Texas Press.

BBC News (2002). Internet starts to shrink. Retrieved from http://news.bbc.co.uk/2/hi/science/nature/1738496.stm)

Blanchard, K. (2001). *High five! None of us is as smart as all of us.* New York: William Morrow & Company.

Bolter, J. D. (2001). *Writing space: Computers, hypertext, and the remediation of print.* Mahwah, NJ: Lawrence Erlbaum Associates.

Bonk, C. J., & Cunningham, D. J. (1998). Searching for learner-centered, constructivist, and sociocultural components of collaborative educational learning tools. In C. J. Bonk & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 25-50). Mahwah, NJ: Lawrence Erlbaum Associates.

Britton, J. (1972). Writing to learn and learning to write. In G. M. Pradl (Ed.), *Prospect and retrospect: Selected essays of James Britton* (pp. 94-111). Montclair, NJ: Boynton/Cook.

Cazden, C. B. (2001). *Classroom discourse: The language of teaching and learning*. Portsmouth, NH: Heinemann.

Chiseri-Strater, E., & Sunstein, B. (2006). *What works? A practical guide to teacher research*. Portsmouth, NH: Heinemann.

Cooney, D. H. (1998). Sharing aspects within *Aspects*: Real-time collaboration in the high school classroom. In C. J. Bonk & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 263-287). Mahwah, NJ: Lawrence Erlbaum Associates.

Creswell, J. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice, 39*, 124-130. Retrieved from http://www.medicine.usask.ca/family/research/manuals/qualitative-research/Validity%20in%20Qual%20Rch.pdf

Dewey, J. (1997). *How we think*. Mineola, NY: Dover Publications.

Dewey, J. (2005). *Art as experience*. New York: The Berkley Publishing Group.

Dewey, J. (2009). *Democracy and education: An introduction to the philosophy of education*. Bel Air, CA: WLC Books.

Duffy, T. M., & Cunningham, D. J. (1995). Constructivism: Implications for the design and delivery of instruction. In D. H. Jonassen (Ed.) *Handbook of Research for Educational Communications and Technology* (pp. 1-57). New York: Scholastic.

Duffy, T. M., Dueber, B., & Hawley, C. L. (1998). Critical thinking in a distributed environment: A pedagogical base for the design of conferencing systems. In C. J. Bonk & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 51-78). Mahwah, NJ: Lawrence Erlbaum Associates.

Dyson, A. H., & Genishi, C. (2005). *On the case: Approaches to language and literacy research.* New York: Teachers College Press.

Fitzgerald, F. S. (1995). *The great Gatsby*. New York: Simon & Schuster.

Garrison, D. R., (2006). Online collaboration principles. *Journal of Asynchronous Learning Networks*, *10*(1), 25-34. doi: 10.1.1.96.4536&rep=rep1&type=pdf.

Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *The Internet and Higher Education*, *10*(3), 157-172. Retrieved from Science Direct, doi:10.1016/j.iheduc.2007.04.001

Garrison, D. R., Anderson T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, *2*(2-3), 87-105. Retrieved from Science Direct, doi:10.1016/S1096-7516(00)00016-6

Garrison, D. R., Anderson T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, *15*(1), 7-23. Retrieved from http://communitiesofinquiry.com/cognitive_presence

Garrison, D. R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: Interaction is not enough. *The American Journal of Distance Education, 19*(3), 133-148. doi: 10.1207/s15389286ajde1903_2

Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Cambridge, MA: Harvard.

Grisham, D. L., & Wolsey, T. D. (2006). Recentering the middle school classroom as a vibrant learning community: Students, literacy, and technology intersect. *Journal of Adolescent and Adult Literacy*, *49*, 648-660. doi: 10.1598/JAAL.49.8.2

Gunawardena, C. N., Ortegano-Layne, L., Carabajal, K., Frechette, C., Linderman, K., & Jennings, B. (2006). New model, new strategies: Instructional design for building online wisdom communities. *Distance Education 27*, 217-232.

Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *The American Journal of Distance Education*, *11*(3), 8-26. Retrieved from ERIC, http://prxy4.ursus.maine.edu:2070/auth/EZProxy/test/authej.asp?url=http://prxy4.ursus.maine.edu:2059/login.aspx?direct=true&db=eric&AN=EJ567749&site=ehost-live

Gura, M., and Percy, B. (2005). *Recapturing technology for education: Keeping tomorrow in today's classroom*. Lanham, MD: Scarecrow Education.

Henry, J. (1999). An ethnography of change: Teacher-research as dissertation. In R. Hubbard and B. Power (Eds.), *Living the questions: A guide for teacher-researchers* (pp. 196-204). Portland, ME: Stenhouse.

Hewitt, J. (2001). Beyond threaded discourse. *International Journal of Educational Telecommunications, 7*(3), 207-221. Retrieved from http://java.cs.vt.edu/public/projects/digitalgov/papers/Beyond_threaded_discourse.pdf

Hewitt, J. (2003). How habitual online practices affect the development of asynchronous discussion threads. *Journal of Educational Computing Research, 28*(1), 31-45. doi:10.2190/PMG8-A05J-CUH1-DK14

Hofstad, M. E. (2003, August). *Enhancing student learning in online courses*. Poster session presented at the annual conference of the American Psychological Association, Toronto, Canada.

Hughes, L. (1958). Thank you, m'am. Retrieved from http://www.americanliterature.com/Hughes/SS/ThankYouMam.html

Jenkins, H. (2008). *Convergence culture: Where old and new media collide*. New York: New York University Press.

Jolivette, B. J. (2006). *Social presence and its relevancy to cognitive and affective learning in an asynchronous distance-learning environment: A preliminary literature review*. Paper presented at the International Conference of the Academy of Human Resource Development, Columbus, OH. Retrieved from ERIC, http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED492717

Jonassen, D. H. (2000). *Computers as mindtools for schools: Engaging critical thinking* (2nd ed.). Columbus, OH: Prentice Hall.

Jonassen, D. H. (1994). Technology as cognitive tools: Learners as designers. ITForum [online electronic listserv]. Retrieved from http://it.coe.uga.edu/itforum/paper1/paper1.html

Keene, E. O., & Zimmerman, S. (1997). *Mosaic of thought: Teaching comprehension in a reader's workshop*. Portsmouth, NH: Heinemann

Kirk, J. J., & Orr, R. L. (2003). A primer on the effective use of threaded discussion forums. Retrieved from ERIC, http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED472738

Lobry de Bruyn, L.L. (2004). Monitoring online communication: Can the development of convergence and social presence indicate an interactive learning environment? *Distance Education*, *25(*1), 67-81. DOI: 10.1080/0158791042000212468

Martin, K. H. (2008). *Moodle forums in ninth-grade English: Engaging students with threaded discussion*. Unpublished manuscript.

Mehan, H. (1979). *Learning lessons*. Cambridge, MA: Harvard University Press.

Merriam, S. (1988). *Case study research in education*. San Francisco, CA: Jossey-Bass.

Merriam, S. (2002). *Qualitative research in practice: Examples for discussion and analysis*. San Francisco, CA: Jossey-Bass

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook.* Thousand Oaks, CA: Sage Publications.

Murray, D. (1984). *Write to learn*. N. Y.: Holt, Rinehart and Winston.

Murray, D. M. (1996). *Crafting a life in essay, story, poem*. Portsmouth, NH: Boynton, Cook Publishers.

Newberry, B. (2001, February). *Raising student social presence in online classes*. Paper presented at WebNet 2001: World Conference on the WWW and Internet Proceedings, Orlando, FL. Retrieved from ERIC, http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED466611

Norman, D. A. (2002). *The design of everyday things*. New York: Basic Books.

Paas, F., Renkl, A., & Sweller, J. (2003). Cognitive load theory and instructional design: Recent developments. *Educational Psychologist, 38*(1), 1-4. Retrieved from http://create.alt.ed.nyu.edu/courses/2174/reading/Paas_Renkl_Sweller_EP.pdf

Papert, S. (1980). *Mindstorms: Children, computers, and powerful ideas*. New York: Harper Collins.

Pea, R. D. (1997). Practices of distributed intelligence and designs for education. In G. Salomon (Ed.) *Distributed cognitions: Psychological and educational considerations* (pp. 47-87). Cambridge: Cambridge University Press. Retrieved from http://tecfa.unige.ch/tecfa/publicat/dil-papers-2/dc2/dc2.pdf

Pearson, P. D., & Gallagher, M. C. (1983). The instruction of reading comprehension. *Contemporary Education Psychology, 8*, 317-344.

Perkins, D. N. (1997). Person-plus: A distributed view of thinking and learning. In G. Salomon (Ed.) *Distributed cognitions: Psychological and educational considerations* (pp. 88-110). Cambridge: Cambridge University Press. Retrieved from http://tecfa.unige.ch/tecfa/publicat/dil-papers-2/dc3/dc3.pdf

Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Networks*, *6*(1), 21-40. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.98.6506&rep=rep1&type=pdf

Postman, N. 1995. *The end of education: Redefining the value of school*. New York: Vintage Books.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon 9*(5), 1-6. Retrieved from http://www.marcprensky.com/writing/

Riverside High School (2010). *Riverside High School Accreditation Report*. Riverside, ME: Riverside School District.

Rogers, P., & Lea, M. (2005). Social presence in distributed group environments: The role of social identity. *Behavior and Information Technology*, *24*(2), 151-158. Retrieved from DOI: 10.1080/01449290410001723472

Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (1999). Assessing social presence in asynchronous text-based computer conferencing. *The Journal of Distance Education*, *14*, 50-71. Retrieved from http://www.jofde.ca/index.php/jde/article/view/153/341.

Ryder, M., and Wilson, B. (1996). Affordances and constraints of the Internet for learning and instruction. Presented to a joint session of the Association for Educational Communications Technology, Research and Theory Division. Indianapolic, IN, 2/14-18/1996. Retrieved from ERIC database, http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED397833

Shea, P. J. (2006). A study of students' sense of learning community in online learning environments. *Journal of Asynchronous Learning Networks*, *10*(1), 35-44. Retrieved from http://www.sloan-c.org/publications/jaln/v10n1/pdf/v10n1_4shea.pdf

Shea, P., Li, C. S., Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and Higher Education*, *9*(3), 175-190. Retrieved from Science Direct, doi:10.1016/j.iheduc.2006.06.005

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research*. Newbury Park, CA: Sage.

Sugar, W. A., & Bonk, C. J. (1998). Student role-play in the World Forum: Analyses of an Arctic adventure learning apprenticeship. In C. J. Bonk & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 131-155). Mahwah, NJ: Lawrence Erlbaum Associates.

Suler, J. (2004). The online inhibition effect. *CyberPsychology & Behavior, 7*, 321-326. Retrieved from http://www-usr.rider.edu/~suler/psycyber/disinhibit.html

Swan, K. (2006, March). *Threaded discussion*. Paper presented at Ohio Digital Commons for Education (ODCE) Conference: The Convergence of Libraries, Learning, and Technology, Columbus OH. Retrieved from http://www.oln.org/conferences/ODCE2006/papers/Swan_Threaded_Discussion.pdf

Swan, K. P., Richardson, J. C., Ice, P., Garrison, D. R., Cleveland-Innes, M., & Arbaugh, J. B. (2008). Validating a measurement tool of presence in online communities of inquiry. *e-Mentor, 2*(24). Retrieved from http://www.e-mentor.edu.pl/e_index.php?numer=24&all=1

Tu, C-H., & McIsaac, M. (2002). The relationship of social presence and interaction in online classes. *The American Journal of Distance Education, 16*(3), 131-150. DOI: 10.1207/S15389286AJDE1603_2

Tu, C-H., & Corry, M. (2003). Designs, management tactics, and strategies in asynchronous learning discussions. *The Quarterly Review of Distance Education, 4*(3), 303-315. Retrieved from http://www.lsue.edu/elearning/asyncrhonous_pedagogy.pdf

United States Department of Education (2009). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies*. Washington, DC: Government Printing Office.

Vandergrift, K. E. (2002). The anatomy of a distance education course: A case study analysis. *Journal of Asynchronous Learning Networks, 6*(1), 76-90. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.133.5885&rep=rep1&type=pdf

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. In M. Cole, V. John-Steiner, S. Scribner, & E. Souberman (Eds.). Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (1986). *Thought and word*. In A. Kozulin (Ed.). *Thought and language* (pp. 210-256). Cambridge, MA: MIT Press.

Warlick, D. F. (2004). *Redefining literacy for the 21st century*. Worthington, OH: Linworth.

Wells, G., (1994, April). *Discourse as tool in the activity of learning and teaching*. Paper presented at the annual meeting of the American Educational Research Association. New Orleans, LA. Retrieved from ERIC, http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED371619

Wells, G. (2002). Text, talk, and inquiry: Schooling as semiotic apprenticeship. In *Dialogic inquiry: Towards a sociocultural practice and theory of education* (pp. 135-166). New York: Cambridge University Press. Retrieved from ERIC http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED371618

Wells, G., MacLure, M., & Montgomery, M. (1981). Some strategies for sustaining interaction. In Werth, P. (Ed.), *Conversation and discourse: Structure and interpretation* (pp. 73-85). New York: St. Martin's Press.

Wertsch, J. V. (1991). *Voices of the mind: A sociocultural approach to mediated action*. Cambridge, MA: Harvard University Press.

Wilhelm, J. D., Baker, T. N., & Dube, J. (2001). *Strategic reading: Guiding students to lifelong literacy, 6-12*. Portsmouth, NH: Boynton/Cook.

