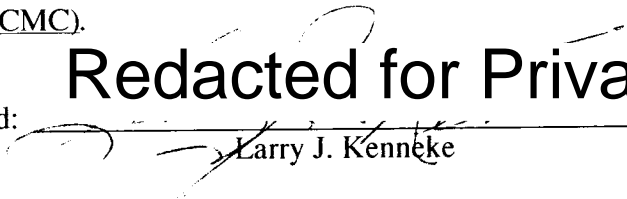


AN ABSTRACT OF THE THESIS OF

Terri L. Johanson for the degree of Doctor of Education in Education presented on January 24, 1996. Title: The Virtual Community of an Online Classroom: Participant Interactions in a Community College Writing Class Delivered by Computer-Mediated Communication (CMC).

**Redacted for Privacy**

Abstract approved:

  
Larry J. Kenneke

This qualitative study describes and interprets the interactions of participants in a community college writing class delivered by computer-mediated communication (CMC). The class represented a best practice model of learner-centered instruction in a CMC class. The description and the discussion are framed by five aspects of CMC instruction: (1) context; (2) technology; (3) communication; (4) learning; and (5) community.

Offered via a computer bulletin board system (BBS), the class was an ongoing asynchronous electronic meeting. The participants actively accessed the class to interact and collaborate at all hours of the day and night and on almost every day of the term. The relational communication style adopted by the students reflected the formality, immediacy, and social presence of the instructor. Expressing the tone of friendly letters, most of the messages combined salutations, personal or social content, task-oriented content, closing comments and signatures.

The mix of assignments and activities required students to act and interact individually, collaboratively and cooperatively. The students accepted the responsibility for interaction and initiated a majority of the messages. The instructor's communications were predominately responsive, facilitative, and coaching type messages. Assignments

and activities that required interaction and information sharing stimulated the development of a sense of community for participants.

The qualitative analysis and interpretation of the data generated two hypotheses:

### Hypothesis One

Four elements of CMC instruction have critical impact on student participation, satisfaction, learning, and achievement: (1) the functionality and operational transparency of the technology; (2) the course design; (3) the instructor's attitude, style and expertise; and (4) the students autonomous choices about participation, interaction, and cooperation.

### Hypothesis Two

In CMC instruction student participation, satisfaction, learning, and achievement are positively impacted when: (1) the technology is transparent and functions both reliably and conveniently; or (2) the course is specifically designed to take advantage of the CMC characteristics of time/place independence and interactivity to support learner-centered instructional strategies; or (3) the instructor's style is collegial and he/she operates as facilitator, model and coach; or (4) there is a reasonable level of flexibility to accommodate the autonomous choices students make about interaction and collaboration.

The Virtual Community of an Online Classroom: Participant Interactions in a Community  
College Writing Class Delivered by Computer-Mediated Communication (CMC)

by

Terri L. Johanson

A THESIS

submitted to

Oregon State University

in partial fulfillment of  
the requirements for the  
degree of

Doctor of Education

Completed January 24, 1996  
Commencement June 1996

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Doctor of Education thesis of Terri L. Johanson presented on January 24, 1996

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Terri L. Johanson, Author

## ACKNOWLEDGMENTS

Just as hypotheses emerge from the process of qualitative research, so friends and supporters emerge from an author's community during the writing of a thesis. Some of my supporters, mentors and motivators were long-time friends, some were newer, and some just appeared to express good thoughts and encouragement—what a joyous thing!

My husband's contribution to this effort is without measure. Gary created a cocoon of support. He shouldered the lion's share of the responsibility for our family and for our life together. His efforts empowered me and his belief that I could do this inspired me!

Four friends stand out as always there *and* always positive that I would complete the task. Lucy MacDonald, Betty Bode, Gail Pincus and Sharon Smith guarded my sanity, my confidence, and my health throughout the entire project. Also in the *always there and positively supportive* ranks were all the members of cohort two, my graduate school family. Together in this adventure we can count on one another unequivocally—we're colleagues and friends forever. I could not have done any of this without them.

My colleagues at Chemeketa Community College formed the next wave of stalwart supporters. Tom DePue was on hand to nourish my confidence at every step of the way. Connie Green was there whenever I needed support, guidance, and coaching—she gave me confidence! Doug Moxley's creativity and technical expertise was invaluable, as always. Gwen Ellyn Anderson pitched to help when I really needed her. And, support that came in the form of kind words, cards, interested questions, or hugs, from lots of other Chemeketans, helped me stave off my fears and replenished my desire and my tenacity.

I am thankful, to Dr. Larry Kenneke my Major Professor, for all of his help and to the members of my committee, Dr. Ruth Stiehl, Dr. Maggie Niess, Dr. Betty Duvall, and Dr. Ann Green for their suggestions and encouragement. I also extend my sincere appreciation to *all* the CCLP faculty, but I'd especially like to acknowledge Dr. Charles Carpenter and Dr. Tom Evans for their continuous efforts to encourage and support me.

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The Virtual Community of an Online Classroom: Participant Interactions in a Community College Writing Class Delivered by Computer-Mediated Communication (CMC)

## INTRODUCTION

This study describes and interprets the actions and interactions of community college students in a computer-mediated communication (CMC) class which existed only as text on a computer screen. The report of how this group of people interacted in their virtual classroom will be of interest to people who are making policy about CMC instruction, designing CMC systems and curriculum, teaching CMC courses, and to those considering participation in CMC courses.

### Background

Telecommunication is a national policy agenda today. Every American who reads a newspaper or who watches television has at least heard of the information highway. Jones (1995) states that there are approximately 1.5 million users on 30,000 computer networks, and that the numbers are increasing at a rate of 10% each month. Public access to future technological advances is increasing and it is predicted that telecommunications will be even more pervasive in the near future (Chapin, 1993; Stix, 1993). Many colleges and universities are offering courses and degree programs via Electronic Distance Education (EDE). It is becoming a standard component of instructional delivery in higher education (Lauzon & Moore, 1989).

Colleges are facing reduced funding and at the same time are anticipating increased student populations (Zumeta, 1995). Due to the constraints of work and various access issues, many students have time and place barriers which limit their participation in traditional classes (Cross, 1981; Merriam & Caffarella, 1991). When considered together,

these factors lead many to believe that EDE and particularly CMC courses and degrees will be increasingly more popular (Harasim, 1990; Kinnaman, 1995; Lever, 1992).

Computer-Mediated Communication is already being used as the delivery medium for college degree programs and a growing number of students and teachers are meeting in virtual classrooms (Connolly & Schneebeck, 1993; Holden & Mitchell, 1993). Yet, little is known about the interactions of participants in the virtual community of a CMC class. It is vital that the decision makers and those who will be charged with implementing their decisions have more than just the cost and access information about CMC instructional delivery available to them. This study is an effort to understand the interaction in one CMC classroom in a community college. As educators design systems, curriculum, and student services for CMC students, the hypotheses generated by this study may be useful.

### Questions

Some questions about CMC students and their virtual environment sparked this research. What actions, interactions, relationships, or group dynamics occur among the participants (students and instructor) in such a community? What kinds of communication (writing) patterns do participants use? Do the actions and interactions support, encourage, or engender participation, collaboration, or learning? Does this virtual community resemble other communities? What impact does the CMC environment have on participant feelings of satisfaction, comfort, inclusion, or exclusion? Answering these questions led to a better understanding of the experience this group of students had in their virtual classroom.

