INTRODUCTION

As online learning continues to gain popularity and acceptance in higher education, researchers are turning their attention to the search for evidence of learning (Garrison, Anderson, & Archer, 2001; Gunawardena, Lowe, & Anderson, 1997; Kanuka & Anderson, 1998; McKlin, Harmon, Evans, & Jones, 2002; Newman, Webb & Cochrane, 1995; Stoney & Oliver, 1997). Of particular interest in recent years has been the study asynchronous online discourse.

In looking for evidence of learning or joint construction of meaning online, researchers find themselves short on analytic tools, and needing to make adaptations to tools, frameworks, rubrics, and coding systems that have served them in the sociolinguistic analysis of classroom discourse and interactive writing tasks such as dialogue journals (Staton & Shuy, 1988; Wegerif & Mercer, 1997). Those assessment tools developed specifically to assess learning in online settings have tended to focus more on the quantity and directedness of messages rather than on the quality or evidence of learning (Henri, 1992; Levin, Kim, & Riel, 1990; Mason, 1991; Newman, Webb, & Cochrane, 1995; Rourke, Anderson, Garrison, & Archer, 2001).

However, the assumptions and explicit characteristics of asynchronous and synchronous online tools for interaction vary in important ways from those of classrooms. These discrepancies are problematic as we move forward into the investigation of a new realm for learning.
PURPOSE OF STUDY

The study of online collaborative learning spaces is a relatively new field for researchers (Harasim, 1993) and one that lacks a research tradition. There is overlapping research in this subject from various academic disciplines such as sociology (Smith & Kollock, 1999), linguistics (Halliday 1993), distance education (Maor & Hendricks, 2001; Swan, 2001; Oliver & Omari, 1997), composition and rhetoric (Hawisher, 1992; Kopple, 2002; Napierkowski, 2001), education (Wells, 1999; Wegerif & Mercer, 1997) and discourse analysis (Barton, 2002; Goldman, 1997). Yet there is one thing that scholars across the disciplines do agree upon, according to the existing body of research: the need for more studies and better methods for studying these online phenomena (Althaus, 1997; Cherny, 1999; Flaherty, Kollock & Smith, 1999; Pearce, & Rubin, 1998, Tu & Corry, 2001). Therefore, the issue at hand is as much about “what” to study as it is about “how” one should study it.

This presentation arises out of our own research, looking for learning in intentional online learning settings (e.g., Polin, 2000). In this study, we did two things. First, we conducted a comparative analysis of discourse tools, rubrics, and frameworks that are being employed in current and recent work on online learning environments. Second, we developed and used our own derivation of such a tool. In this paper we discuss our efforts, largely in terms of issues that arise with reliability and construct validity based on preliminary analyses of asynchronous discourse in an online graduate program for teachers.

Asynchronous Discourse as Conversation and Data

Asynchronous communication technologies, for supporting group discussion, allow multiple users to post messages to a designated news server for communal reading. The term asynchronous refers to the fact that the exchange of messages does not need to occur in real time. Newsgrroup messages are sent or “posted” to the newsgroup. Recipients can then read those messages at their convenience; neither their physical nor virtual presence is required at the time a message is composed and posted. Newsgroup messages can be sorted for reading in a variety of ways; according to criteria such as the subject, sender, or date and time they were sent. Unlike email or listserv messages, newsgroup messages are threaded, which means that they are linked together in a way that allows the users to follow visually the course of communication. When someone posts a message, all responses are listed sequentially below it. As more people read and respond to these messages, the thread branches out and users are able to see the different paths that the conversation has taken. Consequently, newsgroups give virtual discourse a physical place in which to reside.

When threaded discussions are expanded, all the messages that are related to the initiating thread can be seen at once. When newsgroup messages are collapsed, only the first message in a thread can be seen. At a glance, any user can see how many messages are contained in a newsgroup, the status of each message—either read or unread—and even the number of lines contained per message. Users have the option of identifying certain messages of particular importance by assigning a “flag” icon to them. Messages can then be sorted according to any of the criteria listed above with the click of the
mouse. Thus, newsgroups allow users to “see” their online conversations in a variety of ways.

In this study we use the term Asynchronous Communities of Practice to describe asynchronous online learning networks in which collaborative knowledge construction is the goal and whereby written discourse is the main activity of the participants. The term Community of Practice (COP) is used to describe the many social networks to which people belong. People learn by their membership and participation within these social networks, and as they learn they both change and are changed by the community to which they belong (Wenger, 1999). The main activity of these asynchronous communities of practice is dialogue through writing.

From a research perspective, asynchronous communities of practice are alluring. Jones (1999) points out the advantages to studying these kinds of technologies as they provide “artifactual textual traces of interaction created instantaneously, at the moment of utterance.” (p. 13). But studying online phenomenon, such as newsgroup interaction, is not as simple or straightforward as it may appear (Levin et al., 1990). There is so much more going on in the learning setting than what meets the eye when examining the transcripts of an asynchronous conference.

In our research setting, the Online Master’s of Educational Technology (OMAET) Program at Pepperdine University, asynchronous communication is the main method of communication. Many students and faculty consider it more than just a mode of communication. For them, it’s a form of thinking and reflection. One graduate student in this study, when asked about the value of newsgroups, had this to say:

I’ve been proselytizing on the value of newsgroups, because I think it’s even better than a real classroom, because in a real classroom you’re sitting there trying to process what people are saying, trying to write it, and then trying to think of a response. [Online] I like being able to read it, think about it, construct my response offline, and then post. But since posting is the only real evidence of participation in the asynchronous conference, (passive listening/reading, while valuable, is difficult to assess), students feel pressure to post. Another student notes: “posting is something that I think a lot of the time I force myself to do. But it’s also something that can get me thinking in other directions. People’s replies to my posts can get me thinking in other directions”. This study examines the content of newsgroup postings in one graduate class to locate evidence of learning and collaborative knowledge construction.

**Theoretical Framework**

In conducting this investigation, three research areas contributed to our analytic framework: conversation, time, and context. Our framework arises from our examination of these elements because they are critical to the functional use of asynchronous or threaded discussion in an intentional learning context.
Conversation: Language as Activity

Since intentional online learning relies heavily on language, the tools of interaction at a distance are dominated by text, especially that which has been characterized as a hybrid of speech and prose (Davis & Brewer, 1997). Speech, in asynchronous dialogue, is performed through writing, which is more permanent than spoken discourse. Wells (1999) says that writing has a “special role . . . in the construction of knowledge . . . especially if one uses the writing, not to report what one already understands, but to come to understand in and through the process” (p.128). Writing as dialogue then, whether as a dialogue between several people or a dialogue with oneself, is a reflective process and is both the essential activity of asynchronous communication and the basis for joint knowledge creation.