Wine, L. (2008). Towards a deeper understanding of framing, footing, and alignment. *The Forum, 8*(2). Retrieved from http://journals.tc-library.org/templates/about/editable/pdf/2_ForumWine_Final.pdf

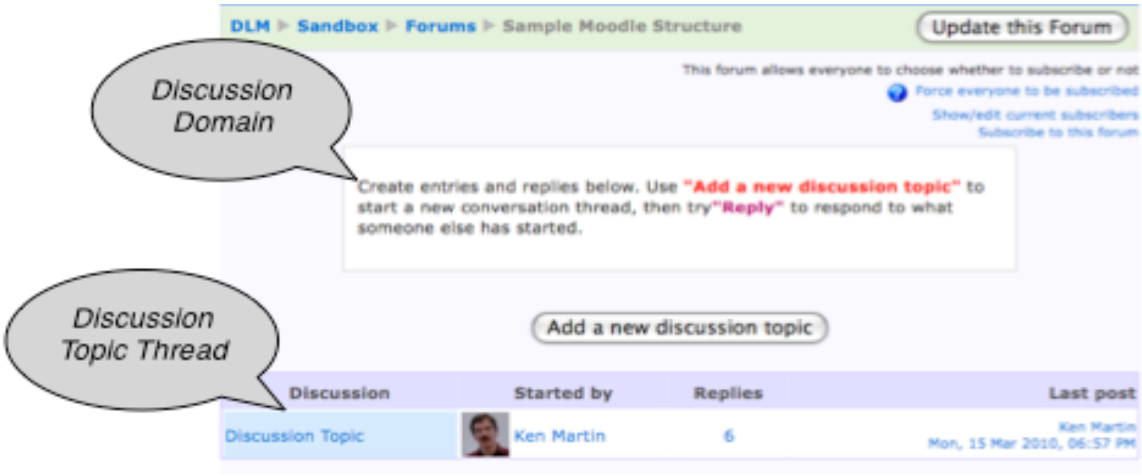
Zhu, E. (1998). Learning and mentoring: Electronic discussion in a distance learning course. In C. J. Bonk & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 233-259). Mahwah, NJ: Lawrence Erlbaum Associates.

Zindel, P. (1968). *The Pigman*. New York: Harper Collins.

Zinsser, W. (1988). *Writing to learn.* New York: Harper & Row.

# Appendix A

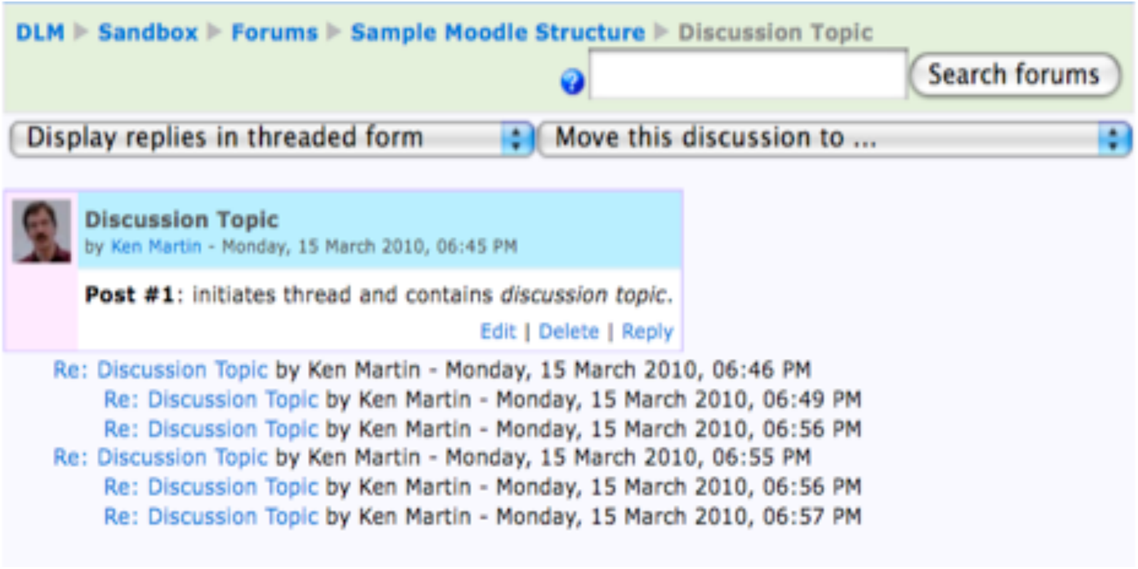
## MOODLE FORUM STRUCTURES


Discussion Domain
Discussion Topic Thread
DLM ▸ Sandbox ▸ Forums ▸ Sample Moodle Structure
Update this Forum
This forum allows everyone to choose whether to subscribe or not
Force everyone to be subscribed
Show/edit current subscribers
Subscribe to this forum
Add a new discussion topic

Create entries and replies below. Use **"Add a new discussion topic"** to start a new conversation thread, then try **"Reply"** to respond to what someone else has started.

| Discussion | Started by | Replies | Last post |
|---|---|---|---|
| Discussion Topic | Ken Martin | 6 | Ken Martin<br>Mon, 15 Mar 2010, 06:57 PM |

Figure A1. Cover page of a Moodle Forum. New discussion topic threads are started and catalogued under the discussion domain.

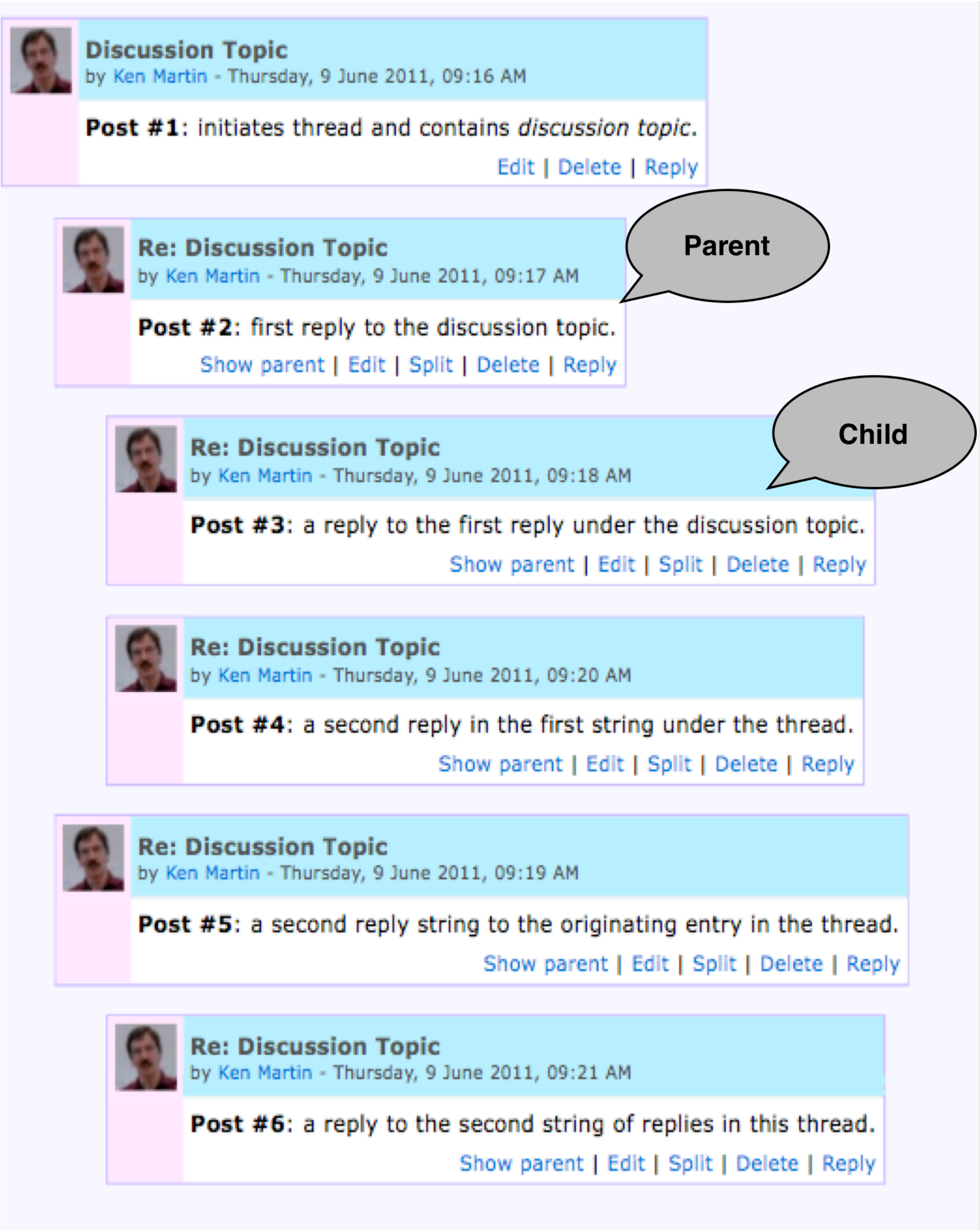

DLM ▸ Sandbox ▸ Forums ▸ Sample Moodle Structure ▸ Discussion Topic
Search forums
Display replies in threaded form
Move this discussion to ...
Edit | Delete | Reply

**Discussion Topic**
by Ken Martin - Monday, 15 March 2010, 06:45 PM

**Post #1**: initiates thread and contains *discussion topic*.

Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:46 PM
    Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:49 PM
    Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:56 PM
Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:55 PM
    Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:56 PM
    Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:57 PM

Figure A2. A discussion in “threaded form.” The initial entry, which contains the discussion topic, is shown in full. Replies are collapsed and show only the entry label, author’s name, and date and time of entry.



**Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:16 AM

**Post #1**: initiates thread and contains *discussion topic*.

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:17 AM

**Post #2**: first reply to the discussion topic.

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:18 AM

**Post #3**: a reply to the first reply under the discussion topic.

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:20 AM

**Post #4**: a second reply in the first string under the thread.

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:19 AM

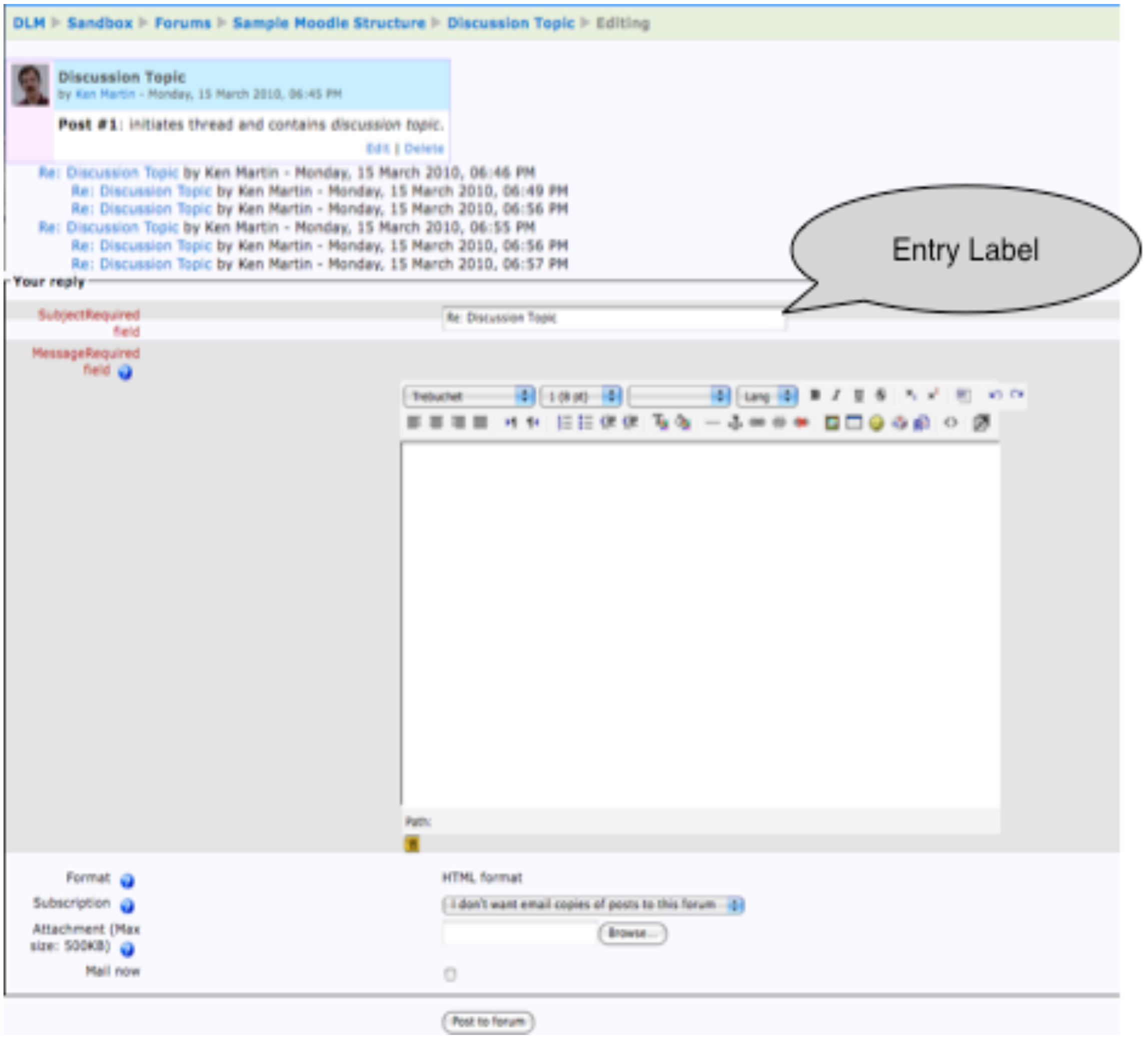
**Post #5**: a second reply string to the originating entry in the thread.

**Re: Discussion Topic**
by Ken Martin - Thursday, 9 June 2011, 09:21 AM

**Post #6**: a reply to the second string of replies in this thread.

Edit | Delete | Reply
Parent
Show parent | Edit | Split | Delete | Reply
Child
Show parent | Edit | Split | Delete | Reply
Show parent | Edit | Split | Delete | Reply
Show parent | Edit | Split | Delete | Reply
Show parent | Edit | Split | Delete | Reply

Figure A3. A discussion in "nested form." The full entry is listed for each reply. "Child" replies are gathered and indented under their "parent" to create a string of sub-topic entries within a topic thread. Time stamps indicate chronological order in which entries were posted (e.g., Post #5 was written before post #4.)


DLM ▸ Sandbox ▸ Forums ▸ Sample Moodle Structure ▸ Discussion Topic ▸ Editing
Edit | Delete
Entry Label
Trebuchet
1 (8 pt)
Lang
Path:
Browse...
Post to forum

**Discussion Topic**
by Ken Martin - Monday, 15 March 2010, 06:45 PM

**Post #1**: initiates thread and contains discussion topic.

Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:46 PM
  Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:49 PM
  Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:56 PM
Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:55 PM
  Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:56 PM
  Re: Discussion Topic by Ken Martin - Monday, 15 March 2010, 06:57 PM

**Your reply**

SubjectRequired field: Re: Discussion Topic

MessageRequired field

Format: HTML format

Subscription: I don't want email copies of posts to this forum

Attachment (Max size: 500KB)

Mail now ☐

Figure A4. Reply screen. When users select the “Reply” option at the bottom right of an entry, a screen opens with existing replies collapsed into threaded view and a text box opens for composing a reply.