### The Literature

There are little empirical data available about the community that is formed in a CMC class—how the participants interact, or what impact the environment itself has on the instruction or on interactions of the participants (Basham, 1991; Rosenthal, 1991). The

relevant information that is available is diffused into many disciplines and is not yet well organized, researched, nor documented in a specific context (Metz, 1994). In a general review, the theoretical constructs of community, communication (interpersonal), CMC, and collaborative learning dominate the literature about this new educational domain. As such, they form the framework of the study.

The literature about CMC instructional environments focuses primarily on comparing CMC with face-to-face (FtF) instruction in such areas as general effectiveness, cost effectiveness, achievement levels, and the characteristics of CMC students and of CMC systems. However, the secondary themes revealed in this literature are of more interest for this study. The CMC literature establishes instructional CMC as a new educational domain. It provides an interactive and social instructional environment which meets the needs of students to access education outside of traditional classrooms and affords them both satisfaction and academic success (Cheng, Lehman, & Armstrong, 1991; Lauzon, 1992; Phelps, Wells, Ashworth, & Hahn, 1991; Stubbs & Burnham, 1990).

Communication is the essence of the CMC environment, making it logical then to examine the communication literature to explore and define different kinds of communication, communication patterns and theories about how people are present in and relate through communication (Rogers, 1986; Short, Williams, & Christie, 1976; Walther, 1990). The connections between how people communicate, relate, collaborate, and how they learn are strong and integral to a study aimed at describing what happens in a new instructional domain. The learning literature provides insight about how people learn and a framework for assessing the characteristics of the CMC environment in terms of how such an environment may support or affect learning. Collaborative learning literature draws direct connections between learning and social interaction and holds that learning can be facilitated by the provision of an environment rich in social interaction. The research suggests that CMC provides such an environment and can support collaborative instructional activities (Harasim, 1987; Jennings, 1987; Kinkead, 1987; Peyton, 1987).



Consistent throughout all the literature about CMC is the concept of community — that sense of group identity which reduces social isolation, encourages interactive mental engagement, and provides a social context for conversation and dialogue. The community concept provides the thread that binds the elements of communication theory, distance education, and learning theory into the whole of the instructional CMC context (Connolly & Schneebeck, 1993; Kay, 1995; Levy, 1995; Rheingold, 1995; Stoll, 1995).

### The Methodology

A qualitative research design was selected for this study. The design is appropriate to gain detailed descriptive information about the actions and interactions of students and their instructor in the virtual environment of a CMC classroom. Descriptive information has been needed to gain familiarity with this new educational domain and to address gaps in the knowledge (Baym, 1995; Crook, 1994; Escobar, 1994; Harasim, 1987; Wells, 1992). The conclusions reached from this study have implications for building theory, policy, action, and further research.

### Definitions Of Terms

*BBS* is the acronym used for a computer bulletin board system.

*Best Practice Model* describes an application of instructional practice that integrates the components considered to be essential to the optimum implementation of a particular instructional theory.

*Computer-mediated Communication (CMC)* is a distance education/electronic distance education (DE/EDE) delivery medium which allows students and instructors to access time and place independent instruction, utilizing a computer, modem, telecommunications software, and a telephone connection (Harasim, 1990).

*Community* is defined in many ways, but, in the EDE context it is generally used to describe a sense of group identity which reduces social isolation, encourages interactive mental engagement, and provides a social context for conversation and dialogue (Grabowski, Pusch, & Pusch, 1990; Harasim, 1987).

*Cyberspace* refers to the shared, virtual space created by the networks and systems of computer-mediated environments.

*Distance Education (DE)* is defined as any instruction which occurs with the instructor and the student/s in separate locations; it encompasses all formats including EDE and its subset CMC.

*Ethnography* is both a descriptive and an interpretive, sense/meaning-making, account of the actions and interactions of the participants in a social unit (Agar, 1986; Bogdan & Biklen, 1982; Erickson, 1984).

*Electronic Distance Education (EDE)* is DE delivered through any of a variety of electronic technologies including telephone, radio, television, video, and computer-mediated communication.

*Emoticons* are relational icons constructed of combinations of punctuation marks to represent nonverbal communication such as smiles, frowns, etc. (See Appendix A).

*FtF* is the acronym used for *face-to-face*, the communication standard against which all communicative media is compared. It is also the traditional classroom instruction standard.

*Grounding* is the process through which communicators confirm that their communications have been understood.

*Immediacy* is the “psychological distance which a communicator puts between himself or herself and the object of his/her communication” (Gunawardena, 1994, p. 3).

*Learner-centered instruction* is characterized by active student participation, student responsibility for the learning, knowledge facilitator and coach role for the instructor, and interactive, evaluative and cooperative roles for all participants (Bruffee, 1986).

*Social presence* is “the degree to which a person is perceived as a *real person* in mediated communication” (Gunawardena, 1994, p. 3).

*Telnet* is the internet standard protocol used to connect to a remote computer system from another computer and then function on the remote system as if directly connected.

*Triangulation* a process through which qualitative research findings are derived and verified, first, by acquiring data from multiple sources and by multiple methods, and then by verifying the findings with multiple sources and/or methods (Miles & Huberman, 1994).

*Virtual* is a term used in computer-mediated communication literature to define an environment which exists in essence though not in actual form.

## REVIEW OF THE LITERATURE

The review examines Computer-mediated Communication (CMC) in the context of its use as the delivery medium for college classes. It is grounded in a framework of CMC, communication, collaborative learning, and community literature. The review is organized into four main sections: Instructional CMC, CMC and Learning, Communication Research and CMC, and CMC and Community.

### Instructional CMC

The first distance education (DE) offering, a “composition course through the medium of the post,” (Holmberg, 1986, p.6) was advertised in Sweden in 1833. It started an ongoing effort to serve the needs of students by providing educational offerings outside of the traditional FtF classroom. When telephone, radio, television, and video technologies became available, DE programs adopted them and became known as electronic distance education (EDE) programs. Emerging in the mid-1970s, CMC is the latest innovation in the evolution of DE/EDE (Buckland & Dye, 1991; Lever, 1992).

Computer-mediated communication is a new domain in education. Its characteristics of time and place independence combine with interactivity to make an instructional domain completely new and separate from face-to-face instruction and traditional distance education (Harasim, 1989). This section briefly explores the implementation of CMC in instruction. It is organized into the following subsections: Theoretical Models, Students, and Instructors.

#### Theoretical Models

Nipper (1989) identified three generations of DE instruction: correspondence, broadcast, and computer conferencing. He noted that each generation incorporated the

media used by earlier generations. New models emerge within the context of new mediums, applications, and users.

Themes of independence and autonomy are prominent throughout the DE/CMC literature. Keegan (1986) discussed these themes in *The Foundations of Distance Education* citing the works of Charles Wedemeyer and Michael Moore. To Wedemeyer the essence of DE was the independence of the student. In his model the teacher and the student are in separate locations. The teaching is individualized and done in writing. The learning is provided in an environment convenient for the student. The student is responsible for the learning and is free to define the pace of the learning (in Keegan, 1986). In the early 1970s, Moore expanded upon Wedemeyer's DE criteria. He argued that DE must provide for at least two-way communication, that it be responsive to the needs of the individual student, and that the student have a high degree of autonomy (in Keegan, 1986).