This noticeable lack of physical place in asynchronous communities of practice has many implications for learning as language takes on a preeminent role. Halliday (1993) writes that language “is the essential condition of knowing, the process by which experience becomes knowledge” (p. 93). But language and activity are blurred in asynchronous communities of practice, as the action that takes place is the articulation of ideas and thoughts through written dialogue; attention to language becomes acute. The lack of “social presence” may encourage people to communicate more freely and creatively than they do in person, at times “flaming” each other (Kiesler et al. 1984). Flaming is a term used to describe “the exchange of emotionally charged, hostile and insulting messages on computer-mediated communication networks” (Thompsen, 1994, p. 51). This, combined with the enduring presence of the text that is created can cause tension among members of the community. This tension, however, may be an important part of the construction of meaning as members of the virtual learning community continually experiment and test ideas against one another (Palloff, R., & Pratt, K., 1999). There is evidence to suggest that certain forms of argumentation that would not normally take place in face-to-face dialogue surface more readily in an asynchronous dialogue (Thompsen, 1994; Sproull & Kielsler, 1991).

Another element that is unique to asynchronous communities of practice is the speaker’s ability to reflect upon what she is going to say before she actually speaks. This is because “speech” in asynchronous dialogue is performed through writing, which is more permanent than spoken discourse. Stubbs (1996) says that in spoken conversation, “speakers cannot remember exactly what has been said, so cannot refer back with accuracy. . . . [whereas] written text is still present, readers can look back at it, and written language may therefore be retrospectively structured” (p. 42). The enduring presence of this dialogue-as-text, that is evident in asynchronous discourse, is another factor to consider when assessing the effectiveness of the medium for promoting cognitive engagement. As Davis and Brewer (1997) note, electronic discourse “reads like and to a certain extent acts like conversation,” yet since is it asynchronous, it “has a different kind of immediacy of feedback and response” (p. 3). Writing as dialogue then, whether as a dialogue between several people or a dialogue with oneself, is a reflective process and is both the essential activity of a newsgroup and the basis for joint knowledge creation.

One of the most influential writers on the importance of social action as it relates to learning is L. S. Vygotsky. For Vygotsky (1978), the term “discourse” applies both to
the internal and external dialogue that a person engages in to learn. This is seen in his theory of semiotic mediation. He asserts that the convergence of speech and activity lead to intellectual development and thus, to learning. He uses the example of children whose use of speech increases and becomes more complex when trying to accomplish difficult tasks. Children use speech as a tool for solving problems. Speaking is essential to understanding and children use both social speech and inward or interpersonal speech when engaging in problem solving. It can be just as important for them to engage in speech with others as with themselves in order to find solutions to specific tasks. It is the social activity of speech that enables students to move through their zones of proximal development (Vygotsky, 1979), the stage between that which they can accomplish or comprehend on their own and that which they can accomplish or understand with the help of others.

In asynchronous communities of practice, speech is the activity that the members engage in. It is important to see that speech can be as much a part of one’s own process of understanding of construction meaning as it is for the rest of the community’s. Unlike writing in other contexts, such as in a textbook or in an essay that a student writes for a teacher, much of the writing (speech) in a newsgroup is for the writer himself. It is his way of discovering his own version of reality. Social constructionists see knowledge as a subjective reality, formed by the negotiation of meaning in a group. It is culturally and historically “specific” (Burr, 1995). If we are to accept this definition of knowledge, then it follows that the construction of meaning, in online communities of practice such as newsgroups, will be affected by the diversity of the community members—their backgrounds and experiences shaping the shared text that they produce. The more experientially diverse the members of a group, the greater the potential there is for the “rich” construction of meaning (Riel, 2001).

While the text that is created in newsgroup discourse is tangible, and, for the sake of argument, permanent, when compared to the transience of spoken conversation, the meaning that is evoked or created by reading such a text is not permanent. Smagorinsky (2000) calls the creation of student texts “provisional” and subject to further revision, “if not tangibly then psychologically, as they provide the basis from which new evocations, or newly composed texts, are possible.” Therefore, we can see that although the members of virtual communities of practice create artifacts of their learning through text creation, these artifacts are only a partial representation of all possible learning. A re-reading of a newsgroup artifact will undoubtedly create more knowledge or negotiation of meaning by the reader, who may or may not be one of the text’s original authors.

Time: Help Or Hindrance?

Consider the problem of time in asynchronous learning venues. In ‘real life’ formal learning settings, time moves forward in a very straightforward manner. It is linear. Antecedents are temporal antecedents. In a threaded discussion online, time is not linear. People can and do interact with messages out of the temporal sequence in which they were initially generated. In a face-to-face conversation researchers have been willing to assume that people engaged in taking turns in talking to and addressing each other have actually been listening to the remarks of their fellow speaker. The participants
assumed a “set of positions,” the most obvious of which are the “speaker and hearer” (Goodwin & Heritage, 1990, p. 291). But online, it is possible to respond to someone without having read his or her prior postings. It is not fair to assume that because one is responding that one has “heard” or read the preceding text. In synchronous conversation with more than a few people, it is common to have multiple topical threads concurrently in play (Levin, Kim, & Riel, 1990). Yet, because the talk is ‘written’ text, it is possible and common for people to keep up and even interact with the topics other than the one in which they are mainly engaged. (Campbell, 1991).

Time and “audience” are closely related in terms of learners’ need for feedback and affirmation. Time lags can allow for reflection but can also complicate learners’ sense of audience; when no one responds, it is almost as though there is no audience at all. There is also the question of whom people are directing their messages to in an asynchronous online forum. When reading a message within a thread, it is easy to press “reply”, but does this mean that people responding to messages are directing their replies to the author of the messages they are reading when they decide to respond? It only matters when one considers that the interpretation of an utterance in conversation may rely on the context that the preceding utterance creates. Again, this is a marked distinction between face-to-face conversation, where the speaker’s audience is not only known, but is visible to the speaker. A person can infer, to a certain degree, the effect that her speech is having on the audience by observing facial expressions, gestures, and other body languages. As many researchers have noted, this starkly contrasts conversations that occur online, as such contextual cues are absent.

Transcript analysis becomes complicated when researchers try to separate messages from their context. To analyze messages as singular units, without accounting for the co-constructed context of the “utterances,” violates even traditional discourse analysis methods (Gee, 1999).

**Context: Reading the World behind the Words**

In ethnographic studies of classrooms, even those looking specifically at linguistic interaction, field notes fill in the contextual field around the language activity (Goodwin and Duranti, 1992). Online, even with a literal transcription of talk, it is nearly impossible to fill in the descriptive gaps around the speakers: Where are they? What are they engaged in at the time they choose to speak? What else is in the field of their attention? For instance, while reading a required text, why is a student suddenly compelled to post about something he/she has read? Has there been a prior conversation with co-located people? We cannot know.