## Appendix B

## INDICATORS OF SOCIAL PRESENCE

Community of Inquiry Model Indicators of Social Presence in Threaded Discussion

Rourke, Anderson, and Archer (1999) divided the condition of social presence into three categories: affective, interactive, and cohesive responses. In threaded discussion, each category of response is represented by specific rhetorical indicators.

Table B1. Affective Response Category of Social Presence

| Indicators | Definition | Examples |
|---|---|---|
| Expression of emotions | Conventional expressions of emotion or unconventional expressions of emotion, includes repetitious punctuation, conspicuous capitalization, emoticons. | “I just can’t stand it when...!!!”<br>“ANYBODY OUT THERE?” |
| Use of Humor | Teasing, cajoling, irony, understatements, sarcasm. | The banana crop in Edmonton is looking good this year |
| Self-disclosure | Presents details of life outside of class, or expresses vulnerability. | “Where I work, this is what we do...” “I just don’t understand this question” |

Table B2. Interactive Response Category of Social Presence

| Indicators | Definition | Examples |
|---|---|---|
| Continuing a thread | Using reply feature of software rather than starting a new thread. | Software dependent. e.g., “Subject Re:” or “Branch From” |
| Quoting from others’ messages | Using software features to quote others entire message or cutting and pasting selections of others’ messages. | Software Dependent, e.g., “Martha writes:” or text prefaced by less-than symbol < |
| Referring explicitly to others’ messages | Direct references to contents of others’ posts. | “In your message, you talked about Moore’s distinction between...” |
| Asking questions | Students ask questions of other students or the moderator. | “Anyone else had experience with WEBCT?” |
| Complimenting, expressing appreciation | Complimenting others or contents of others’ messages. | “I really like your interpretation of the reading.” |
| Expressing agreement | Expressing agreement with others or content of others’ messages. | “I was thinking the same thing. You really hit the nail on the head.” |

Table B3. Cohesive Response Category of Social Presence

| Indicators | Definition | Examples |
|---|---|---|
| Vocatives | Addressing or referring to participants by name. | “I think John made a good point.” “John, what do you think?” |
| Addresses or refers to the group using inclusive pronouns | Addresses the group as we, us, our, group. | “Our textbook refers to...” “I think we veered off track...” |
| Phatics, salutations | Communication that serves a purely social function, greetings, closures | “Hi, all” “That’s it for now” “We’re having the most beautiful weather here.” |

# Appendix C

## INDICATORS OF COGNITIVE PRESENCE

Community of Inquiry Model Indicators of Cognitive Presence in Threaded Discussion

Garrison, Anderson, and Archer (2001) divided the condition of cognitive presence into four categories: evocative, inquisitive, tentative and committed responses – each of which corresponds to a particular stage in the inquiry cycle. In threaded discussion, each category of response is represented by specific rhetorical indicators.

Table C1. Evocative Response Category of Cognitive Presence (corresponds to the triggering events stage of the inquiry cycle)

| Indicators | Definition and Examples |
|---|---|
| Recognizing the problem | Presenting background information that culminates in a question |
| Sense of puzzlement | Asking questions<br>Messages that take discussion in new direction |

Table C2. Inquisitive Response Category of Cognitive Presence (corresponds to the exploration stage of the inquiry cycle)

| Indicators | Definition and Examples |
|---|---|
| Divergence within the online community | Unsubstantiated contradiction of previous ideas |
| Divergence within a single message | Many different ideas/themes presented in one message |
| Information exchange | Personal naratives/descriptions/facts (not used as evidence to support a conclusion) |
| Suggestions for consideration | Author explicitly characterizes message as exploration – e.g., “Does that seem about right?” or “Am I way off mark?” |
| Brainstorming | Add to established points but does not systematically defend/justify/develop addition |
| Leaps to conclusions | Offers unsupported opinions |

Table C3. Tentative Response Category of Cognitive Presence (corresponds to the integration stage of the inquiry cycle)

| Indicators | Definition and Examples |
|---|---|
| Convergence among group members | Reference to previous message followed by substantiated agreement – e.g., I agree because...”<br>Building on, adding to others’ ideas. |
| Convergence within a single message | Justified, developed, defensible, yet tentative hypotheses. |
| Connecting ideas, synthesis | Integrating information from various sources – textbooks, articles, personal experience. |
| Creating solutions | Explicit characterization f message as a solution by participant. |

Table C4. Committed Response Category of Cognitive Presence (corresponds to the resolution stage of the inquiry cycle)

| Indicators | Definition and Examples |
|---|---|
| Vicarious application to real world | None Coded |
| Testing solutions | None Coded |
| Defending solutions | None Coded |

# Appendix D

## INDICATORS OF TEACHING PRESENCE

Community of Inquiry Model Indicators of Teaching Presence in Threaded Discussion

Anderson, Rourke, Garrison, and Archer (2001) divided the condition of teaching presence into three categories: instructional design and organization, facilitating discourse, and direct instruction. In threaded discussion, each category of response is represented by specific rhetorical indicators.

Table D1. Instructional Design and Organization Response Category of Teaching Presence

| Indicators | Definition and Examples |
|---|---|
| Setting curriculum | “This week we will be discussing...” |
| Designing methods | “I am going to divide you into groups, and you will debate...” |
| Establishing time parameters | “Please post a message by Friday...” |
| Utilizing medium effectively | “Try to address issues that others have raised when you post!” |
| Establishing netiquette | “Keep your messages short!” |

Table D2. Facilitating Discourse Response Category of Teaching Presence

| Indicators | Definition and Examples |
|---|---|
| Identifying areas of agreement/disagreement | “Joe, Mary has provided a compelling counter-example to your hypothesis. Would you care to respond?” |
| Seeking to reach consensus/understanding | “I think Joe and Mary are saying essentially the same thing.” |
| Encouraging, acknowledging, or reinforcing student contributions | “Thank you for your insightful comments.” |
| Setting climate for learning | “Don’t feel self-conscious about ‘thinking out loud’ on the forum. This is a place to try out ideas after all.” |
| Drawing in participants, prompting discussion | “Any thoughts on the issue?”<br>“Anyone care to comment?” |
| Assess the efficacy of the process | “I think we’re getting a little off track here.” |

Table D3. Direct Instruction Response Category of Teaching Presence

| Indicators | Definition and Examples |
|---|---|
| Present content/questions | “Bates says...what do you think?” |
| Focus the discussion on specific issues | “I think that’s a dead end. I would ask you to consider.” |
| Summarize the discussion | “The original question was...Joe said,...Mary said...we concluded that...We still haven’t addressed...” |
| Confirm understanding through assessment and explanatory feedback | “You’re close, but you didn’t account for...”<br>“...this is important because...” |
| Diagnose misconceptions | “Remember, Bates is speaking from an administrative perspective, so be careful when you say...” |
| Inject knowledge from diverse sources, e.g., textbook, articles, internet, personal experience (includes pointers and resources) | “I was at a conference with Bates once, and he said... You can find the proceedings from the conference at http://...” |
| Responding to technical concerns | “If you want to include a hyperlink in your messages, you have to...” |

# Appendix E

## TIMELINE FOR INSTRUCTIONAL INTERVENTION

## UNIT PROGRAMMING

Key:

RJ - research journal

FN - field notes

AM - analytic memo

TI - teacher interview

TC - teacher conversation

SI - student interview

Survey - student biographical survey

TD - threaded discussion transcript

| **Pre-Data Collection: 6/1/10 - 8/31/10** | |
|---|---|
| Classroom | Complete design of instructional program (timeline and materials). |
| Moodle Component | Create Moodle Forum structures for inquiry unit. |
| Researcher Role | • Collect data: RJ, TI, TC<br>• Conduct pre-study interview with Ms. Hawthorne.<br>• Prepare parental consent and student assent forms, student biographical survey. |
| Notes | None |

| **Week 1: 9/7/10 Begin phase one** - introduces the inquiry unit, Moodle Forum operations, rhetorical features of significance and convergence, and design elements of discussion topic, entry subject lines, and entry hyperlinks. | |
|---|---|
| Classroom | • Introduce central curricular focus on inquiry and how character is shaped.<br>• Students compose “I am” poems - influences that shaped their character.<br>• Students consider problematic situations having to do with character. |
| Moodle Component | • Introduce Moodle Forum - basic operations.<br>• Students compose Moodle profile. |
| Researcher Role | • Collect data: RJ, FN, TC, Survey<br>• Introduce research project to students.<br>• Distribute and collect parental consent and student assent forms.<br>• Determine participants based on parental consent and student assent forms.<br>• Conduct biographical survey with participants. |
| Notes | None |

| **Week 2: 9/13/10** | |
|---|---|
| Classroom | • Begin inquiry unit around essential question: How is character shaped?” (content: news articles, music, images, poetry, short story).<br>• Students conduct character interviews with older individuals. |
| Moodle Component | • Introduce descriptive entry subject lines[1] and begin to introduce concepts of significance and convergence.[2]<br>• Conduct Memory Forum. |
| Researcher Role | Collect data: RJ, FN, TC, TD |
| Notes | [1] Guided participation, structured activities, and discussion assists students to consider what makes an effective entry subject line. Students introduced to the subject line protocol and criteria of “appealing & informative.”<br>[2] Students oriented toward two signal questions:<br>1. What do you think is significant in others’ entries? (significance)<br>2. How can you bring...[these two comments, what Mary and Joe have written, etc.]...together? (convergence) |

| **Week 3: 9/20/10** | |
|---|---|
| Classroom | • Continue inquiry unit.<br>• Hang classroom banner with inquiry question: “How is character shaped?”<br>• Introduce bulletin board with protocol phrases (e.g., “appealing & informative,” and “erase & replace”).<br>• Class discussions of what makes a subject line memorable, how to reply in ways that keep conversation going, and ways of disagreeing in Forum response. |
| Moodle Component | • Continue exploration of entry subject lines and introduce protocol for reply entries of “erase & replace.”<br>• Conduct Interview Forum. |
| Researcher Role | • Collect data: RJ, FN, TC, TD<br>• Identify potential primary informants. |
| Notes | None. |

| **Week 4: 9/27/10** | |
|---|---|
| Classroom | • Continue inquiry unit (content: short story “Thank You, M’am” (Hughes, 1958).<br>• Develop the three-part entry format in class discussion. |
| Moodle Component | • Continue exploration of entry subject lines.<br>• Introduce topic design[1], including concepts of topic domain and discussion topic. Add to bulletin board graphics: “How can I start a thread or reply?”<br>• Conduct “Thank You M’am” Forum. |
| Researcher Role | • Collect data: RJ, FN, TC, TD, SI #1<br>• Finalize identification of primary informants.<br>• Conduct first interview with primary informants (SI #1). |

| **Week 4: 9/27/10 (continued)** | |
|---|---|
| Notes | [1] Guided participation and structured activities assist the whole class to generate potential Forum topics.<br>Debriefing discussions used after each Forum to inform students' understanding of Forum discussion. |

| **Week 5: 10/4/10** | |
|---|---|
| Classroom | • Continue inquiry unit (content: poetry and song lyrics).<br>• Conduct gallery walk activity with teacher-selected poetry student-selected and song lyrics. |
| Moodle Component | • Continue exploration of entry subject lines and topic design.<br>• Introduce entry hyperlinks.<br>• Conduct Poem & Song Lyric Forum |
| Researcher Role | Collect data: RJ, FN, TC, TD |
| Notes | [1] Guided participation and structured activities assist students to consider effective use of entry hyperlinks. |

| **Week 6: 10/12/10 Begin phase two** - continues instruction and gradual release of responsibility for threaded discussion. | |
|---|---|
| Classroom | Begin phase two of the inquiry unit with mini-research projects on different aspects of the 1920s to build background knowledge for *The Great Gatsby* by F. Scott Fitzgerald. |
| Moodle Component | None |
| Researcher Role | • Collect data: RJ, FN, AM #1, TC, SI #2, TD<br>• Conduct second interview with primary informants (SI #2).<br>• Compose Analytic Memo #1 regarding phase one. |
| Notes | Instructional intervention utilizes collaborative sub-groups as well as whole class discussion and activity to assist students with designing topics, composing entry subject lines, and utilizing entry hyperlinks in ways that support significance and convergence. |

| **Week 7: 10/18/10** | |
|---|---|
| Classroom | Complete and present mini-research projects on 1920s. |
| Moodle Component | None |
| Researcher Role | Collect data: RJ, FN, TC |
| Notes | None |

| **Week 8: 10/25/10** | |
|---|---|
| Classroom | • Continue inquiry unit. Begin reading *The Great Gatsby.*<br>• Read aloud chapter one of *The Great Gatsby*.<br>• Begin Glossary Forum activity.<br>• Introduce collaborative topic design with whole class topic development. |
| Moodle Component | • Conduct first *Gatsby* Forum over chapter one.<br>• Continue students' practice in designing topics, composing entry subject lines, and utilizing hyperlinks. |
| Researcher Role | • Collect data: RJ, FN, TC, TD, SI #2<br>• Conduct second interview with primary informants (SI #2) |
| Notes | None |

| **Week 9: 11/1/10** | |
|---|---|
| Classroom | • Continue inquiry unit with *The Great Gatsby.*<br>• Independent reading of chapter two of *The Great Gatsby*.<br>• Read aloud of chapter three of *The Great Gatsby*.<br>• Class discussion activities around essential quotes and continued work with Glossary Forum.<br>• Introduce task rotation project – compose writings in four learning styles: character quotes, choose one character with whom to share a deserted island, compare two characters, and write a RAFT. |
| Moodle Component | • Conduct second *Gatsby* Forum over chapters two and three.<br>• ***Entry length requirement introduced by Ms. Hawthorne with this discussion Forum.***<br>• Students develop discussion topics in collaborative groups. Mrs. Hawthorne and Mr. Martin revise and post initiating entries.<br>• Model topic design conference by Mrs. Hawthorne and Mr. Martin.<br>• Continue students' practice in composing entry subject lines and utilizing hyperlinks. |
| Researcher Role | • Collect data: RJ, FN, TC, TD, AM #2<br>• Compose Analytic Memo #2 regarding phase two to-date. |
| Notes | None |