Paulsen (1993) builds on both Wedemeyer's and Moore's models to theorize that CMC instruction provides an environment for *cooperative freedom* through the combination of freedom for the individual and group cooperation. In CMC, the elements of time, space, pace, medium, access, and curriculum form a hexagon that can be negotiated by individual participants cooperating together to generate a cooperative freedom for learning (Paulsen, 1993).

Just as separation of the instructor and the student are the constants in every generation of DE instruction; so autonomy, independence, and control are the constants in the theoretical models. How a particular CMC instructional implementation deals with these issues is critical to the kind of interaction the participants have and to their feelings of satisfaction, comfort, and inclusion or exclusion.

## Students

The themes of autonomy, independence, and control also resonate through the research that has been conducted with CMC students. In *Computer Mediated Communication and the Online Classroom* series, Volume I, Zane Berge (1995) states clearly that “CMC promotes self-discipline and requires students to take more responsibility for their own learning” (p. 3-4). At the same time she acknowledges that for some students self-management and independence may be a barrier rather than an empowerment. Such dichotomies confuse the discussion about whether the CMC environment engenders learning and whether participants are satisfied with this kind of learning environment.

While others focus on control by either the teacher or the student, Baynton (1992) suggests that a balance must be struck between independence, competence, and support to achieve control of the learning process. This approach emphasizes the interdependence of the teacher and the learner rather than the independence or control of one or the other. This interdependence draws on the strengths of all the participants and contributes to the active participation of all in a group dynamic of learning.

Researchers have invested much effort in defining the common characteristics of those who have *achieved success* in online classes (Boston, 1992; Davie & Wells, 1991). The emphasis on defining the characteristics of successful participants has precluded serious examination of actions and interactions among participants in CMC classes. It may be that satisfaction and success are derived as much from the interactions that happen between and among the participants in *class*, or from the freedom the environment provides to act independently, as from the characteristics or skill sets participants possess.

## Instructors

It is felt that student satisfaction with CMC courses is directly related to the actions of and interactions with the instructor (Paulsen, 1992). The instructor sets the tone of the

interaction, establishes the pace, facilitates the interaction, and defines the objectives, activities, and the materials. Yet, the role of the instructor is probably the least studied aspect of CMC instruction creating a serious gap in the research.

CMC provides an excellent environment for student/teacher interaction and student/teacher relationships may be more developed in CMC than in the traditional classroom (Beaudoin, 1990; Gunawardena, 1994; Lauzon, 1992). To achieve such positive student/teacher interaction and to have successful and satisfied students, instructors must rethink and redesign their traditional course materials to teach in the CMC environment and they may need to have some special training plus additional planning time (Basham, 1991; Holden & Mitchell, 1993; Kaye, 1989).

There are conflicting reports about instructional planning for CMC classes. Roger Boston (1992) reports that faculty who teach online have found renewal and satisfaction from redesigning their courses to teach them online. But Wolcott (1993) found that most instructors prefer to rely on familiar techniques and simply model their distance courses on what they regularly do in the FtF classroom. Little attention is paid to the characteristics of the medium or of the students, the focus being on the content not the context of the course (Wolcott, 1993).

Research has shown that the instructor plays a pivotal role in the actions and interactions in the CMC classroom. However, there is very little research pertaining specifically to the teacher, the teacher's role in the CMC classroom and the issues of planning and effective teaching strategies.

### CMC and Learning

Computer-mediated Communication has the potential to move DE from a *mass production* model to one that facilitates learning. Students can move from being recipients of knowledge to being actively engaged with learning and making knowledge their own

(Lauzon, 1992; Lauzon & Moore, 1989). The five attributes of CMC instruction, that set it apart from other modes of education, also support learning in ways that make it a unique domain for learner-centered instruction (Harasim, 1990). These five attributes: (1) many-to-many communication, (2) place-independent communication, (3) time-independent communication, (4) text-based communication, and (5) computer-mediated interaction are used to organize the review of the literature relevant to understanding the relationship between the CMC instructional environment and learning (Harasim, 1990).

### Many-to-Many Communication

A primary component of CMC instruction is the computer conference, a social environment that supports and encourages interactive group communication (Harasim, 1990). Computer conferencing was specifically designed to facilitate group interaction and CMC literature is rich with references to the compatibility of CMC instruction and collaborative learning strategies (Harasim, 1989).

Bruffee (1986) has defined collaborative learning theory based on a best practice model of the learner-centered environment: (1) students actively participate in the learning process; (2) students are invested with responsibility for knowledge acquisition; (3) the instructor role shifts from knowledge transmitter to knowledge facilitator, enabler, coach, model, and guide; and (4) the environment facilitates peer interaction, evaluation and cooperation. Harasim (1990), contends that “with careful attention to [curriculum] design—computer conferencing supports and facilitates active learning collaborations” (p. 43).

Collaborative learning theory has been applied in many ways. Vygotsky placed collaboration at the core of the teaching-learning process (as cited in Mabrito, 1989). Kenneth Bruffee (1984) focuses on the value of collaborative conversation and the role that language plays in writing. He views writing as the resocialization of internalized



conversation and the collaborative conversation and writing process as a way of “demonstrating to students that they know something only when they can explain it in writing to the satisfaction of the community of their knowledgeable peers” (p. 652). Harasim (1989) describes the process of collaborative learning, as the construction of knowledge by the engagement of students, instructors, and experts in interactive discussions and activities.

In a study of two CMC courses which required joint writing assignments, one through collaboration of writing partners and the other the collaboration of small groups, the performance level of both groups was judged to be superior to that of similar FtF courses. In the course where participants worked as writing partners, the transcripts revealed that both partners contributed substantially to the project in five of the seven partnerships. The transcript of the class using small group collaboration showed more variation in the participation rates than in the partnership pairs, but all students contributed to the final project in some way and the quality of the writing was judged superior to the products of similar small groups working FtF. Participants in this study reported satisfaction with their work in the CMC environment. Several students particularly valued the opportunity to contribute to the class at times that did not conflict with family responsibilities, allowing them to devote full attention to the course work without family distractions (Davie, 1988).

The research reports about collaborative learning applications in CMC classes make it clear that instructors must specifically design class activities in order to take advantage of the interactive and collaborative environment that is possible in CMC. Design and planning are essential, whether a formal instructional design model is to be used for a new course or an instructor is undertaking a purposeful redesign of the FtF strategies from an existing class (Crook, 1994; Harasim, 1989; Lauzon, 1992; Lauzon & Moore, 1989; Nalley, 1995).

### Place and Time-Independent Communication

Because CMC instruction can be accessed from anywhere that the appropriate communication tools are available, CMC students are not limited to the learning opportunities, resources and experts available in their specific geographic locations. CMC also offers access to active learning experiences to those who have previously been limited to the transmission-type models of traditional DE instruction, (Kinner & Coombs, 1995).

The time-independent attribute contributes to learning in several ways. Hiltz (1986) found that learning is more effective when students can take as much time as they need to read, understand and respond to information (Hiltz, 1986). Chesebro and Bonsall (1989) identified time manipulation as a primary difference between FtF communication and CMC. In CMC, messages and responses can be read and reread for understanding and consideration. The respondent may take as much time as needed for message construction and editing without the receiver having any perception of the actual time the other person invested in reading and responding (Chesebro & Bonsall, 1989). Students who are not adept at oral communications because of timidity, language or speech difficulties, feel more confident and able to contribute to the interaction in CMC and their contributions receive attention equal to that afforded more assertive or facile participants. In the more competitive environment of a time-bound FtF discussion, these students are often unwilling or unable to contribute equally in the interaction (Rice, 1984).