A common method for interpreting the data culled from asynchronous forums, which is usually a transcript of the discourse, is the quantitative process of counting and coding messages, sentences, or conversation threads, and scrutinizing these units of analysis for emerging discourse patterns (Hara et al., 1998; McKlin et al., 2002; Rourke et al., 2000). To date, there are few notable studies that indicate the ability of these methods to demonstrate a relationship between asynchronous communication technologies and learning; moreover, these methods do not reveal how, why, or under
what conditions asynchronous online communities successfully produce cognitive engagement and joint knowledge construction, and hence, learning.

It is obvious that there is a great need for more effective methods for studying these online communities of practice. Fahy, Crawford & Ally (2001) argue that despite a growing body of research in online transcript analysis, “substantial gaps persist in our understanding of online interaction.” While they claim “redressing such omissions may at least partially require rethinking the methods of enquiry typically employed in transcript research,” they suggest the use of computer network analysis programs, namely their Transcript Analysis Tool (TAT), for uncovering patterns of interaction within these online social networks (p. 2). They argue that tools such as TAT, are able to determine the “type” of messages exchanged and the “directedness” or flow of those exchanges. However, after identifying interaction patterns and categorizing and coding these messages, researchers tend to overlook the content of the messages themselves, which are rich sources of information. Neither the essence of a message nor the context in which the message was written can be captured through even the most sophisticated coding schemes.

Scholars such as Goodwin and Duranti (1992) address this problem, arguing, “anthropological linguists can no longer be content with analyzing language as an encapsulated formal system that [is] isolated from the rest of a society’s culture and social organization” (p. 1). They cite the work of Malinowski (1923) who submits that “linguistic analysis must be supplemented by ethnographic analysis of situations within which speech occurs” (p. 15). Stubbs (1996) cites linguists such as Firth, Halliday, and Sinclair, who propose that language be studied “in actual, attested, authentic instances of use, not as intuitive, invented, isolated sentences” (p. 28) and that “the unit of study must be whole texts” rather than sentences or words (p. 32). This, he argues, is because some of the more traditional linguistic approaches tend to be too contrived, and much classroom research on student “talk” is based upon the three-part initiation-response-feedback (IRF) model of “triadic dialogue” (Wells, 1990) in which the teacher controls the discourse. Such research methods are inappropriate for the online classroom, which is, by its nature, very different from a traditional face-to-face classroom. Some studies (Piburn, 1998) reveal that “in traditional classrooms, teachers solicit and react.” By contrast, in some asynchronous online classes the “conversation is almost completely between the students” (p. 70). It follows, then, that to truly understand the complexities of the phenomenon of Asynchronous communities of practice, we must study the discourse that occurs within them differently from the ways we have traditionally studied classroom talk. We must treat the “talk” of online asynchronous discourse as a whole entity while also considering the larger context in which this discourse is created.

Dialogue, in an electronic context, consists not only of speaking, which occurs through writing, but also of listening, which occurs through reading. Reading is “a mediating act with a dialogic function: The students’ thoughts both shaped and were shaped by the texts they composed” (Smagorinsky, 2000). Text changes context and context changes text. Thus, when analyzing online discourse, the unit of analysis becomes complex. How does one separate the message, sentence, or paragraph from the context in which it was written? Should written text, composed as part of an ongoing dialogue, stand alone? We think not and have found this problematic in our analyses.
Analyzing Asynchronous Online Interaction: Prior Work

Henri’s (1992) Content Analysis Model is one of the most often cited models when discussing the analysis of asynchronous transcripts. Her framework examines five elements of the learning process that can be identified in asynchronous transcript messages: participation, interaction, social, cognitive, and metacognitive dimensions. Her framework for analyzing the cognitive dimension looks for five reasoning skills: elementary clarification, in-depth clarification, inference, judgment, and strategies. These skills assess the thought process of the individual participant in a computer conference and do not reflect the larger social context in which these skills are being used. Another problem that has been noted with Henri’s model is the difficulty in differentiating between units of meaning that are coded as cognitive and metacognitive. As Gunawardena (2001) points out, Henri’s model is “inappropriate for evaluating the quality of a learning event designed within a collaborative, social constructivist learning environment” (p. 6). Her model is largely teacher-centered, and she admits that it comes from a “cognitive conception of learning” (p. 123). Furthermore, her framework acknowledges and accounts for units of meaning within messages that can be coded as “social,” but her criteria for identifying these social exchanges was limited to ideas or statements “not related to the formal content of subject matter.”

A more recent model for analyzing asynchronous computer transcripts is Garrison, Anderson, and Archer’s (2000) Community of Inquiry Model, which focuses on three elements of an educational experience: social presence, cognitive presence, and teaching presence. Cognitive presence, according to Garrison et al., is noted by the following categories: Triggering Event, Exploration, Integration, and Resolution. One of the difficulties with this model is that the majority of messages were coded under the exploration category. The exploration category consists of subcategories: personal narrative, information exchange, brainstorming, divergence among, leap to conclusion, suggestion, and divergence within. These are very inclusive criteria for one category. In a study by McKlin, Harmon, Evans, & Jones (2002), 75% of all messages coded within the cognitive presence category were coded as exploration. Less than 2% of messages coded within the cognitive presence category were coded as resolution. It is difficult to draw meaningful conclusions from a model that yields results that are so heavily weighted in one sub-category.

Gunawardena, Lowe & Anderson (1997) present another model for evaluating the construction of knowledge in asynchronous computer conferences. Their interaction analysis model has five phases: Sharing/comparing of information, Discovery and exploration of dissonance or inconsistency among ideas, concepts, or statements, Negotiating of Meaning/Co-construction of knowledge, Testing and Modification of proposed synthesis or co-construction, and Agreement statement(s) or application of newly-constructed meaning. Unlike Henri’s model, the interaction analysis model has a more discernible focus on the social aspect of learning. Certainly, the first three phases: sharing/comparing, dissonance, and negotiating, must take place in a social context. The final two stages, however—testing and application—can certainly occur on an individual level. This model is interesting in that it examines the process by which knowledge evolves or is made in a computer conference. One of the problems that the authors of this
model encountered was a difficulty in coding exchanges as *negotiation of meaning* as there were many exchanges which seemed to be simple statements of agreement. They found it difficult to identify tacit instances of negotiation and admitted that such instances were occurring even when participants seemed to be in agreement. They suggest that the participants’ offering of examples and “corroborating experiences” were actually examples of negotiation, as individuals argued that their “example” belonged in the same category as the preceding example(s).

**Developing a New Framework for Analysis**

The development of own tools, the Audience and Discourse Functions rubrics, were created using a different approach. Rather than determining what we were going to look for in the content of the newsgroup transcripts, we began from what we both knew and assumed to be there. One of the researchers in this study is an alumna of the online masters of educational technology program, and is now in the doctoral program; the other researcher is an instructor in both the masters and doctoral programs in educational technology. As such, both approached the problem of looking for evidence of learning from a perspective of experience. The tools that we examined were not sufficient for analyzing what we believed to exist in the online masters of educational technology program. Thus, based on a combination of our own experiences in conjunction with current research and theory on learning in both traditional and online environments, we began the development of our own tool, the process of which will be described later in this study.