| **Week 10: 11/8/10** | |
|---|---|
| Classroom | • Continue inquiry unit with *The Great Gatsby.*<br>• Independent reading of chapters four and five of *The Great Gatsby*.<br>• Class discussion activities based on read aloud of excerpts from chapter five.<br>• Continue task rotation project. |
| Moodle Component | • Conduct third *Gatsby* Forum over chapters four and five.<br>• Students develop discussion topics in collaborative groups, compose and post initiating entries.<br>• Continue students' practice in composing entry subject lines and utilizing hyperlinks. |
| Researcher Role | Collect data: RJ, FN, TC, TD |
| Notes | None |

| **Week 11: 11/15/10** | |
|---|---|
| Classroom | • Continue inquiry unit with *The Great Gatsby.*<br>• Independent reading of chapters six and seven of *The Great Gatsby*.<br>• Complete task rotation project. |
| Moodle Component | • Conduct fourth *Gatsby* Forum over chapters six and seven.<br>• Students develop discussion topics in collaborative groups, compose and post initiating entries.<br>• Continue students' practice in composing entry subject lines and utilizing hyperlinks. |
| Researcher Role | Collect data: RJ, FN, TC, TD |
| Notes | None |

| **Week 12: 11/22/10** | |
|---|---|
| Classroom | • Continue inquiry unit with *The Great Gatsby.*<br>• View clips from two *Gatsby* films and compare in class discussion.<br>• Distribute culminating project. |
| Moodle Component | Continue *Gatsby* Forum over chapters six and seven. |
| Researcher Role | Collect data: RJ, FN, TC, TD |
| Notes | None |

| **Week 13: 11/29/10** | |
|---|---|
| Classroom | • Independent reading of chapters eight and nine of *The Great Gatsby*.<br>• Read aloud of excerpts from chapters eight and nine of *The Great Gatsby*.<br>• Class discussion activities around excerpts. |
| Moodle Component | • Conduct fifth (final) *Gatsby* Forum over chapters eight and nine.<br>• Students develop discussion topics individually, compose and post initiating entries.<br>• Continue students' practice in composing entry subject lines and utilizing hyperlinks. |
| Researcher Role | Collect data: RJ, FN, TC, TD |
| Notes | None |

| **Week 14: 12/6/10** | |
|---|---|
| Classroom | Begin unit assessment and follow-up activities: Choice activity (essay, digital poster using Glogster or Prezi, or media project using podcast or iMovie). |
| Moodle Component | Not applicable |
| Researcher Role | • Collect data: RJ, FN, TC, TD, SI #3,<br>• Conduct third interview with primary informants (SI #3) |
| Notes | None |

| **Week 15: 12/13/10** | |
|---|---|
| Classroom | Complete and present unit assessment and follow-up activities: Choice activity (essay, digital poster using Glogster or Prezi, or media project using podcast or iMovie). |
| Moodle Component | Not applicable |
| Researcher Role | • Collect data: RJ, TI, TC, SI #3, AM #3<br>• Complete third interview with primary informants (SI #3).<br>• Conduct post-study teacher interview with Ms. Hawthorne<br>• Compose Analytic Memo #3 regarding phase two. |
| Notes | None |

# Appendix F

## INFORMED PARENTAL CONSENT

Dear Parent or Guardian:

Your child is invited to take part in a research project being conducted throughout the fall semester by Kenneth Martin, a graduate student at the University of Maine. This research will be carried out in order to inform Mr. Martin’s doctoral dissertation in Literacy Education. The research will be conducted under the guidance of Dr. Julie Cheville, an Associate Professor of Literacy Education in the College of Education and Human Development at the University of Maine.

The purpose of this research is to explore the effect of online communication on students' discussion of what they read. More specifically, I will be assisting Ms. Hawthorne and your child's English class in learning to use Moodle Forum, a computer-based, online discussion program. I will explore the way students use the Forum and their reactions to it.

**What will your child be asked to do?**

As part of their regular work in Ms. Hawthorne's English class, students use Moodle Forum to discuss what they read with their teacher and classmates. I am asking for your permission to use information about these discussions in my study. Specifically, I am asking for your permission to include your student in the following activities. Students may choose to participate in some or all of these activities.

- A survey of his or her technology experience in general and with Moodle Forum in particular as well as certain attitudes toward schoolwork, class discussion, and using Moodle Forum. Sample questions include:
  - How many hours do you spend online each week in school and outside school?
  - Do you have a cell phone? About how many text messages do you send each month?
  - Do you prefer to work alone or do you prefer to work in a group with other students?

- Observation of students in class while they are learning about and using Moodle Forum. I will take notes while observing students who choose to participate, but these observations will not be audio-recorded, videotaped, or shared with the teacher or students.

- In-person interviews that will be audio-recorded and transcribed. Interviews will require up to forty minutes of your child's time and will be scheduled during the class period or at another time during the school day that is convenient for your child. Interviews will be conducted where the student's responses will not be overheard, and I will remind students that they may choose to answer or not answer any questions that I ask.

- I will ask your child about his or her reactions to using Moodle Forum and about the way he or she has used Moodle Forum to participate in discussion. Sample questions include:
  - How does using Moodle Forum compare with discussion in class?
  - How do you decide what entries to read and respond to?
  - What makes a good discussion topic on Moodle Forum?

- Review of entries made in Moodle Forum discussions. Because I will be helping students in learning to use online discussion, I may be reading Moodle Forum entries by all students. However, for purposes of my research, I will only be collecting and analyzing entries made by those students who choose to participate in the study.

**Voluntary**

Your child's participation is entirely voluntary. He or she may skip any survey or interview questions, or refuse to participate or withdraw from any of the activities listed above at any time. Withdrawing or refusing to participate in some or all of the activities or refusing to answer interview questions will not affect his or her standing with his or her teacher or the school in any way.

**Confidentiality**

Your child's name will not be on any of the documents. I will replace students' names with pseudonyms on interview transcripts and transcripts of Moodle Forum discussions. Student surveys will be identified with a numerical code, and the key matching these codes to student names will be kept in a locked cabinet. This key will be destroyed following my successful dissertation defense, which is anticipated to occur in May 2011, and any survey data will be reported anonymously. Your child's real name or any other identifying information will not be used in any reports, publications, or conference presentations that result from this study. Interview transcripts and observation notes will not be available to any participants. Participants are, of course, free to discuss their own experiences in this study with others.

I will store interview audio recordings on a computer hard drive in a password-protected file that only I can access. Once I have successfully defended my dissertation, I will destroy the audio recordings. I will store electronic copies of interview transcripts and Moodle Forum discussion transcripts on a computer hard drive in a password-protected file that only I can access. This computer hard drive as well as any paper copies of surveys, interview transcripts, Moodle Forum discussion transcripts, or other documents will be stored in a locked cabinet in my home office for a period of ten years. At that time, the computer hard drive and paper copies of surveys, interview and Forum discussion transcripts, and other documents will be destroyed.

## Risks

Other than time and inconvenience, risks to your child are minimal beyond those of a regular school day. There is a possibility that students may be uncomfortable answering some interview or survey questions, or sharing their work. Students will be reminded that they may skip any question at any time or decline to submit their work to the research study. Your child also has the right to end interview participation at any time.

## Benefits

This study will have no direct benefit to you or your child, other than possible increased understanding of himself or herself as a learner. I do hope that the reported results of the research may add to what we know about computer-based learning and may benefit teachers who have access to the written report, including interested school and district personnel.

## Contact Information

If you have any questions about this study, please contact me, Ken Martin at [Telephone] or at [email], address: [mailing address]. You may also contact my faculty advisor, Dr. Julie Cheville at [Telephone] or at [email]. If you have any questions about your child’s rights as a research participant, please contact [Name], Assistant to the University’s Protection of Human Subjects Review Board, at [Telephone] or at [email].

Please select and mark an “X” beside *one* of the following statements and sign below.

_____ I agree to my son/daughter's participation in the Moodle research study.

_____ Please do NOT include my son/daughter in the Moodle research study.

Your signature below indicates that you have read and understand the above information. You will receive a copy of this form.

| | |
|---|---|
| ___________________________________ | ______________________________ |
| Parent's/Guardian's Signature | Date |

___________________________________

Student's Name

## Appendix G

## ASSENT FORM FOR STUDENTS

Dear Student:

You are invited to take part in a research project being conducted throughout the fall semester by Kenneth Martin, a graduate student at the University of Maine. This research will be carried out in order to inform Mr. Martin's doctoral dissertation in Literacy Education. The research will be conducted under the guidance of Dr. Julie Cheville, an Associate Professor of Literacy Education in the College of Education and Human Development at the University of Maine.

The purpose of this research is to explore the effect of online communication on students' discussion of what they read. More specifically, I will be assisting Ms. Hawthorne and your English class in learning to use Moodle Forum, a computer-based, online discussion program. I will explore the way students use the Forum and their reactions to it.

**What will you be asked to do?**

As part of your regular work in Ms. Hawthorne's English class, students use Moodle Forum to discuss what they read with their teacher and classmates. I am asking for your permission to use information about these discussions in my study. Specifically, I am asking for your permission to include you in the following activities. Students may choose to participate in some or all of these activities.

- A survey of your technology experience in general and with Moodle Forum in particular as well as certain attitudes toward schoolwork, class discussion, and using Moodle Forum. Sample questions include:
  - How many hours do you spend online each week in school and outside school?
  - Do you have a cell phone? About how many text messages do you send each month?
  - Do you prefer to work alone or do you prefer to work in a group with other students?

- Observation of students in class while they are learning about and using Moodle Forum. I will take notes while observing students who choose to participate, but these observations will not be audio-recorded, videotaped, or shared with the teacher or students.

- In-person interviews that will be audio-recorded and transcribed. Interviews will require up to forty minutes of your time and will be scheduled during the class period or at another time during the school day that is convenient for you. Interviews will be conducted where the student's responses will not be overheard, and I will remind students that they may choose to answer or not answer any questions that I ask.

- I will ask you about your reactions to using Moodle Forum and about the way you have used Moodle Forum to participate in discussion. Sample questions include:
  - How does using Moodle Forum compare with discussion in class?
  - How do you decide what entries to read and respond to?
  - What makes a good discussion topic on Moodle Forum?

- Review of entries made in Moodle Forum discussions. Because I will be helping students in learning to use online discussion, I may be reading Moodle Forum entries by all students. However, for purposes of my research, I will only be collecting and analyzing entries made by those students who choose to participate in the study.

**Voluntary**

Your participation is entirely voluntary. You may skip any survey or interview questions, or refuse to participate or withdraw from any of the activities listed above at any time. Withdrawing or refusing to participate in some or all of the activities or refusing to answer interview questions will not affect your standing with your teacher or the school in any way.

**Confidentiality**

Your name will not be on any of the documents. I will replace students' names with pseudonyms on interview transcripts and transcripts of Moodle Forum discussions. Student surveys will be identified with a numerical code, and the key matching these codes to student names will be kept in a locked cabinet. This key will be destroyed following my successful dissertation defense, which is anticipated to occur in May 2011, and any survey data will be reported anonymously. Your real name or any other identifying information will not be used in any reports, publications, or conference presentations that result from this study. Interview transcripts and observation notes will not be available to any participants. Participants are, of course, free to discuss their own experiences in this study with others.

I will store interview audio recordings on a computer hard drive in a password-protected file that only I can access. Once I have successfully defended my dissertation, I will destroy the audio recordings. I will store electronic copies of interview transcripts and Moodle Forum discussion transcripts on a computer hard drive in a password-protected file that only I can access. This computer hard drive as well as any paper copies of surveys, interview transcripts, Moodle Forum discussion transcripts, or other documents will be stored in a locked cabinet in my home office for a period of ten years. At that time, the computer hard drive and paper copies of surveys, interview and Forum discussion transcripts, and other documents will be destroyed.

**Risks**

Other than time and inconvenience, risks to you are minimal beyond those of a regular school day. There is a possibility that students may be uncomfortable answering some interview or survey questions, or sharing their work. Students will be reminded that they may skip any question at any time or decline to submit their work to the research study. Students also have the right to end interview participation at any time.

**Benefits:**

This study will have no direct benefit to you, other than possible increased understanding of yourself as a learner. I do hope that the reported results of the research may add to what we know about computer-based learning and may benefit teachers who have access to the written report, including interested school and district personnel.

**Contact Information**

If you have any questions about this study, please contact me, Ken Martin at [Telephone] or at [email], address: [mailing address]. You may also contact my faculty advisor, Dr. Julie Cheville at [Telephone] or at [email]. If you have any questions about your rights as a research participant, please contact [Name], Assistant to the University's Protection of Human Subjects Review Board, at [Telephone] or at [email].

Please select and mark an "X" beside *one* of the following statements and sign below.

_____ I agree to participation in the Moodle research study.

_____ Please do NOT include me in the Moodle research study.

Your signature below indicates that you have read and understand the above information.
You will receive a copy of this form.

| | |
|---|---|
| ______________________________ | ______________________________ |
| Student's Signature | Date |

______________________________
Student's Name

## Appendix H

## TECHNOLOGY EXPERIENCE SURVEY FOR PARTICIPATING STUDENTS

1. Please check any that you have at home: ___Internet ___dial-up ___high speed

How many of the following do you have in your home:

___computer ___television ___vcr or dvd players ___game players

| 2. Please mark how often you do any of the following.<br>Mark "S" for how often you do each for schoolwork, ***and***<br>Mark "P" for how often you do each on your own. | | | | |
|---|---|---|---|---|
| | Daily | 2-3 times a week | Occasionally | Never |
| Surf the Internet | | | | |
| E-mail | | | | |
| Instant Message or Chat | | | | |
| *Read* blogs or Social networking sites like Facebook | | | | |
| *Write* on blogs or Social networking sites like Facebook | | | | |
| Use the Internet for homework | | | | |

3. How many hours do you spend online each week? in school:__________

outside school:__________

About how many hours a day do you spend doing each of the following?