### Text-based Learning

A significant attribute of CMC instruction is that it consists almost entirely of written communication. CMC participants must encode their interactions into written language to communicate them to each other. This characteristic has sometimes been viewed as a negative attribute or at least a limiting one as in the *cues filtered out* theories which propose that the text mode of CMC constricts communication.

Some learning theorists propose that learning may actually occur through the process of writing and that writing is heuristic (Emig, 1977). In the process of writing, thoughts are mediated by the simultaneous actions of synthesizing, imaging, and graphically recording a representation of thought in words. Vygotsky (1962) calls this the “deliberate structuring of the web of meaning” (p. 100).

Emig (1977) states that “because writing is often our representation of the world made visible, embodying both process and product, writing is more readily a form and source of learning than talking” (p. 124). In FtF instruction, talking is the originating process, and in CMC instruction, writing is the originating process (Emig, 1977). If writing is a form and a source of learning, that is in some ways better than talking, then some of the differences between FtF and CMC formerly viewed as problematic may actually reflect a better environment for learning in CMC instructional environments than in FtF ones.

### Computer-Mediated Interaction

Computer mediation is the essence of CMC and it provides the capabilities which support the other attributes of CMC instruction discussed in this section. But most importantly it provides a level of control in instructional interactions that is unmatched in any other educational domain (Harasim, 1990). CMC interactions are “revisable, archivable, and retrievable” and they give the user an exceptional capability to “present, receive, process and manage information” (p. 51).

The process of CMC automatically creates a product—an electronic transcript of all the interaction. This permanent record of the communication provides participants with unprecedented control over the way they participate in collaborative and discursive activities. They can sort, scan and/or ignore the contributions of the others in their group. They can take the time they need to formulate their responses and they never have to wait a

turn or try to break into the interaction of the more assertive members of the group. The transcript also allows participants repetitive access and information retrieval. This attribute facilitates both retrospective analysis and critical review of the interaction (Harasim, 1990).

### Communication Research and CMC

Communication research is important to understanding the interactions of participants in a CMC class. The theory of social presence and relational communication research are highly relevant to the integration of CMC into instructional delivery and to the perception of satisfaction and success students experience in CMC courses. Grounding concepts and the discussion of communication network analysis are reviewed to present a frame for the examination of online messages.

### Social Presence Theory and Relational Communication

FtF communication is the standard by which all other communication is measured (Steuer, 1992). The only attention that has been paid to the interaction that occurs in CMC environments has been dedicated to comparing FtF and CMC interaction and/or various implications of social presence, channel, or cues filtered-out theories.

Nonverbal cues have been considered particularly critical to meaningful communication since Mehrabian (1981) found that 93% of meaning in FtF communication comes from nonverbal information (Feenberg, 1989; Mabrito, 1989). Social presence theory is based upon the FtF standard and the assumption that communication is constrained without nonverbal communicative codes such as body language, voice tone, facial expressions, and other social cues. Short, Williams, and Christie (1976) defined social presence as “the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships” (p. 65), meaning the degree to which each person perceives the other as a *real person* and their interaction as a *personal*

*relationship*. They hypothesized that different communications media have varying degrees of social presence based on the ability of the media to transmit nonverbal information.

The ability of the media to transmit nonverbal information is measured by the number of *channels* a medium provides for the transmission of various kinds of data (Walther, 1990). In FtF, instructional communication occurs not only student-to-teacher, teacher-to-student, and student-to-student but also along multisensory channels that receive and/or transmit audio, visual, tactile, and even olfactory information. CMC instruction communication also occurs student-to-teacher, teacher-to-student, and student-to-student but, in most systems, it is limited to the dimensions that can be expressed in visual channels transmitting text and graphics (Levinson, 1990).

Standard CMC text filters out the nonverbal cues and so it is said to be very low in social presence (Walther, 1990). With social presence theory as the framework for much of the CMC research, the characteristics of CMC or of its users are identified to support, expand, or conflict with the theme. Researchers Sproull and Kiesler (1986) identified the critical difference between FtF communication and CMC to be that the *social context cues* are filtered out of CMC interaction. Hiltz and Turoff (1978) found the CMC environment to be highly impersonal and task-oriented but they also found that users participated more equally and retained more from a CMC meeting than an FtF meeting. In contrast, Chesebro (1985) found that around 30% of the messages in a random sample of computer bulletin board messages were interpersonal in nature.

Expanding on the social presence theme researchers took up the idea of immediacy which has been defined as the “psychological distance which a communicator puts between himself or herself and the object of his/her communication” (Gunawardena, 1994 p. 3). Immediacy, sometimes termed intimacy, can be expressed in physical, verbal, or nonverbal ways, including physical proximity, high eye contact, smiling, forward body lean, formality, level of interactivity, and availability for interaction (Burgoon, Buller, Hale & deTurck, 1984; Gunawardena, 1994). Research shows that people compensate for the lack

of physical intimacy in CMC by encoding *verbal* intimacy using such strategies as informal tone, typing phatic phrases such as *I see*, and using emoticons (combinations of punctuation marks used to represent smiles, frowns, winks, etc.) to express affective messages (Gunawardena, 1994; Walther, 1992). (See Appendix A)

It has been suggested that the lack of channels for social cues in CMC inhibits the ability of CMC participants to exhibit the necessary immediacy or social presence to achieve interpersonal relationships (Baym, 1995; Walther, 1990). But Walther (1990) counters that the research which has examined the interpersonal interactions of CMC groups has been flawed by using previously unacquainted communicants and short-lived groups. He suggests that CMC groups take longer to develop because of the *cues filtered out* environment, but that given time they employ compensatory techniques to establish social presence and immediacy and that they ultimately engage in group dynamics as intense and rich in relational communication as FtF groups (Walther, 1990; Walther, 1992; Walther, 1994).

The social presence and intimacy theories have been central to research examining the use of CMC in instruction. A number of studies have concluded that teachers who exhibit social presence and/or immediacy contribute positively to student learning and satisfaction and are seen to be effective (Christophel, 1990; Gorham, 1988; Kearney, Plax & Wendt-Wasco, 1985; Kelley & Gorham, 1988). Other researchers have redefined social presence and intimacy characteristics using terms of interactivity and social interaction and have found that CMC provides a highly interactive and social environment which supports instructional engagements that result in student satisfaction and achievement (Boston, 1992; Gunawardena, 1994; Harasim, 1990; Lauzon, 1991; Lauzon & Moore, 1989; Lewis, Whitaker & Julian, 1995; Nalley, 1995; Shedletsky, 1993). In both empirical and anecdotal reports, students have generally been found to be satisfied with their CMC classes and to have achieved a level of success either equal to or surpassing students in traditional FtF classes (Boston, 1992; Davie, 1988; Shedletsky, 1993).

The early research that focused on the importance of nonverbal cues and on the FtF standard now stands juxtaposed with more recent research that shows students to be able to communicate effectively in a CMC environment. That early research may have been fatally flawed because it was based on assumptions about the FtF standard that had never before been challenged.