**Research Sample**

In this study we examined the text of four newsgroup threads produced in classes that were part of the Pepperdine University Graduate School of Education’s 90% Online Master of Arts in Educational Technology program. The newsgroups threads were taken from two courses, the first two threads from a course entitled “Educating Today’s Learner” that was offered in the students’ first trimester of study, and the other two threads from a course entitled “Shaping the Learning Environment” that was offered in the second trimester. Each course was led by a different instructor but the class participants were consistent in both trimesters. There were twenty-three students in total. The newsgroup threads were chosen, in part, because of their length—they generated more responses than most other threads in terms of the numbers of posts and replies.

One thread from each trimester was chosen that focused on a particular chapter from the students’ course readings. Thus, these messages were largely academic in nature. By contrast, one thread from each trimester was also chosen that focused on the class process. In the first trimester, this thread concerned the use of TappedIn©, the synchronous chat interface used for real time online discussions (Schank & Schlager, 1997). In the second trimester, the chosen thread focused on rules and protocols for posting in the class newsgroup during the asynchronous portion of class interaction. Since many of the newsgroups participants were somewhat new to online learning, these
conversations, served as meta-commentary on the process in which they were engaged. Both the content and the length of these threads lent themselves to analysis and provided fodder for the questioning of the newsgroup participants (see table 1).

Table 1. Research Sample

<table>
<thead>
<tr>
<th>Thread Type</th>
<th>Trimester I</th>
<th>Trimester II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Instructor A</td>
<td>Instructor B</td>
</tr>
<tr>
<td>Group 1: Chapter Threads</td>
<td>Chapter 4: Workplace</td>
<td>Chapter 3: Schooling</td>
</tr>
<tr>
<td></td>
<td>Settings</td>
<td></td>
</tr>
<tr>
<td>Group 2: Process-oriented</td>
<td>Synchronous Chats</td>
<td>Posting Protocol</td>
</tr>
<tr>
<td>Threads</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

While newsgroup participation formed the bulk of the interaction that the students engaged in, there were also several synchronous chat meetings held in TappedIn© in both trimesters. The students had no organized face-to-face contact during the first trimester. Their second face-to-face meeting was held in February of 2003, when the cadre met at the Florida Educational Technology Conference in Orlando, Florida¹. However, most of the interaction throughout the program was conducted online.

**INSTRUMENTS: Audience & Discourse Function Rubrics**

There are two measures that were created for the analysis of newsgroup postings: audience and discourse function. Both rubrics underwent significant revision through pilot applications and through discussion between the researcher-authors. The final two rubrics that resulted from the pilot testing and that were eventually used for this study are described below.

**Audience Rubric**

Since newsgroup interaction occurs through writing, the intended audience of each message is not always as clear as it is in a face-to-face dialogue. Furthermore, there has been much emphasis on the role of audience on writing in modern composition theory (Ong, 1975; Ede, & Lunsford, 1984). Thus, this rubric was created to identify the audience to whom each participant/writer was directing his/her messages (see table 1). Clearly, all newsgroup participants understand that their posted messages are available for all to read, but this does not mean that the writer is directing his/her posts toward everyone when composing them, and while newsgroups feature a “reply” function, one cannot assume that the intended audience of message is the sender of the message being replied to. In fact, it is safe to assume that messages may sometimes have more than one
intended audience. A person may begin a thread by addressing the group and then single out an individual later on in that message. The multiple coding of the singular message indicates such cases.

The intent was to develop an instrument that came closer to capturing the process by which students make sense in online classes. Because we were examining the data in order to study the process of learning itself, we could use an emerging system to develop the rubric.

Messages were coded according to five possibilities: Self, Specific Person or Persons, Instructor, Group, and Other. Because the newsgroup is available in a public forum, it can be assumed that all posts are intended for reading by the entire group. Therefore, the coding of GROUP was only assigned when the message did not indicate any other intended audiences. SELF indicated posts that signaled newsgroup participants writing for their own clarification or understanding, rather than for the purpose of group discourse. SPECIFIC PERSON or Persons indicated posts in which one or more people were specifically addressed by name or by logical inference. INSTRUCTOR indicated posts that were directed toward the course instructor. Posts, which did not fit into any of these categories, were coded as OTHER.

**Discourse Function Rubric**

The Discourse Functions Rubric was created to distinguish between the different roles or discourse functions of the newsgroups messages. Rather than examining the messages for pre-conceived ideas of what learning entails, we took an emergent approach, and developed the rubric according the different roles or functions that the messages and its parts exhibited. Posts were coded according to the following categories: Rumination, Storytelling, Disagreement/Argumentation, Social Interaction, Procedural/Logistical, Acknowledgement, Reference/Resource, Inquiry, and Other.

Messages in which the newsgroup participants demonstrated thoughtful commentary on the topic being discussed were coded under the category *rumination*. Messages coded as storytelling often included personal stories, anecdotes, analogies or examples to illustrate or emphasize a point or to call attention to their own direct experiences with a concept or situation being discussed. The category *disagreement/argumentation* included posts in which participants challenged the ideas being discussed, or in which they contradicted the claims put forth by others. Posts coded as *social interaction* indicated the presence of a personal relationship between members of the newsgroup or cadre. Messages in this category are often supportive or counseling in nature and quite often, they include linguistic particularities of the group. *Procedural/logistical* posts concern the practical aspects of the course, such as due dates for assignments or technical programs with their hardware or software. Posts coded as *acknowledgement* were those that only indicated agreement or recognition of another’s ideas. They do not move the conversation forward or contribute any content to the discussion. Posts coded as *reference/resource* include URL’s, quotations, or references to information outside of the course content. Posts which *inquire* pose questions to the newsgroup participants or demand some kind of response from the group. The category *other* was used to identify posts that did not fit into any of the categories outlined above.
Interviews

Because phenomenological studies rely mostly on ethnographic research methods, open-ended interviews were used to elicit information about the context of the learning environment as perceived by the participants. Stimulated recall techniques using excerpts from the newsgroup transcripts were used to help class participants to remember the context in which certain dialogues took place. Questions posed based were based on the newsgroup content. (See Appendix A for interview schedule).

Validity

There are inherent limitations to any study that proposes to assess the presence of cognitive engagement and joint knowledge construction in any given learning context. To propose to know what one is thinking assumes an ability to see that which cannot be seen. It is impossible to go inside the mind of any of the participants of the online class. Even if one could do this, it would not guarantee the ability of the researcher to confirm the existence of cognitive engagement or knowledge construction. Cognitive engagement and knowledge construction are abstract concepts. A coding scheme can only identify indicators of these abstract concepts. What a researcher can do is establish criteria or indicators for identifying cognitive engagement and knowledge construction and look to see if such indicators exists in particular contexts. Both the Audience Rubric and the Discourse Function Rubric were designed to identify to whom newsgroup posts were being directed and why those posts were written—or rather, what function they served in the ongoing asynchronous dialogue of the online learning forum.