___watching TV or video/dvd ___listening to music ___video or online gaming

4. When you are doing homework, do you do any of the following at the same time?

___listen to music ___IM/Chat ___talk on the telephone ___other (please describe)

5. How frequently do you complete homework on time?

___always ___usually ___50/50 ___occasionally ___never

6. What interferes with your completing assignments?

| | | | |
|---|---|---|---|
| Lack of time | Never | Sometimes | Often |
| Lack of interest | Never | Sometimes | Often |
| Other interests (sports, job) | Never | Sometimes | Often |
| Other:___________________ | Never | Sometimes | Often |

7. How do you usually use the Internet for schoolwork?

8. Do you have a cell phone? _____Yes _____No

a. About how many cell phone *voice* calls do you make a month? __________

b. About how many cell phone *text* messages do you send a month? __________

9. Have you used Moodle Forum before? _____Yes _____No

10. If you have used Moodle Forum before...

a. When? English class in: ___9th grade ___10th grade ___11th grade

_____other:

b. Please complete each statement with the phrase that describes you best:

I participate more___in class discussion ___on Moodle Forum ___about the same

I feel I learn more___in class discussion ___on Moodle Forum ___about the same

c. Please add any comment about your past experience using Moodle:

11. Beginning last year, RHS provided each student with a MacBook laptop. How has this changed the schoolwork (including homework) that you do or are asked to do?

12. Please circle the line ( | ) where you fall on the scale between each pair of statements.

a. I like to participate in class discussions. |------|------|------|------|------| I do not like to participate in class discussions.

b. I almost never change what I think as a result of listening to my classmates. |------|------|------|------|------| I often change what I think as a result of listening to my classmates.

c. I like to be told exactly what the teacher wants on an assignment. |------|------|------|------|------| It's important to have some choice on assignments.

d. Knowing what other members of the class have done helps me know what to do |------|------|------|------|------| I don't usually pay attention to what other students do.

e. I prefer to work alone. |------|------|------|------|------| I prefer to work in a group with other students.

13. When you don’t understand something in class, what do you usually do?

___ask a teacher    ___ask another student    ___look it up    ___forget about it

14. What grades do you usually get in school?

___A    ___B    ___C    ___usually passing    ___often in danger of failing

15. Please list 3-5 students in this class that you would most likely choose to work with on a project.

# Appendix I

## INTERVIEW PROTOCOL FOR PRIMARY INFORMANTS – INTERVIEW #1

I will begin each interview with the following script, describing the research study and emphasizing the confidentiality and voluntary aspects of participating in interviews.

> Good morning. Before we begin, I just want to remind you that everything you say in this interview is confidential. I won't tell your teacher, other students, or anyone else the things you tell me. I'm recording this interview, but the recording will be locked up and I'll be the only one who listens to it. I'll be transcribing the interview into a word document. When I do that, I'll change your name to a pseudonym or fake name, and I'll also be disguising or taking out any information that might be used to identify you or any other student. When I write my final paper or give any presentations about this study, I also won't be using any actual names or other identifying information.
>
> I also want to emphasize that you are free to skip any of the questions I ask or to stop the interview altogether at any point if you want, and that won't affect your standing in any way with me or with your teacher. The purpose of this interview is to find out about how you use the Moodle Forum and how you feel about using the Moodle Forum. I want to emphasize that I'm not judging what you say in any way. I'm just interested in your honest thoughts and feelings. If I ask you a question, it's not because I'm looking for a particular answer. It's just because I want to know more about what you think. The only right answer here is the answer that you think is true.
>
> Do you have any questions before we start?

I will then ask students the following questions:

- I'd like to begin by asking you to describe your general experience with technology both in and out of school.

- Beginning last year, the school provided every student with a laptop. How has this affected the work you do or are asked to do in school?

- Please describe what helps you to learn in school (e.g., kinds of activities, who you work with)? What makes it hard for you to learn in school (e.g., kinds of activities, who you work with)? What part do other students play in the way you learn? How do you feel about participating in class discussion?

- Now that we have been using it for about three weeks, how do you feel about using

Moodle Forum?

- How does our use of Moodle Forum compare with class discussion?
- (If the student has used Moodle Forum prior to this study...) How do you feel about the way we are using Moodle Forum compared with the way you used it in the past?
- How do you decide which entries to read and respond to on the Forum?
- One of the things we've been talking about is considering what others have to say on a Moodle Forum, and I'm just wondering how you feel about being asked to do that? What, if any, influence do other students have on your participation on the Forum?
- What makes a good discussion topic?
- What makes a good moderator?
- How do you go about writing a Moodle Forum reply?
- What makes a good entry subject line?
- How do you use entry hyperlinks?
- We've been talking a lot about making connections between what different students have to say on a Moodle Forum, and I'm just wondering how you feel about being asked to do that?
- How do you feel about your teacher's participation on the Forum?
- Is there anything you would like us to do to make the Forum work better for you?

# Appendix J

## INTERVIEW PROTOCOL FOR PRIMARY INFORMANTS – INTERVIEW #2

I will begin each interview with the following script reminding students about the confidentiality and voluntary aspects of participating in interviews.

> Good morning. Before we begin, I just want to remind you that everything you say in this interview is confidential. I won't tell your teacher, other students, or anyone else the things you tell me. I'm recording this interview, but the recording will be locked up and I'll be the only one who listens to it. I'll be transcribing the interview into a word document. When I do that, I'll change your name to a pseudonym or fake name, and I'll also be disguising or taking out any information that might be used to identify you or any other student. When I write my final paper or give any presentations about this study, I also won't be using any actual names or other identifying information.
>
> I also want to emphasize that you are free to skip any of the questions I ask or to stop the interview altogether at any point if you want, and that won't affect your standing in any way with me or with your teacher. The purpose of this interview is to find out about how you use the Moodle Forum and how you feel about using the Moodle Forum. I want to emphasize that I'm not judging what you say in any way. I'm just interested in your honest thoughts and feelings. If I ask you a question, it's not because I'm looking for a particular answer. It's just because I want to know more about what you think. The only right answer here is the answer that you think is true.
>
> Do you have any questions before we start?
>
> Now that we have been using Moodle Forum for about six weeks, I'd like to ask you about some of the ways we are using it as well as how you feel about using it. A lot of the questions I ask will be the same as in the first interview, but your thoughts and reactions to Moodle may have changed since then which is fine.

I will then ask students the following questions:

- Now that we have been using it for about six weeks, how do you feel about using Moodle Forum?
- How does our use of Moodle Forum compare with class discussion?
- (If the student has used Moodle Forum prior to this study...) How have you felt about

the way we are using Moodle Forum compared with the way you used it in the past?

- How do you decide which entries to read and respond to on the Forum?
- One of the things we've been talking about is considering what others have to say on a Moodle Forum, and I'm just wondering how you feel about being asked to do that? What, if any, influence do other students have on your participation on the Forum?
- What makes a good discussion topic?
- What makes a good moderator?
- How do you go about writing a Moodle Forum reply?
- What makes a good entry subject line?
- How do you use entry hyperlinks?
- One of the things we've been talking about is making connections between what different students have to say on a Moodle Forum, and I'm just wondering how you feel about being asked to do that?
- How do you feel about your teacher's participation on the Forum?
- Is there anything you would like us to do to make the Forum work better for you?

# Appendix K

## INTERVIEW PROTOCOL FOR PRIMARY INFORMANTS – INTERVIEW #3

Anchor questions (in bold) will be asked of every informant in the third interview. Secondary questions (bulleted) will provide prompts as needed. In the fourth interview, I will follow the same protocol but will only be asking for clarification or follow-up on selected anchor items as needed based on my review of transcripts from the third interview.

I will begin each of these interviews with the following script reminding students about the confidentiality and voluntary aspects of participating in interviews.

> Good morning. Before we begin, I just want to remind you that everything you say in this interview is confidential. I won't tell your teacher, other students, or anyone else the things you tell me. I'm recording this interview, but the recording will be locked up and I'll be the only one who listens to it. I'll be transcribing the interview into a word document. When I do that, I'll change your name to a pseudonym or fake name, and I'll also be disguising or taking out any information that might be used to identify you or any other student. When I write my final paper or give any presentations about this study, I also won't be using any actual names or other identifying information.
>
> I also want to emphasize that you are free to skip any of the questions I ask or to stop the interview altogether at any point if you want, and that won't affect your standing in any way with me or with your teacher. The purpose of this interview is to find out about how you use the Moodle Forum and how you feel about using the Moodle Forum. I want to emphasize that I'm not judging what you say in any way. I'm just interested in your honest thoughts and feelings. If I ask you a question, it's not because I'm looking for a particular answer. It's just because I want to know more about what you think. The only right answer here is the answer that you think is true.
>
> Do you have any questions before we start?

**1. How do you feel about using Moodle Forum?**

- What do you like and dislike about using Moodle Forum?
- On Moodle Forum, are you comfortable ...sharing personal information? ...being serious? ...expressing feelings? ...using humor?
- What surprised you about using Moodle?
- ***Transition:*** Is using Moodle Forum more like class discussion or more like a writing assignment?

**2. How does using Moodle compare ...with class discussion? ...with written assignments?**

- How do you feel about participating ...in class discussion? ...on Moodle Forum?
  - Are you comfortable participating ...in class? ...on Moodle Forum?
- How important is it to participate ...on the Moodle Forum? [...in class discussion?]
- How does Moodle Forum [or class discussion] affect the way you learn [understand what you are discussing or studying]? ...or how much you learn [understand what you are discussing or studying]?

**3. How do you decide what entries to read and to respond to on Moodle Forum?**

- How many entries do you tend to read? Do you read every student's posts? ...all/most/some of their posts?
- Do you tend to reply to the same students most of the time?
- On Moodle, do you feel like you respond to different people? ...more people?
- How do you decide when to respond in class discussion?
- Are you more apt to reply based on what someone said or who the author is?

**4. When using Moodle Forum, how are you influenced by classmates?**

- Are you apt to change what you think (write) as a result of what other students have written on Moodle Forum? [...compared with class discussion?] Ask for examples.
- Do you feel as though you learn from other students? ...what they write [say]?
- Does what classmates write help you decide what you think or what to do?
- How often do you re-read an entry or go back to an earlier entry on the Forum?

- How do you think classmates are influenced by you?
- Is it easy to make them understand you? ...what you think?
- Do you feel classmates care what you think?

**Summary question on *significance*:** We've talked a lot this semester about considering what others write on a Moodle Forum. I'm just wondering how you feel about being asked to do that?

**5. While using Moodle in class, what else are you and your classmates apt to be doing?**

**6. How do you feel about your teacher's participation on Moodle?**

- Do you read all of her entries? How many...which ones do you tend to read?
- When are you apt to reply to what she has written?
- Do you feel you have to respond to her? [Do you feel you can ignore her entries?]
- How important is it to you to get a reply from your teacher?

**7. What makes a good topic?**

- How do you feel about the topics we've had on the Forum?
- Were they interesting? ...different from each other?
- What topics do you find most difficult to write about?
- What makes you lose interest in a topic?

**8. What makes a good moderator?**

- How did you decide which moderators to join (topic or person)?
- How did you decide which moderators to avoid?
- What kinds of things did moderators do that made it easy for you to participate? What was helpful, interesting, thought-provoking?
- How did you like being a moderator yourself?
- How did you decide on a topic? ...who or what helped you decide on a topic?
- What did you try to do as a moderator?

**9. How do you go about writing a Moodle Forum reply? (Describe your process.)**

**10. What makes a good entry subject line?**

- Do you read entry subject lines? How do they help you [decide which entries to read]?
- How do you use entry subject lines?
- Do you use entry subject lines to find entries?
- How do you use the search feature in Moodle?
- How do you create an entry subject line?
- Do you write the subject line before or after writing the entry?

**11. How do you use entry hyperlinks?**

- When [how, why] do you decide to add a link in an entry?
- How often do you choose to open a link?
- Why do you decide to open a link?
- Are you apt to use [or refer to ] what someone else has written without actually creating a link to their entry? Ask for examples.
- Are you apt to be influenced by what someone else has written but not actually refer to their post in your own entry?

**Summary question on *convergence***: We've talked a lot this semester about making connections between what different students have to say on a Moodle Forum. I'm just wondering how you feel about being asked to do that?

Is there anything you think we could do to make the Forum work better for you?
Is there anything about the way Moodle Forum works that you would like to see changed?

# Appendix L

## TEACHER INTERVIEW PROTOCOL – PRE-STUDY

- How have you used Moodle in your classroom practice?

- How would you compare discussion in class and online?
  - How carefully do students listen to others?
  - How do students tend to respond to others?

- What are your objectives for discussion in each context?

- What are the advantages or benefits of online discussion?
- What are the disadvantages?  What do you consider participants' biggest difficulties or your greatest concerns/disappointments in discussion?

- How would you characterize student engagement/use of technology generally?

- How does online discussion influence students' perception of themselves as learners or of learning generally?

- What is you general philosophy of education and learning? the teacher's role? student responsibility for learning?
  - How do you view student work out-of-class?
  - How do students view out-of-class schoolwork?

- How would you characterize the work of students in this class (length, completion, sophistication)?

- You have been their English teacher for two of their three high school years. How would you characterize their progress over that time? How does this influence your expectations for them this year? As relates to Moodle Forum?

## Appendix M

## TEACHER INTERVIEW PROTOCOL – POST-STUDY

- How has the use of Moodle Forum this semester compared with your prior experience with Moodle Forum?

- What do you feel have been the most salient effects of the instructional intervention with Moodle Forum during the first semester?

- In what ways has the use of Moodle Forum met your hopes and expectations this semester?
    - What will you continue in future use?

- In what ways has the use of Moodle Forum failed to meet your hopes or expectations this semester?
    - What will you change in future use?

- What is your description, analysis, evaluation, or perception of discussion ***topic design***? Feel free to include how you would continue or alter instructional intervention used to introduce and/or support topic design.

- What is your description, analysis, evaluation, or perception of the following ***entry protocols***? Feel free to include how you would continue or alter instructional intervention used to introduce and/or support these protocols.
    - the three-part entry format that we instituted (state your position, provide evidence or support, keep the conversation going)
    - subject lines
    - hyperlinks
    - entry length
    - approaches for expressing agreement or disagreement with each other

- What is your description, analysis, evaluation, or perception of the following ***Forum protocols***? Feel free to include how you would continue or alter instructional intervention used to introduce and/or support these protocols.
    - when activity is scheduled or takes place, including
        - how long a Forum stays open to participation
        - to what extent time is provided in class or participation is expected to take place out of class/school
    - number of entries posted
    - frequency of participation, particularly over time – i.e., returning to check the Forum.
        - How does requiring Forum participation compare with requiring participation in class discussion?