### Analyzing Communication

The communication literature provides some analysis strategies that have obvious application for the study of CMC and the patterns of communication that participants use. Clark and Brennan (1991) present the concept of grounding and define a way to examine the effectiveness of communication. Communication network analysis provides a strategy for identifying and tracking the kinds of communication and interaction that actually occur in CMC.

Grounding is basic to communication and provides a useful frame for analyzing the success of messages sent in CMC. It is the process through which communicators confirm that their communications have been understood. This process takes on different shapes depending upon the medium of communication being used. According to Clark and Brennan (1991), a communication is divided into phases and states, which exemplify the presentation, acceptance, and level of reception or understanding (grounding). They suggest that grounding can be affected by factors which include: (a) whether the communicants are sharing the same physical space, (b) whether they are visible to one another, (c) whether they can hear each other, (d) whether one receives a communication at the same time the other sends it, (e) whether they can send and receive simultaneously, (f) whether the communications can be received out of sequence, (g) and whether the communications can be reviewed and/or revised. As CMC curriculum is designed for college classes, it will be important to understand how CMC messages are grounded.

An important difference between CMC and FtF communication is that in CMC a permanent record, in the form of an electronic transcript of all the interaction is generated and maintained. This *mediated memory* of all the communication is particularly useful for the user and researcher alike, enabling review and/or analysis of the messages as needed (Levin, Kim & Riel, 1990; Vygotsky, 1962). The detailed information contained in the transcript also presents a unique opportunity to explore the interaction patterns of the participants. Using participant structure analysis, intermessage reference analysis, and activity analyses to diagram, track, and interpret the actions and interactions of the group, a profile can be developed which identifies the communication patterns of who talks to whom, when, about what, and how often messages are related (Levin et al., 1990).

The picture of the interaction of CMC groups developed through the use of the profile analysis strategies can be expanded to another dimension through “message act analysis” (Levin et al., 1990 p. 200) which is used to explore the patterns of message function. Using this technique, Mehan (1978) identified the IRE sequence of teacher initiation, student response, and teacher evaluation as the typical message pattern in FtF classrooms. Using message act analysis, Levin et al., found both differences and similarities between Mehan's findings with FtF classes and CMC classes. In Mehan's FtF study, almost all the initiations and evaluations were by the teacher and only replies were by students. Levin et al., found the initiation, evaluation, and reply type messages were more evenly distributed among teachers and students in CMC. They found only a few instances of the standard IRE sequence, but the analysis did reveal two other patterns: a star pattern where the messages are a series of replies to a single initiation and the thread pattern where the messages are more linear in a chain of replies following a similar thread. Also, the CMC messages were more complex than the FtF interactions and they were less dominated by the instructor (Levin et al., 1990).



## CMC and Community

In contrast with social presence theory but aligning with Walther's (1990) relational communication hypotheses, the idea that CMC participants form virtual communities is a consistent thread throughout CMC literature. There is a timeless interest in the concept of community and references to it are found in scholarly literature, in the classics, and in the popular press. Aristotle said in *Politics*, “a community begins in the union of those who need each other for survival . . . and a common work that binds them together” (in Johnson, 1992, p.7). The popular writer Howard Rheingold (1994) thinks the virtual communities in public CMC networks arise out of people’s need to replace disintegrating traditional communities. He describes CMC communities as “cultural aggregations that emerge from the net [Internet] when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace” (p. 5). Nancy Baym (1995), a researcher who studies public CMC groups, says people “appropriate the possibilities offered by commonality and individuality in ways that weave them into distinct communities” (p. 161).

This section examines the community aspect of CMC and is divided into two subsections: Definitions and The Developmental Perspective.

### Definitions

The word community is used in so many contexts that its definition can be a problem. It comes from the Latin *communis* — *com* meaning together and *munis* meaning bound — and is often used to describe people collected in one place (Little & Sanders, 1989). It is generally agreed, however, that a community is more than just the co-location of a group of people. It is a group of people with similar interests and is characterized by the ways that the group interacts, shares, participates, and experiences fellowship (Costello, 1993).

Wendell Berry (1992) addresses community as a social organizer. Even though his perspective on community is strongly place-bound, his thoughts about how a community functions are useful in the study of a virtual community. He says that a community is identified by mutual interests and operates by “the common virtues of trust, goodwill, forbearance, self-restraint, compassion, and forgiveness” (p. 120). He adds that a community is only made through the loyalty and affection of its members and that it holds the power to influence the behavior of its members not through coercion but through a shared knowledge of what works and what does not work in the community itself.

In educational CMC literature, the term community is generally used to describe a sense of group identity, which reduces social isolation, encourages interactive mental engagement, and provides a social context for conversation and dialogue (Grabowski, Pusch & Pusch, 1990; Harasim, 1987). The potential for CMC to provide an environment where participants develop a sense of community may be the primary element which makes CMC an educational domain able to support, even engender, learning.

### The Developmental Perspective

Important criteria for the creation or existence of *community* are woven through the ways community is described and discussed. All the descriptions imply that for community or a *sense of community* to develop, there are conditions that must exist and/or that the development may be influenced by external factors (Regis, 1988).

The four-stage process that was identified in a study of immigrants and how they became members of communities has relevance to the study of CMC community formation.

The stages are:

1. The individual develops an attachment to others.
2. The individual establishes residence and interaction with the other residents.

3. The individual recognizes and emphasizes commonalities with the other residents.
4. The individual develops feelings that one cannot be oneself outside of the collective that is the community (Stamm & Fortini-Campbell, 1979).

The first three stages here are present in the development of EDE/CMC communities and all four stages certainly seem to be evident in the kinds of virtual communities that Rheingold (1994) and Baym (1995) describe in their works about public CMC networks.

Communication plays an important role in the development of a sense of community. A sense of community is seen to be a consequence of communication as it occurs within the contextual conditions of the communication (Comstock, Chaffee, Katzman, McCombs & Roberts, 1978). The effort one exerts to get and process information within and/or about the group is seen to lead to an attachment to the group (Regis, 1988). Quarterman (1993) describes a sort of evolution in CMC relationships from resource sharing through communication toward community.

The Freeman and Freeman study (as cited in Hiltz, 1984, p. 176) of scientists connected to a CMC network revealed that friendships developed online over time. By the end of seven months of interaction, all the participants reported that each was either a friend of the others or the friend-of-a-friend. The participants also reported that these friendships were valuable when they needed help or information from their online colleagues. With the passage of months, the network changed from having a clique structure of small groups of *friends* to being a *genuine* community.

It is evident that the development of a sense of community takes place over time in any environment and that in CMC it may take more time than in FtF situations. This time element may be important to instructional designers of CMC classes because it seems clear that the community capacity of the CMC environment is important to its implementation as a delivery medium for instruction.

## Summary

The literature reveals that CMC is a medium that provides a new domain for instruction (Harasim, 1989). However, the research about this new domain has not provided a thorough investigation of the teaching and learning experiences of participants in the virtual classrooms of CMC instruction. The research has been aimed primarily at comparing CMC and/or CMC instruction with the assumed benchmark of FtF communication and/or instruction.