Development of the Coding System

The development of the rubrics underwent several revisions in order to create an instrument that would accurately identify content of the messages being examined. The first rubric created had 10 categories: clarification, rumination, inquiry, directed response, disagreement/dissent, reference, affirmation/encouragement, play/group banter, course procedures, and technology-related procedures. These categories were confusing as there was too much overlap between them to obtain a clear picture of the newsgroup content. Coding proved to be nearly impossible. During the second attempt to create a rubric, the criteria were divided into three subsets: audience, function, and genre. A second pilot test revealed that there were too many overlaps between the function and genre categories to paint a clear picture. Finally, a third coding scheme was developed that divided the categories into only two subsets: audience and discourse function (which was a combination of the function and genre categories). Another pilot test revealed that the categories needed more explicit explanations and that the coders need to be trained more rigorously to use the rubrics precisely. The final Audience Rubric and Discourse Function Rubric, which are presented in this study, yielded promising results.
Construct Validity

In order to ensure the validity of the study, the rubric categories were shared with online the online students who were asked about their appropriateness. Semi-structured interviews with the newsgroup participants were designed to elicit feedback and commentary from the authors of the online discourse: the students themselves. This was necessary since the sample being coded was but one small part of the students’ entire learning experience in the program. It would be impossible to generalize about newsgroups by studying one conversation thread in one semester of a thirteen-month graduate program. Hence, this study put a great deal emphasis on the context of the conversation thread and relied on the newsgroup participants themselves to elaborate upon their experiences, shedding light on the conditions in which their asynchronous conversations took place. The newsgroup participants were questioned about their experiences in the OMAET program and were asked to comment on the rubrics being used to code their responses.

Reliability

The coding of messages in this study was conducted by two raters who were trained by simultaneously coding a sample newsgroup, consisting of 31 messages, to establish agreement in interpreting the coding criteria. Reliability was assessed by calculating inter-rater agreement using the Coefficient of Reliability (CR).

When coding the newsgroup used for this study, the coders achieved a 94.5% agreement using the Audience Rubric and an 89% agreement for using the Discourse Function Rubric. As tools, the Audience and Discourse Function Rubrics proved to be very reliable for the coding of the newsgroup messages. It is interesting to note that the two coders came from very different perspectives. The first coder was a graduate of the OMAET program, four years out from the current group sampled in this study, and as such, was an “insider” in terms of familiarity with the program from a participant point of view. The second coder, on the other hand, had no formal relationship to the program and had never participated in an online class; he was an outside observer. This is important to mention since the different experiences of the two coders, in terms of online learning, would no doubt account for certain assumptions that each may have about the newsgroup interaction.
Table 2. Audience Rubric

### Audience - WHO

<table>
<thead>
<tr>
<th>Addressee/Audience</th>
<th>Description</th>
<th>Indicators</th>
</tr>
</thead>
</table>
| 1  Self                     | These messages are not directed at anyone in particular, but rather, they signal a person’s “thinking aloud” or one’s “writing to understand”. They will explicitly use language to indicate that the message is an act of personal reflection and one that does not require nor necessarily expect a response (although such responses may follow). | “Just thinking aloud”  
“IMHO”  
“These are some of my musings”  
“Just my thoughts” |
| 2  Specific Person or Persons | These messages are addressed to a particular person, as indicated by the use of that person’s name at the start of the message, or by nature of having referenced a particular passage of that person’s message somewhere within the reply.  
May include questions to particular individuals.                                                                                                                                            | “Thanks for sharing this Robert.”                                                                         |
| 3  Instructor               | Simply, these are messages addressed specifically to the instructor of the course.  
This may be indicated either explicitly, by using the instructor’s name, or implicitly, by asking something only the teacher would have the answer to?                                                                 | “Why did you assign these readings to use this week?”                                                                                                    |
| 4  Group                    | All postings are assumed to be directed to the group.  
If messages do not fit into any of the categories listed below, check GROUP.                                                                                                           | Postings that don’t fit into other categories are marked as GROUP.                                           |
| 5  Other                    | It may be difficult to determine if the message is intended for the group as a whole or for the person whose message precedes this one.  
Messages in which the intended or addressed audience is unclear will fall into this category.                                                                                       |                                                                                                          |
## Table 3. Discourse Functions Rubric

### Discourse Functions—WHY?

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Rumination</td>
<td>Posts that show an effort to gain understanding of the topic.</td>
<td>“When we learn online, we commit ourselves to learning independently…”</td>
</tr>
<tr>
<td></td>
<td>May deal with specific concepts or ideas addressed in the readings</td>
<td>“In the future, more and more institutions will be using online classes to augment face-to-face interaction”</td>
</tr>
<tr>
<td></td>
<td>Seek to explain or understand or put forth an opinion about course content</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Such statements may begin as responses to the inquiries of others, but quickly show evidence of the formation or development of one’s own idea(s).</td>
<td></td>
</tr>
<tr>
<td>2 Story-Telling</td>
<td>Statements that contextualize information/knowledge by using personal examples or stories.</td>
<td>“In my job our principal is often demanding. Making us attend workshops will not make us better teachers. I really think her leadership style is adversely affecting the teachers”</td>
</tr>
<tr>
<td></td>
<td>Witnessing</td>
<td></td>
</tr>
<tr>
<td>3 Disagreement/Argumentation</td>
<td>This includes a range of posts that encourage or challenge learners in debate by calling upon them to elaborate, clarify, or defend opinions</td>
<td>“Joe, I didn’t get that from the reading at all. If you look at page 8, you will see that he says the focus of his work is on learning, not teaching.”</td>
</tr>
<tr>
<td></td>
<td>Posts may range from a simple statement of disagreement to a direct contradiction.</td>
<td></td>
</tr>
<tr>
<td>4 Social Interaction</td>
<td>Statements that may not be directly related to the topic, but which reinforce the relationship between members of the learning community—may include linguistic particularities that are specific to the group. May also invoke other communication formats (such as face-to-face or synchronous interactions).</td>
<td>“Ok Weasels! Get back to work”</td>
</tr>
<tr>
<td></td>
<td>May be supportive or counseling in nature</td>
<td>“JoeF gives SueB a virtual hug.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“That’s why this program is so great. Being able to learn from all of your experiences is something I never expected.”</td>
</tr>
<tr>
<td>5 Procedural/Logistical</td>
<td>Statements that explain or inquire about course requirements such as assignments, reading schedule, deadlines, turning in papers, etc.</td>
<td>“Which book are we supposed to discuss in September?”</td>
</tr>
<tr>
<td></td>
<td>Statements that explain or inquire about matters related to the technological functioning of the class process (ng’s, tapped-in, web pages, etc.)</td>
<td>“How do you whisper in Tapped-in?”</td>
</tr>
<tr>
<td></td>
<td>May give advice to other group members about class “survival” techniques.</td>
<td>“I can’t get my computer to recognize MPEG files. Am I missing a component?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I use the flag option when navigating newsgroups; this way I know I can come back to messages that are really important”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Here’s my video project—let me know what you think”</td>
</tr>
</tbody>
</table>