- What is your description, analysis, evaluation, or perception of ***other elements*** not initially targeted in the intervention?
    - messaging system
    - the Forum search feature

- What are your plans for ***assessing*** Moodle Forum activity going forward?

- What do you consider your role to be while students are engaged in online discussion?
    - Are students able to perform any of what you see as the teaching functions?
    - Any comments about curriculum and instruction in support of online discussion.

- How would you characterize student engagement with online discussion?
    - To what would you attribute decreased participation across the Gatsby Forums?
    - To what would you attribute the increased length of individual entries written in the Gatsby Forums?

- How does online discussion influence students' perception of learning or themselves as learners?

- What, if any, response do you have regarding the following alternative explanations?

    - How might the nature of *The Great Gatsby* text have affected student participation? Was using an electronic text an issue impacting student participation?

    - How might other school demands or "being Seniors" have affected student participation?

- Is what we asked students to do within their zone of proximal development (ZPD)?

    - Is there reason to believe that students are or are not developmentally mature enough to participate in online discussion in the ways that we expected or hoped for?

- Do you view Moodle Forums as more like discussion or more like writing?

- How do in-class and online discussion (now) compare?

    - What are the advantages and disadvantages of each?

- How would you *now* characterize student engagement and skill with technology, generally?

- How has this semester affected your general philosophy of education and classroom practice? ...your view of student engagement and motivation? ...your view of technology and technology integration?

# Appendix N

## *SOCIOLINGUISTIC* MASTER CODES AND SUB-CODES

## (Applied to Forum Discussion Transcripts)

### MASTER CODE: INITIATION (INIT)

This master code identifies a participant's introduction of a new topic in a Moodle Forum post. A new topic represents the explicit introduction of a question or declaration that is not evident in *any* prior posts on the Forum.

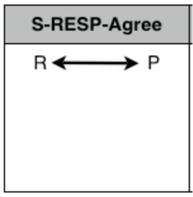
●*Initiation-Question* (INIT-Quest): This sub-code identifies a participant's introduction of a new topic by means of a question. A question may be a request for information, explanation, justification, validation, consensus, or a solution (e.g., Is outright blocking the only answer to controlling students' Internet access?). A question may be accompanied or signaled by an illustrative example that poses a problematic situation (e.g., I suspect that these are just some of the ways students hide their online activity in class, and I would like suggestions on how to combat this.). In addition, a question may be rhetorical (i.e., posed to the self to acknowledge puzzlement) (e.g., I often wonder whether one-to-one laptops are a blessing or a curse.).

●*Initiation-Declaration* (INIT-Decl): This sub-code identifies a participant's introduction of a new topic by the assertion of a belief, claim, or observation. A declaration may be *supported*, as by personal experience, but need not be *substantiated*, as by argument and evidence. A declaration may be expressed in the first person (e.g., I believe that..., I think that..., I feel that..., I have noticed that...) or the third person (e.g., Schools should provide every student with a dedicated laptop computer, Lack of time is the biggest obstacle to technology integration, Most students appear to have access to the Internet outside of school).

N.B.: Sub-codes under the following master codes of Significant Response and Convergent Response are each illustrated by a figure. See explanatory note at the end of this Appendix for the key to the symbols in these figures as well as the complete illustrative figure for these master codes.

### MASTER CODE: SIGNIFICANT RESPONSE (S-RESP)

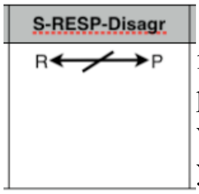
*Significance* is the act of attending with consideration to what is said by another participant in a discussion. The Significant Response master code identifies the Respondent's reference to one other participant's entry, and applies to a reply entry in which explicit reference is made to the entry of that other participant. Significant Response may be made by hyperlink, direct quotation, paraphrase, or summary, but reference clearly identifies its source by author (e.g., name or referrent, "you" in a reply entry) or explicit reference to content.



*Significant Response-Agreement* (S-RESP-Agree): This sub-code identifies a respondent’s agreement with all or a portion of another participant’s entry. This sub-code applies to a respondent’s agreement with a particular belief, claim, or observation (e.g., John, I agree with you that...). This sub-code also applies to affirmation of another’s entry (e.g., I agree that “each student should have a dedicated laptop”).

Examples:

- P: Each student should have a dedicated laptop. With one-to-one laptops students take much better care of their assigned machine.
- R: I agree. Students do take better care of one-to-one laptops.
- R: The experience at our school has been the same. With one-to-one, I almost never find a laptop lying around unattended, and our repair budget has decreased 50%.

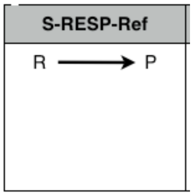


●*Significant Response-Disagreement* (S-RESP-Disagr): This sub-code identifies a respondent’s disagreement with all or a portion of another participant’s entry. This sub-code applies to a respondent’s disagreement with a particular belief, claim, or observation (e.g., John, I disagree with you that...). This sub-code also applies to repudiation of a participant’s entry (e.g., I can’t agree that “each student should have a dedicated laptop”).

Examples:

- P: I think boys are more likely than girls to cheat in a relationship.
- R: No way. Girls are just as likely to cheat.
- R: I can see how you might think this, but I've been a counselor at our Youth Center for three years, and just as many boys as girls come to me for advice over a cheating partner.
- R: Even though it seems that girls are more often the victim of cheating, I would say this is only because girls tend to react more strongly than boys and show their emotions in this kind of situation.

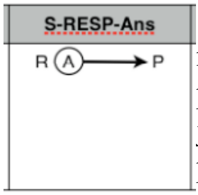
N.B.: “But” and “even though” are transitional rhetorical devices that signal disagreement. See Explanatory Note below for further explanation.



●*Significant Response-Reference* (S-RESP-Ref): This sub-code identifies a respondent’s explicit mention of another participant’s entry that does not indicate either agreement or disagreement This mention may be directed at all or a portion of a participant’s entry and applies to a particular belief, claim, or observation.

Example:

- P: We are now blocking social networking sites at our school (e.g., FaceBook, MySpace).
- R: I notice that your school is blocking social networking sites. Recently, I have noticed a number of articles specifically about using FaceBook in curriculum.

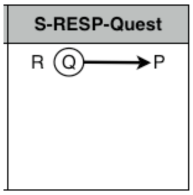


●*Significant Response-Answer* (S-RESP-Ans): This sub-code identifies a respondent's direct response to a question explicitly asked in another participant's entry. Answers provide information, explanation, justification, validation, or possible solutions. Answers may respond to a problematic situation posed by another participant, and may be in the form of a declaration (i.e., a belief, claim, or observation) in either the first or third person.

Examples:

- P: Due to the nature of digital writing, how can a teacher insure that all students are held accountable for their portion of collaborative assignments?
  R: I try to include an individual writing component for every student in every assignment, usually a process reflection. For example...

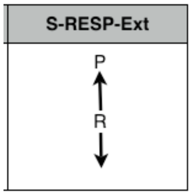
- P: ...I just wonder how much of our time in English class should be spent in teaching a new technology like blogging...
  R: I don't hesitate to use teaching time to introduce my students to a new way to use technology...



●*Significant Response-Question* (S-RESP-Quest): This sub-code identifies a respondent's asking a question about all or a portion of another participant's entry.

Examples:

- A question may ask for clarification, specification, or other explicit amplification regarding what the other participant has said, (e.g., What blog site do you use? What did you mean by "blogging creates privacy concerns for parents?" Can you describe in more detail how you use blogs?).
- A question may be phrased as a request (e.g., Please say more about how you use blogs.).
- A question may inquire into the application of what a participant has said to a different context (e.g., You have described FaceBook as troubling to parents. Do you find that blogging in school is troubling to parents in the same way?).



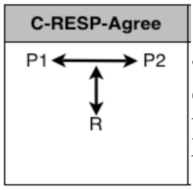
●*Significant Response-Extension* (S-RESP-Ext): This sub-code identifies a respondent's statement that expands the scope, effect, or meaning of another participant's entry. This sub-code applies to statements that suggest a new application, connect to a different context, or synthesize in some new way elements of what the other participant has said. (N.B.: Extension by a respondent may follow agreement or disagreement as well as a neutral reference to another participant.)

Examples:

- Although I agree with you that teachers need to be discussing what technologies should be used in their classrooms, I think it is also important for administrators to address what technologies should be integrated school-wide...
- I believe the situation you describe for blogging is also true of creating multimedia...

**MASTER CODE: CONVERGENT RESPONSE (C-RESP)**

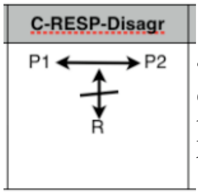
*Convergence* is the act of combining contributions from multiple participants into one's own reasoned position. The Convergent Response master code identifies the respondent's reference to the entries of two or more participants, and applies to a reply entry in which explicit reference is made to the entries of those other participants. Convergent Response may be made by hyperlink, direct quotation, paraphrase, or summary, but reference clearly identifies its multiple sources by author's name (or direct referrent) or explicit reference to content.



●*Convergent Response-Agreement* (C-RESP-Agree): This sub-code applies when a respondent has explicitly identified agreement among entries by two or more participants. These participants themselves may have acknowledged this agreement, or the agreement may be pointed out by the respondent. This sub-code then identifies the respondent's own, explicitly stated agreement with the particular belief, claim, or observation held in common by these other participants.

Example:

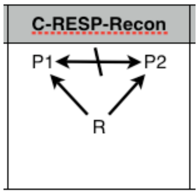
- John and Mary have each noted that teachers are handicapped in adopting new technology applications by a lack of computer hardware in their classrooms. I would also say that this is the number one obstacle to technology integration.



●*Convergent Response-Disagreement* (C-RESP-Disagr): This sub-code applies when a respondent has explicitly identified agreement among entries by two or more participants. These participants themselves may have acknowledged this agreement, or the agreement may be pointed out by the respondent. This sub-code then identifies the respondent's explicitly stated *dis*agreement with the particular belief, claim, or observation held in common by these other participants.

Example:

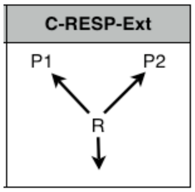
- John and Mary have each stated that teachers are handicapped in adopting new technology applications by a lack of computer hardware in their classrooms. However, I would argue that we have success stories with technology integration even in classrooms that have just one computer available. For example...



●*Convergent Response-Reconcile* (C-RESP-Recon): This sub-code applies when a respondent has explicitly identified *dis*agreement among entries by two or more participants. These participants themselves may have acknowledged this disagreement, or the disagreement may be pointed out by the respondent. This sub-code then identifies the respondent's effort to resolve the difference between the two opposing positions. Reconciliation requires that the respondent propose a compromise, third alternative, or other settlement. Reconciliation does *not* involve taking sides or attempting to bolster one position against the other. (N.B.: Taking sides would be double coded as S-RESP-Agree and S-RESP-Disagree.)

Example:

- John has stated that teachers are prevented from adopting new technology applications by a lack of computer hardware in their classrooms, while Mary notes that we have success stories with technology integration even in classrooms that have just one computer available. I would suggest that we experience both of these realities depending on the nature of a school's administrative leadership.



●*Convergent Response-Extension* (C-RESP-Ext): This sub-code applies when a respondent explicitly references* entries made by two or more participants, *and* connects or synthesizes their content in some way that expands the scope, effect, or meaning of those entries. This sub-code identifies statements that suggest new applications or a different context for what the other participants have said. Extension may involve answering a question raised or problem posed by multiple participants. In addition, extension may involve raising a question based on entries by multiple participants. (*N.B.: "Reference" in this context may be neutral, or it may involve any configuration of agreement or disagreement amongst the participants. The salient determining factor is purposeful extension into new territory by the respondent.)

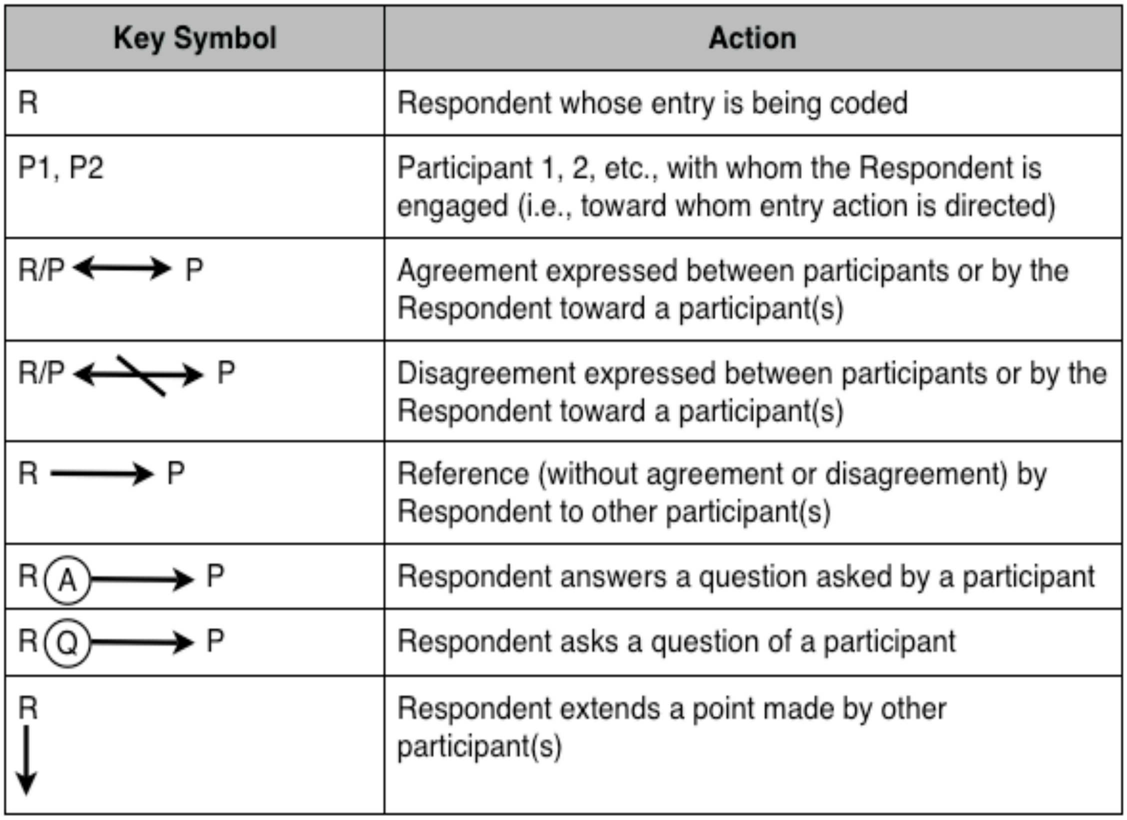
Example:

- John has stated that teachers are prevented from adopting new technology applications by a lack of computer hardware in their classrooms. Mary has described at length her frustration with firewalls and network filters that prevent her from accessing essential Internet sites. I believe these statements indicate the need for so-called technology coordinators not just to manage a school's hardware, but to work in a professional development role with classroom teachers.