Little research is available about the activity and communication patterns, the relationships and interactions of the learners (the instructor and the students), or how these things impact learning in virtual CMC classroom environments. The research is lacking in three specific areas. First, there is a gap in the research about the actions and interactions of students and instructors in CMC classes. Such research is needed to describe what actually happens in CMC classes so that the information can be used to help instructional designers and CMC instructors to plan and deliver CMC instruction.

Secondly, researchers have not explored the possible connections between the CMC environment and learning. Since various researchers have theorized that the act of writing, the social construction of knowledge through community and collaboration, and personal pacing and control may contribute to learning (and, all of these are cited as common elements of CMC instruction), it may be that CMC actually provides an environment that engenders learning. The research has shown that participants in CMC classes achieve results that are equal or superior to students in FtF classes. Now research is needed to examine the reasons for such achievement and the possible relationship between the CMC environment and learning.

The third area where research is lacking is in the examination of the affective dimensions of the CMC classroom that involve how participants relate and interact to form communities. The capacity of the CMC environment to support and even nurture a sense of

community among the people who meet in its virtual places is well accepted (Baym, 1995; Harasim, 1987; Rheingold, 1994; Rheingold, 1995). The idea that learning is a social activity and that it occurs both interactively and collaboratively among *communities* of learners is also well accepted (Bruffee, 1984; Davie, 1988; Davie & Wells, 1991; Harasim, 1989; Harasim, 1990). The connections between the development of community and the interactive and collaborative elements of the CMC instructional environment seem obvious. What is not clear from the current research, is what actions or interactions occur or should occur in virtual CMC classes to realize the potential of the environment for community and learning?

## METHODOLOGY

This study was designed to explore a virtual community in almost the same way that an anthropological study would explore an ancient community. The exploration of the environment occurred without disturbing the inhabitants because all of their interactions were preserved in the text of the transcript of their online class. However, the inhabitants of this now extinct community were alive and available for clarification and confirmation of observations and interpretations about their interaction in the virtual community of their online class.

Escobar (1994), an anthropologist, called for the study of online environments. He states that: “any technology can be studied anthropologically from a variety of perspectives—the rituals it originates, the social relations it helps to create, [and] the practices developed...” (p. 214). He suggests that the study of CMC environments should “start as a rather traditional ethnographic project: to describe...what is happening in terms of the emerging practices and transformations [of practices]” (p. 216).

The design for this ethnographic study was largely derived from the work of Michael Agar (1986) which describes and defines an organized qualitative research process that is useful when the inhabitants of one native environment need to make sense of another. Since the inhabitants of traditional educational environments have a growing need to make sense out of virtual classroom environments, this methodology fits the problem.

The data were analyzed using a constant comparative process to discover, understand, and interpret meanings from the Verstehen perspective — that of subjective and participative understanding (Erickson, 1986). This perspective is possible, not through participant observation in the strictest sense, but rather, by reading and reacting to the text, *being in the class* in the same way any of the participants were in the class.

A pilot study was conducted to identify any refinements necessary in the research design (Locke, Spirduso, & Silverman, 1993). The pilot study revealed that important

information about the interactions of the participants was available in the message headers. The design for the study was revised to include the creation of a series of matrices to capture descriptive statistical information from the message headers.

### Selection of Participants, Data Sources, and Collection of the Data

The participants were selected because they were registered in a CMC writing class at a community college. The class itself was selected because (a) it is a core class in both degree and certificate programs, (b) it had been offered through CMC many times, (c) the instructor was experienced with both the class and the CMC delivery medium, (d) the instructor was willing to participate in the study both as subject and as informant, and (e) the course design incorporated interactive and collaborative teaching/learning strategies and represented (to the researcher) a best practice model of active, learner-centered CMC instruction.

The primary data source was the complete transcript (electronic text) of all the public online communication between students and both the public and the private online communication between students and the instructor during the term. Student-to-student messages marked private were not available to the researcher. These messages are not considered to be part of the class interaction, they occurred *outside* of class in the same way that students exchange private phone calls or engage in private conversations outside of the traditional classroom. Other data sources included the descriptive data matrices, the course materials (syllabus, handouts, calendar) and the researcher's notes from interviews with the instructor and two students (member checks).

At their final class meeting, the participants were read the Informed Consent form which had been approved by the university's Institutional Review Board (Appendix B). Participants were each asked to give their consent for the use of their portions of the transcript of the class. They were also asked to indicate their willingness to participate in

follow-up interviews by signing the second line on the form. All 12 of the students, who completed the course, granted their permission for the use of the transcript. All but one student, who was leaving town and would be unavailable, agreed to participate in follow-up interviews if requested.

### Research Design

The research design defined an iterative process of collection, analysis, integration and synthesis (See Figure 1). Each component of the research design is described in the following subsections: Data Collection (See Figure 1:1.0); Data Preparation (See Figure 1:2.0); Data Analysis and Reduction (See Figure 1:3.0); Triangulation (See Figure 1:4.0); Synthesis: Integration into Explanatory Framework (See Figure 1:5.0); and Conclusions, Hypotheses and Recommendations for Policy, Action, and Research (See Figure 1:6.0).

#### Data Collection

The primary data (messages in the electronic transcript) were collected by exporting a text file from the electronic bulletin board system used for the class. This text file contained all the public messages sent and/or received by the participants as well as both the public and the private messages sent or received by the instructor. Other data were collected through interviews and from student enrollment and grade files. Documents including the course syllabus and class handout materials were also collected. The messages (in the electronic transcript) included *header* information (Figure 2). The headers contained the following information: who sent the message, the number of the current message and the number of total messages that were sent in the class, who the message was addressed to, the date and time the message was posted, the subject of the message, the number (if any) of a previous