*Table adapted from: M. Bean and R. Coen (2000).*
<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Indicators</th>
</tr>
</thead>
</table>
| 6 Acknowledgement| ?? In the absence of other indicators, a phrase or sentence that suggests the respondent has read the post.  
?? Usually a short phrase or sentence. | “Thanks for sharing this Robert”  
“Lol”  
“Agree” |
| 7 Reference/Resource | ?? Statements which go beyond the asynchronous COP, invoking the work of experts in the field, embed or point to artifacts such as websites, diagrams, or other media. | Take a look at this website:  
http://www.psychinfo.com |
| 8 Inquire        | ?? Statements that solicit a specific response from the group related to the reading material, concepts being studied, terms being defined, or examples presented.  
?? This does not include rhetorical questions, posed to make a point, but not to elicit a response. | “What do you think Dewey would say about education in this context?”  
“What does Wenger mean by reification?” |
| 9 Other          | ?? Statements which don’t fit into any of these categories will be classified as “other”. | |

Draft
FINDINGS

The following is a summary of the results of both the interview and newsgroup coding analyses:

Results of Interview Analysis

At midpoint of the second trimester of the students’ OMAET program, interviews were conducted with 8 of the 23 members of the cadre. One week before the interviews were to take place, all members of the cadre were contacted via email, requesting their participation in the study (see Appendix B). The response to this request was good. Eight participants responded to this request within three days of being emailed and interviews were scheduled for the following week. Six of the interviews were conducted by telephone as the students lived in various locales including Texas, Utah, and Oregon and Hawaii. Only one interview was conducted in person and the other interview was conducted in TappedIn™, the web-based chat environment used for OMAET synchronous classes. (That interview had originally been scheduled as a telephone interview, but the interviewee’s phone service was not working due to a bad snow storm). Interview results were coded according to themes and topics that emerged in reviewing the transcripts of the interviews. Topics that yielded the highest frequency count among all the interview transcriptions are addressed. These topics are listed in Appendix Table 3. Interview Topics for Analysis.

Results of Newsgroup Message Coding

Table 4 shows a breakdown of the statistics of each of the four threads analyzed in this study. Note that that “Chapter” threads in both the first and second trimesters were the longest threads, each consisting of 28 messages, while the process-oriented threads about synchronous chats and newsgroup posting were shorter, consisting of 16 and 22 posts respectively. In addition, both chapter threads lasted 20 days or more, while the process-oriented threads were much shorter by comparison, lasting only 8 and 11 days each.

Table 5 shows that in all four threads, the messages were directed, almost evenly, to either the group as a whole or to a specific member or members of the group. In all four threads, only one message was coded as being directed toward the instructor. More than 53% of the posts were directed toward a specific person or people, 46% were directed toward the group as a whole, and less than 1% was directed to the instructor. However, it is important to note that the post directed toward the instructor was a plea for participation credit for posting her message. It may even have been facetious in tone, as the content of the thread had been about the nature of posting in the newsgroup and the feelings of being overwhelmed by the pressure to post.
Table 4. Descriptive Statistics for Participant Interaction

<table>
<thead>
<tr>
<th>THREAD SUBJECT HEADERS</th>
<th>Chapter 4</th>
<th>Chapter 3</th>
<th>Synchronous Chat</th>
<th>Posting Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Thread</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Unique</td>
<td>15</td>
<td>18</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Participants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Number of Class</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Members</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Number of Messages</td>
<td>28</td>
<td>28</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>Minimum # Messages per</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>participant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum # Messages per</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>participant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of Thread (days)</td>
<td>20</td>
<td>26</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Trimester</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5. Descriptive Statistics for Messages Coded according to Audience

<table>
<thead>
<tr>
<th>THREAD SUBJECT HEADERS</th>
<th>Chapter 4</th>
<th>Chapter 3</th>
<th>Posting Protocol</th>
<th>Synchronous Chat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>10</td>
<td>14</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Self</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Specific Member(s) of</td>
<td>16</td>
<td>14</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructor</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 6 shows the results of the coding of all four newsgroup threads. These results are further broken down by individual thread in figures 1 through 4.

<table>
<thead>
<tr>
<th>Discourse Function</th>
<th>Chapter 4</th>
<th>Chapter 3</th>
<th>Synchronous Chat</th>
<th>Posting Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rumination</td>
<td>9</td>
<td>16</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Storytelling</td>
<td>17</td>
<td>15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Argumentation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Social Interaction</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Procedural/Logistical</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Reference/Resource</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Inquiry</td>
<td>8</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
The newsgroup threads that focused on the class readings showed a remarkably similar breakdown among the discourse functions categories. Figures 1 through 4 are graphical representations of the distribution in coding according to the Discourse Functions rubric.

The thread named “Chapter 4: Workplace Settings” (see figure 1) consisted largely of **storytelling** (44%) followed by **rumination** (24%). There were also a significant number of messages that were coded as **inquiry** (21%). The storytelling and rumination categories account for 68% of the total messages that were coded. No messages were coded as being procedural/logistical or argumentative in nature. When compared to the other “chapter thread”, which was taken from the second trimester, there are notable similarities.

The thread named “Chapter 3: Schooling” (see figure 2) consisted largely of **storytelling** (32%) and **rumination** (34%). Together, these categories represent 66% of the total messages coded. There were also a significant number of messages coded as reference/resources (13%) and inquiry (11%). Again, no messages were coded as being argumentation or procedural/logistical. The results of the coding of these more academic-oriented threads contrast those of the two more process-oriented threads.

The focus of the first trimester thread, “Synchronous Chats” (see figure 3), was about the ways to improve the efficacy of the synchronous classes held in TappedIn©. This thread showed a more even distribution of discourse functions among the messages. However, the thread only had 16 messages, making it difficult to generalize from. The majority of messages were coded as **procedural/logistical**, followed by **acknowledgement**. There is also an even distribution of posts among rumination (16%) and social interaction (15%).

The “Posting Protocol” (see figure 4) thread shows an even more marked distribution of posts coded as **Procedural/Logistical** (34%) and **Social Interaction** (39%). These categories are followed by **Acknowledgement** (14%).

While the similarities between the two process-oriented threads are not as great as those between the academic-oriented thread, they are still notable.
Figure 1. Chapter 4: Workplace Settings
Figure 2. Chapter 3: Schooling
Figure 3.  