## Coding Map

<table>
<tr><th colspan="2"><i>Sociolinguistic</i> Master Codes and Sub-codes: <b><i>Forum Transcripts</i></b></th></tr>
<tr><td><b>INITIATION (INIT): user's introduction of a new topic by means of...</b><br>INIT-Quest: a question<br>INIT-Decl: declaration of a belief, claim, or observation</td><td></td></tr>
<tr><td><b>SIGNIFICANT RESPONSE (S-RESP): respondent's explicit reference to one other participant's entry...</b><br>S-RESP-Agree: agreement with an entry<br>S-RESP-Disagr: disagreement with an entry<br>S-RESP-Ref: reference to an entry (without agreement or disagreement)<br>S-RESP-Ans: answer to a question posed by another's entry<br>S-RESP-Quest: ask a question about or prompted by another's entry<br>S-RESP-Ext: extension of another's entry</td><td></td></tr>
<tr><td><b>CONVERGENT RESPONSE (C-RESP): respondent incorporates material from multiple source participants into own position...</b><br>C-RESP-Agree: source participants <i>and</i> respondent all agree<br>C-RESP-Disagr: source participants agree, but respondent disagrees<br>C-RESP-Recon: source participants disagree, and respondent reconciles the two (<i>not</i> taking sides)<br>C-RESP-Ext: respondent connects source participants, extending their content</td><td></td></tr>
</table>

## Explanatory Note: Discourse Moves for Significant and Convergent Response



| Key Symbol | Action |
|---|---|
| R | Respondent whose entry is being coded |
| P1, P2 | Participant 1, 2, etc., with whom the Respondent is engaged (i.e., toward whom entry action is directed) |
| R/P $\longleftrightarrow$ P | Agreement expressed between participants or by the Respondent toward a participant(s) |
| R/P $\not\longleftrightarrow$ P | Disagreement expressed between participants or by the Respondent toward a participant(s) |
| R $\longrightarrow$ P | Reference (without agreement or disagreement) by Respondent to other participant(s) |
| R Ⓐ$\longrightarrow$ P | Respondent answers a question asked by a participant |
| R Ⓠ$\longrightarrow$ P | Respondent asks a question of a participant |
| R $\downarrow$ | Respondent extends a point made by other participant(s) |

Figure N1. Symbol Key for Significant and Convergent Response. The *Key Symbols* in the left hand column are used in Figures O2 and O3 below to signify the discourse moves between participants in a Moodle Forum, as described in the right hand column.

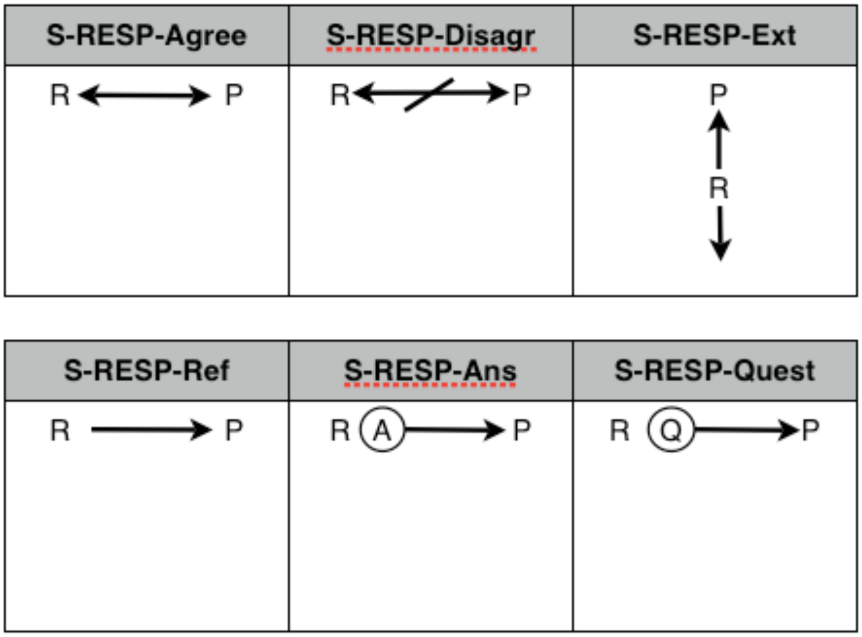

S-RESP-Agree
R
P
S-RESP-Disagr
R
P
S-RESP-Ext
P
R
S-RESP-Ref
R
P
S-RESP-Ans
R
A
P
S-RESP-Quest
R
Q
P

Figure N2. Discourse moves in significant response.  Six discourse moves are available under the significant response master code (S-RESP).

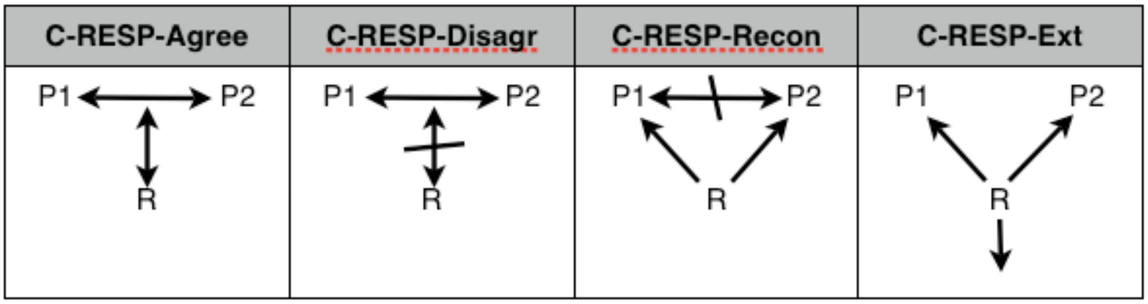

C-RESP-Agree
P1
P2
R
C-RESP-Disagr
P1
P2
R
C-RESP-Recon
P1
P2
R
C-RESP-Ext
P1
P2
R

Figure N3. Discourse moves in convergent response.  Four discourse moves are available under the convergent response master code (C-RESP).

N.B.: Additional notes on coding discourse moves.

- Any single utterance can have multiple codes.  For example, in one reply entry a respondent may express both agreement and disagreement with a participant, in which case the entry might be double-coded as S-RESP-Agree and S-RESP-Disagr.

- It is possible that a stance like agreement or disagreement may be inferred from a respondent's moves.  Readers are reminded that the codes represented here are descriptive only—not inferential.  That is, these codes should be applied only to explicit statements evidencing any discourse move.  For example,
  - P: I find Nick, the narrator in *The Great Gatsby*, to be so annoying in the way he constantly harps on how honest he is.

  - R 1: I feel that Nick describes everything in *Gatsby* with such detail that he helps me to see things clearly and appreciate the lavish nature of the times.

  This example suggests that the respondent (R #1) is more positive toward Nick than is the participant (i.e., it might be inferred that R #1 is disagreeing with P). Nevertheless, it is not clear that P and R1 are addressing the same aspect of Nick's character or role. The participant may be considering Nick, the person, while the respondent may be focusing on Nick as the literary device of narrator. Therefore, the response (R #1) should not be coded as disagreement.

- Although agreement and disagreement should not be inferred, an explicit statement does not require that the words “agree” or “disagree” be used. Disagreement, in particular, may be indicated by a transitional rhetorical device or marker. For example,
  - P: I find Nick, the narrator in *The Great Gatsby*, to be so annoying in the way he constantly harps on how honest he is.
  - R 2: Nick may attest repeatedly to his own honesty, *but* this is a natural and effective way for Fitzgerald to remind us of the dishonesty that is constantly exhibited by those around him.

  In this example, the transitional word “but” is a clear signal that the respondent (R #2) is disagreeing with the first participant (P). Other transitional words include: however, nevertheless, even so, just the same, on the other hand, although.

# Appendix O

## MASTER CODES AND SUB-CODES

## (Applied to Primary Informant Interview Transcripts and Other Data)

### MASTER CODE: ENGAGEMENT (ENG)

This master code identifies the reported influence of participation by those involved in online discussion. The "Engagement" master code includes the description, analysis, or evaluation of users' participation as well as the effects of interaction between and among users.

*NB: When modified by the descriptor "offline", these "Engagement" sub-codes identify the defined influences in the live classroom context.

- *Engagement-Participation* (ENG-Ptc): This sub-code identifies the reported influence of student participation in online discussion generally (either by name or generically), but not in interaction with others. The "Engagement-Participation" sub-code includes summary statements about the value or importance of participating in online discussion as well as the degree of student motivation or interest.
    - Sub-sub-codes: online, offline*, learning, undefined
    - Example: I like [Moodle Forum.] It's not like assignments we usually do. It's fun because you're doing something all the time.

- *Engagement-Disinhibition* (ENG-Dis):This sub-code identifies explicit reference to *disinhibition*, that is, the tendency of shy participants to contribute more and all participants to contribute more on sensitive subjects in the online environment.
    - Example: I could express myself a lot easier on Moodle because no one would be just like jumping down your throat, being like, "No, no."

- *Engagement-Peers* (ENG-Peer): This sub-code identifies the reported influence of interaction with one or more classmates (either by name or generically) as well as description or evaluation of classmates' participation.
    - Sub-sub-codes: online, offline*, undefined
    - Example(s): I could learn more from my classmates because with Moodle it gave them and me a chance to express our feelings and see how we felt toward each others' questions and answers. A lot of students just seem to be mailing it in, and I don't like that.

- *Engagement-Teacher* (ENG-Tchr): This sub-code identifies the reported influence of interaction with the classroom teacher (or researcher participating as a teacher) as well as description or evaluation of the teacher's participation.
    - Sub-sub-codes: online, offline*, undefined

  - Example(s): The thing Mrs. H wrote, it was just like she was one of us, just giving us like how she agreed or if she disagreed and how we could change things.  It's not that important to me whether Mrs. H participates.

- *Engagement-Significance* (ENG-Sig): *Significance* is the act of attending with consideration to what is said by another participant in a discussion.  This sub-code identifies references to the informant's or other participants' attempts to achieve significance while participating or engaged in threaded discussion.
  - Example(s): When I go on Moodle, I answer what I think is right, and then I go and read my peers' postings and see what they think, and if I change my mind then I go back and fix that.

- *Engagement-Convergence* (ENG-Conv): *Convergence* is the act of combining contributions from multiple participants into one's own reasoned position. This sub-code identifies references to the informant's or other participants' attempts to achieve convergence while participating or engaged in threaded discussion.
  - Example(s): It's like a max of ideas.  Everybody can look at it, maybe add to it, and take bits and pieces of everybody's and put it together to help build your own entry.

**MASTER CODE: DISCUSSION (DISC)**

This master code identifies the reported influence of discussion in an online context. The "Discussion" master code includes description, analysis, or evaluation of the affordances and constraints of online discussion generally as well as specific protocols involved with online discussion, whether those protocols are required by the teacher or negotiated by the community.

- *Discussion-Topic* (DISC-Topic): This sub-code identifies description, analysis, and evaluation of the topic domain or thread discussion topics in online discussion.  The "Discussion-Topic" sub-code does include the informant's preferences regarding discussion topics, but does *not* include the informant's or another's process for developing discussion topics which would be identified under metacognitive awareness (below).
  - Sub-sub-codes: topic engagement, relevance, design, variety, controversy (agr/disagr)
  - Example(s): When a topic is controversial, it can draw people out and have different ideas.

- *Discussion-Entry selection* (DISC-E/sel): This sub-code identifies description, analysis, and evaluation of the factors that influence the informant's selection of entries to be read and or for reply.  The "Discussion-Entry selection" sub-code does include the informant's preferences regarding entry selection, but does *not* include the informant's or another's process for selecting or responding to entries which would be identified under metacognitive awareness (below).

  - Sub-sub-codes: for reading (rd), for reply (re), relevance (to self), the WOW factor (curiosity), potential for agreement and/or disagreement (agr/disagr), undefined
  - Example(s): For me, the big thing is *who* wrote the entry. I pick someone I know will usually at least try to write something interesting.

- *Discussion-Entry protocols* (DISC-E/pro): This sub-code identifies description, analysis, and evaluation of protocols or practices that govern or influence the informant's or others' composition of entries. These protocols may be required by the teacher or negotiated by participants.
  - Sub-sub-codes: language, entry format (stating a position, providing evidence or support, and keeping the conversation going), entry length, potential for agreement and/or disagreement (agr/disagr), undefined
  - Example(s): To get to the entry length [requirement], I know some kids just add in a really long quote.

- *Discussion-Forum protocols* (DISC-F/pro): This sub-code identifies description, analysis, and evaluation of protocols or practices that govern or influence the informant's or others' participation across individual threads or the Forum. These protocols may be required by the teacher or negotiated by participants.
  - Sub-sub-codes: frequency (number of entries contributed), timing of participation, the Forum participation window, undefined
  - Example(s): I think it's important to have class time [for online discussion] because in class time you're really focused on English.

- *Discussion-Writing versus Discussion* (DISC-WvD): This sub-code identifies description, analysis, and evaluation of how online discussion compares with live discussion and/or writing tasks.
  - Example(s): There's writing involved, but mostly it's discussing why you feel the way you do.

- *Discussion-Undefined* (DISC-Und): This sub-code identifies description, analysis, and evaluation of protocols or practices that govern or influence the informant's or others' participation in online discussion in ways not otherwise identified by another code. These protocols may be required by the teacher or negotiated by participants.