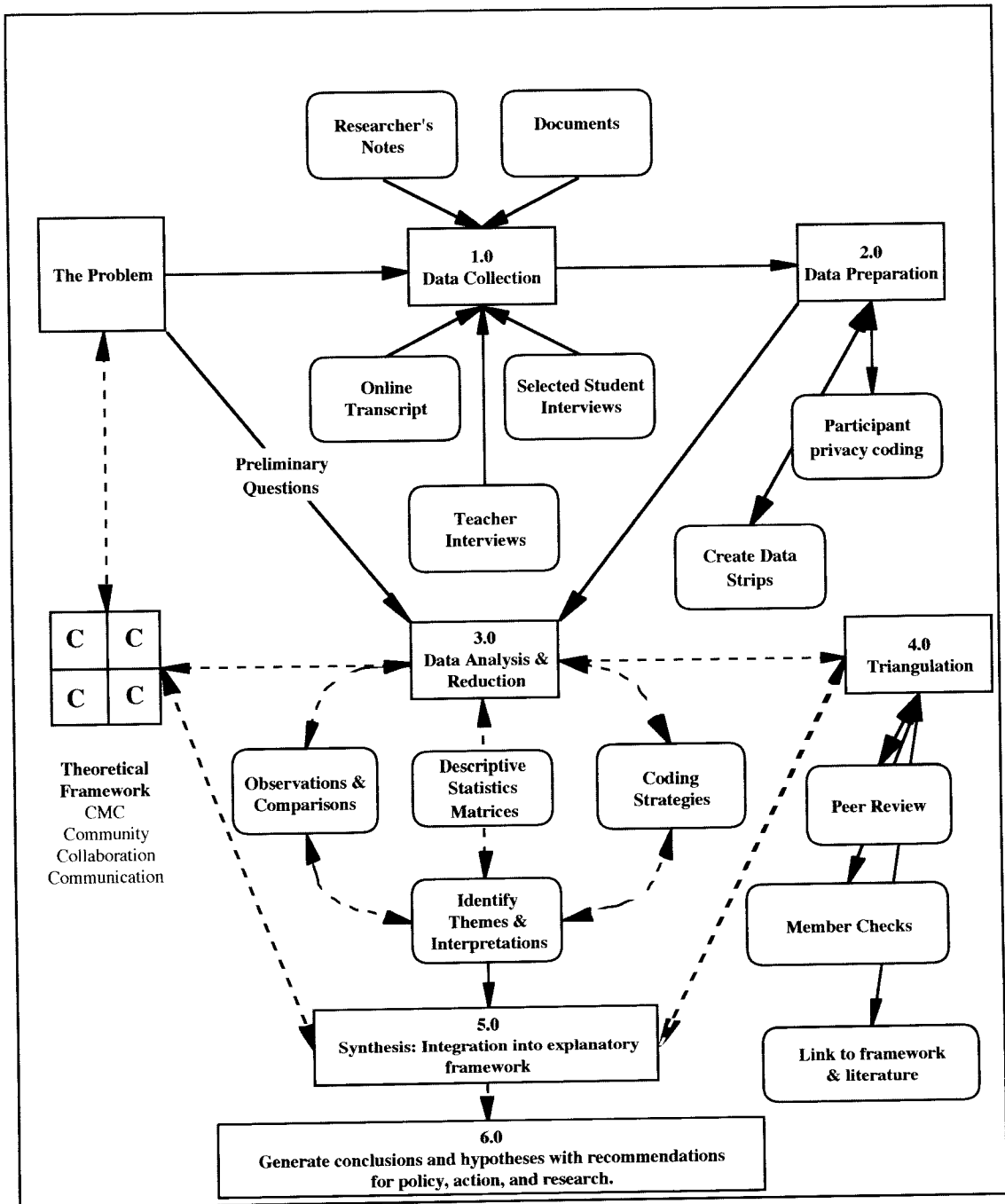


Figure 1. Research Design.

message being referenced, the date and time the message had been read and whether there were replies to the message, whether the message was private (for only the eyes of the recipient), and the number and description of the class conference. These data were used to create a series of matrices of descriptive statistical information.

From:	Student 0	Number:	22 of 902
To:	Student A	Date:	03/31/95 8:50 p.m.
Subject:	Sublimity	Reference:	10
Read:	04/01/95 5:39 am (Replies)	Private:	No
Conf:	700 - Writing 121		

Figure 2. Online Message Header

### Data Preparation

Data units were defined to facilitate coding and sorting of the data. The data units were divided into three levels. The first level consisted of 11 files called strips. Each of these strips consisted of all the messages posted or read in a week. The second level consisted of the individual messages that made up the strips. In the final level, every paragraph, in every message, was defined as a single data unit for coding.

The search and replace functions of a word processor were used to refine the electronic data to: (a) maintain anonymity of the participants by removing their names and replacing them with alpha codes; (b) to delete the line breaks at the end of every line except those marking the end of paragraphs; and (c) to divide the transcript into strips or sections containing the text of the communication for each week of the term.

## Data Analysis and Reduction

The analysis and reduction of the primary data source (electronic transcript) was a constant comparative process working through the data strips in a sequential manner from the first week through the eleventh week (Bogdan & Biklen, 1982) (See Figure 3). A software application, called *Data Collector*, was used to facilitate the coding, sorting, reduction, and management of the data (Werner & Schoepfle, 1987). The software allowed complex selection and sorting operators which were used to assemble the data in a variety of views to facilitate and cultivate understanding and interpretation of the meanings embedded in the strips of data.

The analysis consisted of several steps. The messages that made up each strip were read and individual paragraphs were coded. The theoretical framework of community, communication, collaboration, and CMC provided the initial coding schema (See Figure 3). Themes that emerged between and among the weekly data strips, the individual messages, and specific paragraphs were identified, compared, and interpreted (Miles & Huberman, 1994).

Using the powerful search and sort capabilities of the software, the data were reduced into topic files based on each of the preliminary codes (See Figure 3). For example, all the paragraphs that contained a comment about CMC were assigned the CMC code and then were sorted together (in order of week of submission) into a topic file which provided a more focused look at the CMC theme. Each topic file was then analyzed in another round of constant comparative process to identify new or more refined themes.

The data collected from the message headers was manually recorded in a series of matrices and then was transcribed to worksheets in a computer spreadsheet program called *Microsoft Excel*. The worksheets provided clear organized views of the descriptive statistical data and the software provided calculation and graphing functions which facilitated the analysis and display of these data.