Synchronous Chats

- Rumination: 14%
- Storytelling: 5%
- Social Bonding: 14%
- Procedural/Logistical: 24%
- Acknowledgement: 28%
- Reference/Resource: 5%
- Inquiry: 10%
- Other: 0%
Figure 4. : Posting Protocol

- Social Bonding: 38%
- Procedural/Logistical: 33%
- Acknowledgement: 13%
- Inquiry: 10%
- Other: 3%
- Storytelling: 3%
- Rumination: 3%
- Reference/Resource: 0%
DISCUSSION

The results of this study suggest that the content of newsgroup posts differ, in terms of purpose and function, depending upon the topic of discussion in which participants are engaged. The more academic threads were rife with storytelling and rumination, while the process-oriented threads were marked by posts that were more procedural/logistical in nature. There was little, if any, storytelling in the process-oriented threads.

What was most surprising, however, as we analyzed the results of our study, was that no threads were coded as being argumentative. In fact, the cadre that we studied was extremely diverse, in terms of age, occupations, locale, and ethnicity. How was it, then, that there was no disagreement among participants in any of the threads? A closer examination of the threads, as whole texts, revealed that there was, indeed, disagreement among participants, although dissent was often subtle; there were no overt indicators of direct challenge.

Newsgroup Thread: One Text or a Series of Individual Messages?

In an effort to understand how there could be no argumentation in any of the threads, we decided to review one thread to see if we had missed anything. Indeed, we had. The thread “Chapter 4: Workplace Settings,” begins as one student tries to make sense of the chapter in Lave and Wenger’s *Situated Learning: Legitimate Peripheral Participation*. She discusses the ways that the identities between “old-timers” and “newcomers” conflict and struggle against each other as the community develops. She uses an example of her own workplace to illustrate the point. One idea that she introduces is maintained throughout the subsequent messages in the thread. She suggests that some communities, rather than changing and developing, actually break apart as the “newcomers” leave to form their own practice. The next student agrees and gives an example of how this is happening at his school. This is followed by a third student, who concurs and introduces the expression “jumping ship” to describe how she intends to handle this same problem at her school.

The thread continues to develop for the next two messages with everyone agreeing about how they will “jump ship” because the old-timers at their institutions refuse to change. However, this changes in the sixth message, when a student poses a rhetorical question to the group. He asks: “Do students have the option of jumping ship?” He then invokes Dr. Martin Luther King, in a very appropriate analogy of how King feared not what would happen to himself if he took action, but rather, what would happen if he didn’t take action. This was a very subtle shift in the tone of the discussion. It is not overtly argumentative. Rather, his dissent was cloaked by rhetoric. There was little, if any, blatant disagreement. Thus, when looking at the message alone, it lacked indicators suggesting that it was a dissent. The replies to the thread then begin to change, as the next respondent answers the question posed by saying that children don’t have the
option of “jumping ship”, and further challenges the group by saying “but what do you do as the professional stagnating in a place unwilling to change?” Again, the disagreement is subtle, but it does function to provoke and move the conversation forward in a new direction.

As the thread continues to develop, others chime in about the controversy over whether or not to “jump ship” and this term, introduced by one of the participants who claim that some children can “jump ship” as that is what they do when they transfer to private schools. The term “jump ship” has now become an integral part of the thread well into the fifteenth message. The student, who first challenged the group by asking if children had the option to jump ship, now concedes that sometimes people need to make the choices that best suit them. He backs down a little from his earlier position, admitting that his own children attended private schools. This is followed by a new respondent who challenges the group about the assumptions being made about public schools. He goes on to argue that in many cases public schools and their teachers are superior to private schools. Again, although this is not a direct contradiction of what has been said up until this point, it is certainly an attempt to show that the issue is not simple. And the thread continues with more and more examples of students adding their opinions which are not entirely in keeping with those that preceded them.

When looking back on the thread, there were many messages that could have been coded as argumentation. How then were they overlooked? We determined that the reason for the oversight had to do with the fact that the messages were being coded as individual, discrete units, rather than being considered within the larger chain of communication. Gunawardena, Lowe & Anderson (1997) warn researchers that this is a potential problem, explaining “we must not, without realizing it, begin to view discussion artificially divided into strands of arguments as a fair representation of the participants’ interaction or any individual participant’s learning process” (p. 407). Without taking into account the larger landscape of the entire thread of the discussion, where it had been and where it was going, it was difficult to see any of the individual messages as being overly argumentative. It is only when the messages were examined as one ongoing narrative that it was possible to see that there were slight shifts in tone and opinion from message to message.

Context versus Content: Interview Insights

This presents a problem for the coding and interpretation of messages. Accurate coding requires a large degree of inference. Even when the coders have been rigorously trained, it is difficult to categorize the content of the message without a close examination of the larger text—the thread in which it was composed. To view a message as a unique and discrete unit is to ignore the context in which it arose. Moreover, one must keep in mind the reason for coding messages in the first place. The purpose of this study was to ascertain if and how learning was taking place. The interviews were intended to help fill in the contextual gaps that the asynchronous transcript created. One student made a rather profound statement about the value of newsgroups for her learning
in the OMAET program. She says that “the most important part of the newsgroup process is not the reading or the posting—it’s the part in between where I’ve read it, and then I reflect on it before I post a reply. It’s that little, in that processing place”. If the learning is indeed happening in this little “processing place,” is it possible to actually “see” such a place, much less quantify instances of such processing during the course of a semester—or even a week—of a course? We think not.

One of the greatest advantages of asynchronous online learning forums is that they allow for, if not encourage, collaboration among participants across time and distance. Social theories of learning assume that participants learn when they make engage in joint meaning making. Learning is seen as a negotiation, rather than as transference, of knowledge. As such, asynchronous online learning presents the opportunity for such negotiation, as the activity of the learning environment is dialogue. But dialogue is not the only activity. Reflection is also an important part of this negotiation. When interviewed, some students admitted that this reflection occurs as they write. They come to understand as they process their ideas in writing. For others, the reflection is much more private. Some participants report composing their replies offline after thinking about them for some time, before posting. A few even report not posting their ideas at all, after reflecting and writing offline, as they feel that they have achieved sufficient understanding without having to “go public”. In such instances, it is obvious that the written transcript does not tell all, as may have been previously assumed.

This study does reveal that transcript analysis alone is not sufficient in determining how and to what degree learning occurs in asynchronous online settings. Moreover, while the process-oriented threads that were examined showed little evidence of “rumination” or deep thinking. What was clear, however, was that such threads were important part of the development of the online community in terms of providing support for members and shaping the group’s practices.

What was also notable in this study was the role that stories played in the learning process. In both of the academic threads examined, the same messages that were coded as rumination were quite often also coded as storytelling. This suggests that stories play an important role in the learning/thinking process. Storytelling has been the focus of study in the field of business and corporate training (Denning, 2001; Wenger, McDermott & Snyder 2002), but to date it has received little attention by the academic community in terms of asynchronous online learning. This is an area that would benefit from further study.