**MASTER CODE: TECHNOLOGY (TECH)**

This master code identifies the reported influence of the technology used for discussion in an online context. The "Technology" master code includes description, analysis, or evaluation of the affordances and constraints of online technology, and requires explicit reference to Moodle, or the Moodle Forum application, or a design element of threaded discussion (e.g., entry subject lines or entry hyperlinks).

- *Technology-Subject lines* (TECH-Subj): This sub-code identifies description, analysis, and evaluation of protocols or practices that govern or influence the

informant's or others' use of the subject line or title design feature in Moodle Forum. These protocols may be required by the teacher or negotiated by participants.
  - Example(s): A good subject line is catchy, obviously – something that readers can be curious about.

- *Technology-Hyperlinks* (TECH-Link): This sub-code identifies description, analysis, and evaluation of protocols or practices that govern or influence the informant's or others' use of the hyperlink design feature in Moodle Forum. These protocols may be required by the teacher or negotiated by participants.
  - Example(s): Technically? No problem. But I didn't really see a point to them [hyperlinks]. They might be important for a research project, but why keep linking to something we can all get to [other students' entries]?

- *Technology-Navigation* (TECH-Nav): This sub-code identifies description, analysis, and evaluation of protocols or practices that govern or influence the informant's or others' use of the "bread crumb" or other design features intended to assist user navigation in Moodle Forum. These protocols may be required by the teacher or negotiated by participants.
  - Example(s): I like how at the top of every screen in Moodle it shows your path that you took so you can go straight back to places...It's easy to link to a website, but kind of a pain to link to other entries.

- *Technology-Undefined* (TECH-Und): This sub-code identifies description, analysis, and evaluation of protocols or practices that govern or influence the informant's or others' use of design features in Moodle Forum in ways not otherwise identified by another code. These protocols may be required by the teacher or negotiated by participants.
  - Sub-sub-codes include formatting options, text box structures, emoticons

**MASTER CODE: CURRICULUM & INSTRUCTION (C&I)**
This master code identifies the reported influence of curricular or instructional elements that may support online discussion but occur in the live context of the classroom and not in an online context. (C&I elements that occur online are coded as Teaching Presence—see below). The "Curriculum & Instruction" master code includes references to content, teacher instruction, and student activity

- *Curriculum & Instruction-Content* (C&I-Cont): This sub-code identifies description, analysis, and evaluation of the influence of text (e.g., required readings) and other curricular materials on participant engagement and the nature of online discussion.
  - Sub-sub-codes: unit of study, text/reading
  - Example(s): Some people might have gotten bored with the book.

- *Curriculum & Instruction-Teacher instruction* (C&I-Inst): This sub-code identifies description, analysis, and evaluation of the influence of teacher

instruction and other instructional practices on participant engagement and the nature of online discussion.
  - ○Sub-sub-codes: direct instruction, modeling, expectations (including specificity of directions)
  - ○Example(s): It was helpful when you showed an entry that you [the teacher/researcher] had written for the Forum.

- *Curriculum & Instruction-Student or class activity* (C&I-Act): This sub-code identifies description, analysis, and evaluation of the influence of various student and class activities on participant engagement and the nature of online discussion.
  - ○Sub-sub-codes: in-class discussion, hands-on activity, small group or cooperative learning, collaborative topic design, assignments and homework
  - ○Example(s): It was easier for me to come up with topics when we worked in pairs than just working on my own.

- *Curriculum & Instruction-Undefined* (C&I-Und): This sub-code identifies description, analysis, and evaluation of the influence of curricular and instructional practices not otherwise identified by another code on participant engagement and the nature of online discussion.
  - ○Sub-sub-codes include access to technology (incl. one-to-one), writing process (incl. revision), grades or assessment

**MASTER CODE: PRESENCE (PRES)**
This master code identifies the reported influence of three conditions associated with online discussion: social presence and teaching presence.

- *Presence-Social* (PRES-Soc): This sub-code identifies reference to the informant’s or other participants’ attempts at creating an environment that invites participation in the online environment, including acknowledging and complimenting other participants, recognizing and showing appreciation for contributions by other participants, self-disclosure, showing emotion, and salutations or other social conventions.
  - ○ Examples: When I reply, I try to start out with something nice, like “I agree” or something I like in the entry I read...I like reading John's entries because he always adds a little story or funny thing that happened that made him think of what to write.

- *Presence-Teaching* (PRES-Tchng): This sub-code identifies references to the informant’s or other participants’ attempts at facilitating the group process while engaged in online discussion, including encouraging contributions from others, identifying process conditions  (e.g., agreement/disagreement, misconceptions, misunderstandings, confusion), and directing discussion or recommending discourse action(s) (e.g., summarizing and refocusing discussion, seeking consensus, splitting a discussion thread).
  - ○ Examples: I like it when someone ends an entry with a question.  That helps me start my own entry right off...At first, when I didn't get what someone was

saying I'd just skip out, but now I just say, “I don't get what you mean. What do you mean?”

**MASTER CODE: METACOGNITIVE AWARENESS (META)**
Metacognitive awareness is conscious recognition and understanding of a person’s own thought processes. This master code identifies explicit reference to participants’ thought processes while engaged in or conducting threaded discussion.

- *Metacognitive Awareness-Self* (META-Self): This sub-code identifies the informant’s reference to or analysis of his/her own discourse or thinking processes as a participant in threaded discussion.
    - Example: I tried to find people that I disagreed with because I just thought I could have a discussion with them if maybe I could just show them a different point of view or even just get a rise out of them.
    - I usually write the entry first, and then come up with a subject line for my entry.

- *Metacognitive Awareness-Group* (META-Grp): This sub-code identifies the informant’s reference to or analysis of the discourse or thinking processes of some or all of the participants in a threaded discussion.
    - Example: Discussions just seemed more interesting when everyone was disagreeing, or at least trying to think of other ways to look at something.
    - It seems as if everyone tries to make their subject lines interesting by making them mysterious.

# Coding Map

| Master Codes and Sub-codes: ***Interviews*** | |
|---|---|
| **ENGAGEMENT (ENG): reported influence of...** | |
| > ENG-Ptc: participation | online, offline*, learning, undefined |
| > ENG-Dis: disinhibition | |
| > ENG-Peer: interaction with classmates | online, offline*, undefined |
| > ENG-Tchr: interaction with teacher | (i.e., attending to other participants) |
| > ENG-Sig: attempts to achieve *significance* | (i.e., combining contributions from multiple participants) |
| > ENG-Conv: attempts to achieve *convergence* | |
| DISCUSSION (DISC): reported influence of discussion in an online medium, including | |
| > DISC-Topic: Forum topic domain or thread discussion topic | topic engagement, relevance, design, variety, controversy (agr/disagr) |
| > DISC-E/sel: Entry selection | read (rd), reply (re), relevance (to self), Wow factor (curiosity), agr/disagr, undefined |
| > DISC-E/pro: Entry protocols | language, format (position, support, extending conversation), length, agr/disagr, undefined |
| > DISC-F/pro: Forum (activity) protocols | frequency (number of entries), timing, activity window, undefined |
| >DISC-WvD: | writing vs. discussion |
| > DISC-Und: undefined | undefined |

| | |
|---|---|
| TECHNOLOGY (TECH): threaded discussion technology, including features of Moodle Forum<br>> TECH-Subj: subject lines<br>> TECH-Links: hyperlinks<br>> TECH-Nav: navigation<br>> TECH-Und: undefined | Formatting options, text box structure, emoticons |
| CURRICULUM & INSTRUCTION (C/I): | |
| > C/I-Cont: unit content | unit of study, text/reading, |
| > C/I-Inst: teacher instruction | direct instruction, modeling, expectations (specificity) |
| > C/I-Act: student & class activity | in-class discussion, hands-on, small group, collaborative topic design, assignments & homework |
| > C/I-Und: undefined | undefined (tech access, one-to-one; writing process (revision), grades |
| **PRESENCE (PRES): reported influence of...**<br>PRES-Soc: social presence, creating an inviting, online environment<br>PRES-Tchg: teaching presence, facilitating online discussion process | |
| **METACOGNITIVE AWARENESS (META): informant's analysis of...**<br>META-Self: own discourse or thinking process<br>META-Grp: discourse or thinking process of one or more other participants | |

# Appendix P

## FORUM DISCUSSION TRANSCRIPT
## (From "Thank You, M'am" Forum – Period Two)

**L0 - (1) When you give respect you may also receive it**
**BY BETH** - Monday 08:24 AM
Mrs. Luella Bates Washington Jones shows Roger respect and it could be for the first time in his life. He takes it easily I mean at first, like any other kid that gets in trouble, he wants to run, but after he faces what he had done he was fine with it and gave her respect back. Like the saying goes you treat others the way you want to be treated and she just wanted respect and in the end she got that and also kindness. Plus you never know if he took this lesson and told other kids about it and they learned too. It's one of those lessons that keeps going round and round. But that's a good thing.

**L1 - (2) Re: When you give respect you may also receive it...Agreed**
**BY MICHELLE** - Monday 09:14 AM
I would have to agree completely with you. Respect is a very important life lesson.

**L1 - (3) Re: A beating**
**BY CARLTON** - Monday 09:22 AM
I believe the boy will not learning anything by being taken care of.

**L2 - (4) Re: A beating**
**BY BETH** - Monday 09:25 AM
It's called R-E-S-P-E-C-T Carlton. You don't have to "Smack a kid" or give them a beating just to teach them what they need to learn if that was the case then a lot of people would be getting beaten. Like that commercial that shows how people are helping each other and then another person sees and wants to pass on the help to another its like that. She wanted to help him not hurt him.

**L3 - (5) Re: A beating**
**BY CARLTON** - Monday 09:34 AM
THAT BOY DESERVES A WHIPPING OF A LIFETIME :P

**L4 - (6) Re: A beating**
**BY BETH** - Monday 09:36 AM
Well you may feel that way but I don't because to me it wouldn't be right.

**L5 - (7)Re: A beating**
**BY CARLTON** - Monday 09:36 AM
Well I'm not sure but i think that he may still be a crook

**L6 - (8) Re: A beating**
**BY BETH** - Monday 09:39 AM
You may be right you may be wrong but we will never know.

**L3 - (9) Re: Respect**
**BY LANEY** - Monday 09:37 AM
I completely agree with you. It's just like when a child does something bad. The parent can either spank them, or sit them down and explain to them what

they did wrong and why they are going into time out. There is a better way of learning a lesson then by getting it "spanked" or "beat" into you. I think talking is a perfectly good way of getting the point across. And once a child sees that you are being kind and civil to them, they will pick up those characteristics as well. What do you think?

**L4 - (10) Re: Respect**
BY CARLTON - Monday 09:40 AM
But the problem is what if the kid won't listen to the parents?
Then what are you suppose to do to them?
You can't really try to explain again because they will just ignore you

**L5 - (11) Re: Listening**
BY LANEY - Monday 09:44 AM
Yes, there is some truth to that. But if the kid has respect he will automatically listen to the parents. I mean there is some punishment with the talk as well. There are the options of time-out, taking away a toy, taking away television or game privileges, or just no contact with anyone for a half hour or so. But with hitting you can make the kid turn violent. Either on you, or friends during play. What would you do if the kid starts to hit you back?

**L5 - (12) Re: Reinforcement**
BY EVAN - Monday 09:49 AM
Children need a more real understanding to things. How did you learn what fire is. YOU WENT UP AND FELT THE HEAT. They need a command and an action to get the message. And this story does both. She kicked him and probably not too lightly either. I agree with Carl.

**L4 - (13) Re: Respect**
BY BETH - Monday 09:41 AM
This kind of makes me think of something that may have to do with Psych. Like for example let's see how kids grow up when they get the lesson "beat into them" and then let's see how kids grow up with people just talking to them and telling them what they did was wrong. It also would depend on what they got in trouble for you know. But for some reason this just reminded me of Psychology

**L5 - (14) Re: Respect**
BY CARLTON - Monday 09:43 AM
It reminds me of the movie Forrest Gump

**L6 - (15) Re: Respect**
BY BETH - Monday 09:44 AM
Why Forest Gump???

**L7 - (16) Re: Respect**
BY CARLTON - Monday 09:57 AM
Because Forrest was a good boy and never got hit and Lieutenant dan looks like he was beat when he was a young boy

**L8 - (17) Re: Respect**
BY **BETH** - Wednesday 09:11 AM
but they were in war you have to understand that to and because he looks that way doesn't mean he was. You have to try to understand their past in order to get where they are coming from now. You can't just judge and so she saw a boy that was nice and kind and respectful deep down inside and she just helped him bring it out.

**L9 - (18) Re: Danny Boy!**
BY **CARLTON** - Wednesday 09:13 AM
I mean he acted like he hated everyone and didn't care about anyone. I believe that he was raised by a horrible father.

**L10 - (19) Re: Danny Boy!**
BY **BETH** - Wednesday 09:18 AM
Yeah but you have to understand like a lot of people say that war changes a man. Also you have to understand that he did lose both of his legs and he just may be really depressed and it may hurt his self esteem. And if he didn't care about anyone then why did he help Forest on his boat because forest showed him that someone cared about him and helped him through things so he decided to return the favor.

**L11 - (20) Re: Bubba Gump Shrimp :P**
BY **CARLTON** - Wednesday 09:24 AM
Lieutenant Dan Is the man because he lost both of his legs and he still went shrimp fishing and was happy to be with forrest and his shrimping company.

**L12 - (21) Re: Bubba Gump Shrimp :P**
BY **BETH** - Wednesday 09:25 AM
Exactly after seeing how forest treated him he saw that he could do the same and he did.

**L13 - (22) Re: Bubba Gump Shrimp :P**
BY **CARLTON** - Wednesday 09:31 AM
As long as someone is being nice to lieutenant Dan he will be nice back to them.

# BIOGRAPHY OF THE AUTHOR

Kenneth H. Martin was born in South Weymouth, Massachusetts on June 28, 1951. He grew up in Norton, Massachusetts and graduated from Mount Hermon School (Gill, Massachusetts) in 1969. Kenneth attended Harvard College (Cambridge, Massachusetts) and graduated *cum laude* in 1973 with a B.A. in English. Following 25 years employment in banking and retail, Kenneth worked in eastern Maine for ten years as a high school English teacher and for three years as a technology integration coach. Kenneth earned a Master's degree in Literacy Education from the College of Education and Human Development at the University of Maine in 2003. He is a candidate for the Doctor of Philosophy degree in Literacy Education from the University of Maine in December, 2011.