Measurement continues to be problematic as we review the results of our study. The dangers of reliable, analytic coding schemes that fail to consider the sum of the parts are that validity is compromised in order to achieve reliability. The measurement of online learning must not outpace the development and understanding of how learning occurs online. We must work to develop measurement tools in tandem with careful ethnographic accounts of the online learning experience.
References


Appendix A: Interview Schedule

The following questions formed the basis of the semi-structured interviews I conducted with the newsgroup participants.

**CODING RUBRIC:**

**Discourse Functions**

1. Take a look at the Discourse Functions Rubric. What do you think of these categories?
2. Do you think there is anything in the newsgroups that is not represented in this rubric?
   PROBES: Look at the post on p. 19 of the *Post Toast* thread. Do you agree that this first paragraph should be coded as a *rumination*? Can you explain your reasoning?
3. What do you think about the categories of the Audience Rubric? Do you agree with the categories?
   PROBE: Are these categories consistent with the way you address your posts in the newsgroups? Can you explain?

**Audience**

4. When you write in the newsgroup, whom do you imagine you’re writing to?
   PROBES:
   a. Your peers?
   b. Your professor?
   c. Yourself?
5. Is the Audience Rubric accurate, in your opinion?
6. When you respond to someone else’s posting, whom do you imagine you’re writing to?
   PROBES:
   d. The original message writer?
   e. The entire audience on the thread?
   f. The class?
   g. The prof?
   h. Yourself?
7. Think of a time when you wrote something in the newsgroup and no one replied or those who did took a long time to respond.
   PROBES:
Making Sense of Online Learning

a. How did it make you feel?
b. Did it matter?
c. Did you care?
d. Do you try to respond to other people in order to acknowledge they’ve been heard?

Interaction

8. Would you say that your cadre is typical in the way you respond to newsgroups?
9. What were some of the best dialogues or exchanges that you can recall from your newsgroup interactions?
   PROBES:
   a. Can you think of any particular topics?
   b. Can you think of a particular kind of thread experience, for instance, one that generated a lot of responses, or one that was ‘controversial’?
10. Think of a time when there was tension or argumentation in the newsgroup.
   PROBES:
   a. Can you tell me about that?
11. Think of a time when there was a misunderstanding in the newsgroup.
   PROBES:
   a. Can you tell me about that?
12. Were there any particular expressions or idiomatic phrases that you and your peers used that you think originated in your cadre?
   PROBES:
   a. Any recurrent jokes that show up in the text?
   b. Jokes?
   c. Nicknames?
13. Who do you recall as the ones who wrote the most postings in your cadre for this class?
   PROBES:
   a. How would you characterize their contributions?
   b. Were they writing about course content and ideas? Sharing resources? Or other things?
14. Were there others who perhaps wrote less but had a greater impact?
15. Who were the “key players”?
16. Were there people whose postings you tended to read and others whose postings you tended to skip?
   PROBES:
   a. How would you characterize the differences between those?
17. Can you recall any people who seemed to post very little, if at all?
   PROBES:
   a. How did you feel about that?
18. What purpose do the newsgroups serve for you in your learning?
   PROBES:
   a. Pace to Inquire?
   b. Dialogue?
   c. Socialize?

Storytelling

19. Tell me about any stories that people told in the course of the semester in
   newsgroups.
   PROBES:
   a. Would you say those were academic in nature?
   b. How about non academic stories? Can you recall any?
20. Did you do any sort of story telling during the semester?
   PROBES:
   a. Tell me about that.

Newsgroup Participation

21. Describe for me the way you typically read through newsgroups when you log in.
   PROBES:
   a. Do you read them online?
   b. Print them out?
   c. Do you sort by date or by subject?
   d. Do you look for particular individuals or topics?
   e. Do you ever flag messages or return to read certain messages?
22. Did you ever post a message and then erase it before sending it?
   PROBES:
   a. Tell me about that.
   b. Was writing the message beneficial to you in any way, despite not
      having sent it? Why?
23. Do you ever choose to say things to another student in a private email rather than
    in the newsgroup?
   PROBES:
   a. Why?
24. Were you ever aware of another person reading or posting messages at the same
time as you?
   PROBES:
   a. What did you think of this?
b. Did it affect what/how you wrote?

25. Do you ever cross-post, by talking about issues from another course in a different newsgroup?

26. How do you feel about your amount of participation in newsgroups?
   PROBES:
   a. Do you think you participate as much as others do?
   b. Did any behaviors you adopted from face-to-face discussions or MOO sessions cross over into the asynchronous newsgroup forum?

**Socializing/Community**

27. Would you say that your cadre has a strong sense of community?
   PROBES:
   a. What makes you say that?

28. Describe some face-to-face encounters that affected your experience reading and responding to newsgroups.

**Learning**

29. Which is more important to your own sense of learning:
   PROBES:
   a. Posting?
   b. Reading?
   c. Replying?
   d. Why?

30. Were there any particular members of the cadre who you feel helped you to learn?
   a. Who were they and why do you feel their contributions were helpful?

31. Did you prefer synchronous or asynchronous meetings?
   a. In which forum do you think you learned the most? Explain.

32. Did you think about school differently during this online program?
   PROBES:
   a. How? What was different?

33. What kinds of posts are do you consider to be most valuable to you, in terms of your own learning experience?

**General**

34. Now I want to talk about newsgroups in general. Do you feel satisfied with learning in the asynchronous online setting?

35. Is there anything you didn't like at first about online learning?
   PROBES:
a. Do you still dislike that aspect of online learning?
36. Is there anything you would like to say about online learning that I haven’t addressed?
Appendix B: Interview Topics for Analysis

The following topics emerged from the interviews with eight members of the OMAET cadre:

1. Rubric Validation: Audience and Discourse Functions.
2. Perceptions regard the Important Functions of Newsgroups.
3. Quality of Message Posts:
   a. Volume of Posts
   b. Levels of participation
   c. Diversity of participants
4. Content of Posts:
   a. Storytelling
   b. Argumentation/Controversy
5. Social Interaction
   a. Inside Jokes
   b. Face-to-Face Encounters
   c. Alternate Media: Web Cams, Instant Messenger, MOO’s
6. Responding to Messages
   a. Time
   b. Frequency
7. Affordances of Writing
   a. Reflection
8. Approaches to Newsgroup Reading and Writing
   a. Rules: Written & Unwritten
   b. Strategies
Notes:

1. **OMAET Course and Program Characteristics**

The OMAET program, which is conducted 90% online, offers three opportunities, within the 13-month program, for face-to-face interaction:

   1) *Virtcamp*, a weeklong community-building and technology-training endeavor at the outset of the program, which begins in July;
   2) A Mid-Program meeting in March in Orlando Florida, the site of the Florida Educational Technology Conference;
   3) A Final Meeting the following July to showcase Action Research Projects (ARP’s) that students have been working on throughout the program.

In addition to these three face-to-face meetings, the OMAET classes include a number of synchronous chat events held in TappedIn™, an educational MOO in which Pepperdine has a virtual building. The TappedIn© meetings are opportunities for members of the online COP to engage in a more immediate form of communication.