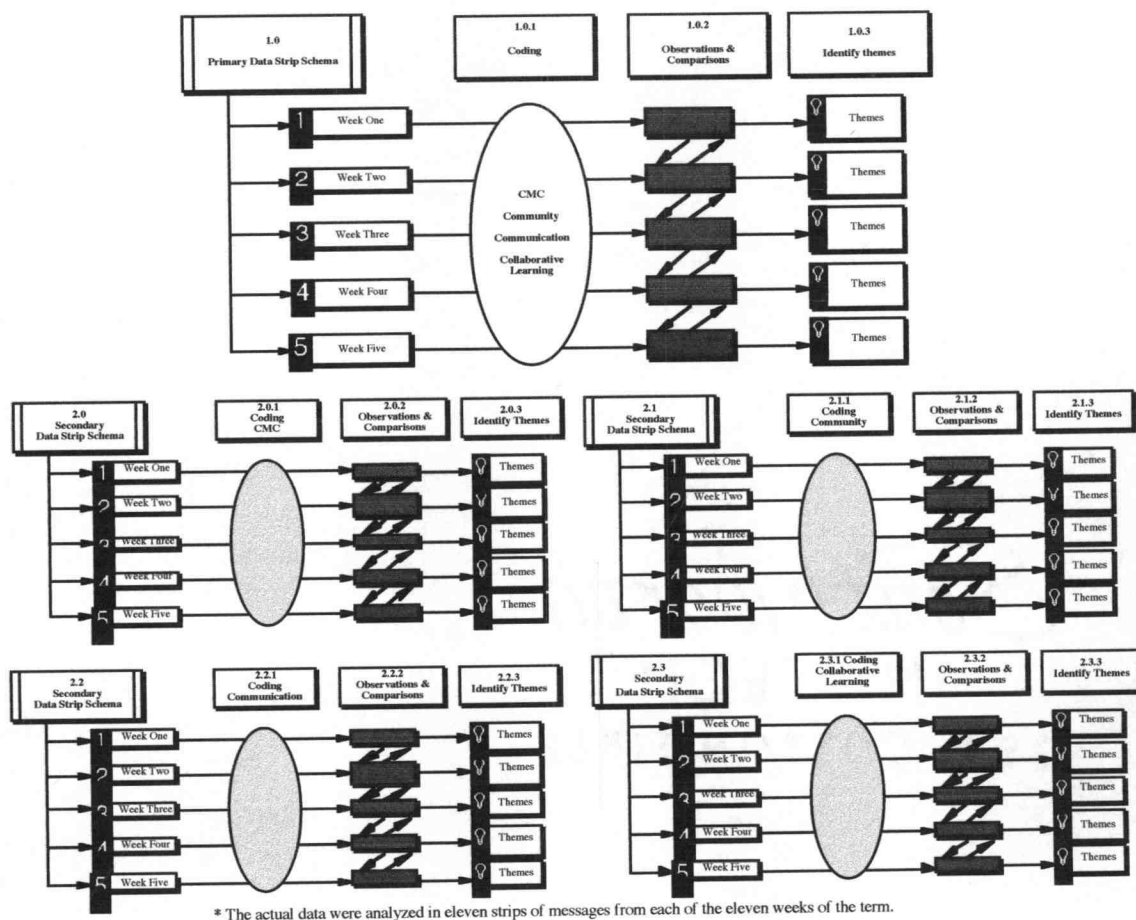


Figure 3. Data Analysis and Reduction

### Triangulation

The research design incorporated review strategies to triangulate the interpretation and conclusions of the research. The researcher engaged the instructor in member checks at various stages of the research. These dialogues about the progress of the analysis provided verification of interpretation of the data. The instructor functioned as both participant and informant in the process of the research, through these dual roles she provided the researcher with reflective perspectives of both the pedagogy and the experience of the class. Toward the end of the analysis process the researcher interviewed two students for further

member checks. These interviews provided both clarifying data and verification of interpretations and conclusions.

Throughout the process of the analysis of the data, the researcher continued to research the literature for analogous, related or negative case interpretations from other studies or anecdotal reports. The literature provided further verification of the interpretations (findings) and hypotheses that emerged from the analysis of the data from this class.

Four of the researcher's community college peers: two faculty members, a librarian and an EDE administrator read the report of the research periodically and engaged the researcher in discussion and review of the research process and data interpretation. These peer reviews provided the researcher with further clarification and exploration of the interpretations and conclusions of the research.

#### Synthesis: Integration into Explanatory Framework

The purpose of this study was to explore, describe and interpret the interaction of participants in a CMC class. The iterative process of the data analysis (the exploration), identified a variety of themes, relationships, and/or findings that describe the environment and the experience of the participants. The story is told in the Findings chapter in an explanatory framework which participants in other learning environments, as well as other CMC classes, will be able to understand (Agar, 1986; Miles & Huberman, 1994).

#### Generate Hypotheses with Implications for Theory, Policy, Action

Results of the study are summarized in the final chapter of the thesis. The report presents a discussion of the research questions and the potential implications and applications for instructional practice and distance education policy. The hypotheses that

emerged from this study provide grounded theory for examination, application, and reflection by future CMC instructors, students, and policy makers.

### Limitations of the Study

The interpretations and conclusions of this study are limited by the interaction and influences of three factors: the researcher's biases, interpretive method, and the selection of the case. These factors, although limiting, are accepted components of the qualitative research methodology. The three limiting factors and their role in the research are examined in the following subsections: Researcher Bias, Interpretive Method, Case Selection, and Methodological Assumptions.

#### Researcher Bias

The impetus for the study and its bias limitations are products of the interests, experience and philosophy of the researcher. Since 1984, I have been actively using and promoting the use of computers. My interests and professional expertise with computers include: electronic publishing, custom database development, electronic presentations (computer-generated slides, transparencies and multimedia), multimedia authoring software documentation, software application instruction and development work with faculty finding ways to utilize computer technologies in support of teaching and learning. Through this spectrum of experience and involvement with the use of computer technologies, I have come to believe that appropriate use of computer technologies can expand both personal and institutional capacity, facilitate improved work (practice, process and product), and challenge and empower the creativity of individuals and groups.

My experience, with CMC, has been both positive and productive. I have experience with CMC in four different applications: email, collaborative projects, graduate level coursework and research. I regularly use email to correspond and exchange documents

with colleagues on my college's wide-area network, on the Internet, and on a commercial online service. I have participated in several successful collaborative projects via CMC. For example, in 1994 I collaborated, via CMC, with a group of academic technology administrators on a writing project to produce a publication that is distributed nationally by *The League for Innovation in the Community College* and *CAUSE*, the association for managing and using information technology in higher education (Baltzer, 1994).

In preparation for admission to my doctoral program I undertook two graduate level EDE courses which integrated the use of print materials, videotape, teleconferencing, and CMC. These courses allowed me to continue my regular employment, to complete credits I needed and to take the coursework from a prestigious university. In both of these classes, the interactive discussions and collaborative assignments (supported by the CMC component) made them engaging, authentic learning experiences. Also, as part of my efforts to complete coursework and other work-related projects, I regularly use CMC to locate and access reference and research materials. Through all of these experiences, I have developed a positive bias for the use of CMC to communicate, to work, and to learn; and, I have also developed a very practical user-oriented perspective on the benefits, limitations and challenges of CMC use and application.

Another bias that I bring to this research project is my interest and belief in active teaching and learning practices. I believe that, in the age of information and whatever lies beyond, learners must be active participants in the construction of knowledge. The world's body of knowledge is growing too fast to expect that all knowledge can be assembled, packaged and transmitted to passive recipient learners in the traditional lecture model. I agree with Brown's (1989) argument that good learning situations do not present optimal arrangements for the "learner to ingest preformed knowledge," but rather, they should present optimal arrangements that support evolutionary sense-making through an active experiential process.

### Interpretive Method

The selection of a qualitative design for this study presents the inevitable limitation that the data must be interpreted by the researcher through inductive and/or intuitive processes (Bogdan & Biklen, 1982). Erickson (1986) states that “the object of interpretive research is action...[and] because actions are grounded in choices of meaning interpretation, they are always open to reinterpretation and change.” (p. 127) The interpretation of the data in this study, as in any other interpretive venture, is vulnerable to alternative interpretations that might logically be made by other parties with other experiences and biases. Any actions undertaken out of this research will be grounded not only in my interpretations but in the choices and interpretations of the potential actor/s.

### Case Selection

This study is further limited by the purposeful selection of the specific case studied. CMC depends on writing as the operative process, therefore writing instruction may be considered a limiting factor because it is a natural, even obvious application for CMC instruction.

The purposeful selection of a best practice model also impacts the findings and/or recommendations. The case was designed to take specific advantage of the interactive and collaborative potential of the CMC environment and it represented, for the researcher, a *best practice* model of active, learner-centered CMC instruction. The high level of CMC experience and recognized teaching expertise of the instructor might also be considered a limiting factor.

The community college that offered the course may present another limiting factor. It is well known for model innovative programs and leadership in EDE/CMC instruction. The college also creates an uncommon context for DE instruction by providing a high level of institutional, faculty, student and services support for DE/EDE and CMC instruction.



### Methodological Assumptions

The reality that a researcher must approach any project with the biases inherent in his/her own experience, values and beliefs is an accepted principle of qualitative research practice. Erickson (1984) contends that “ethnography should be considered a deliberate inquiry process guided by a point of view, rather than a reporting process guided by a standard technique or set of techniques, or a totally intuitive process that does not involve reflection” (p. 51).

Agar (1986) expands upon the importance of the researcher point-of-view, with the contention that: “ethnographies emerge out of a relationship among the traditions of ethnographer, group, and intended audience” (p.19). And, he concludes that:

“Ethnographer, intended audience, and group all represent traditions that limit, but do not fully determine, the possible ethnographic reports that can emerge. Ethnography is neither subjective nor objective. It is interpretive, mediating two worlds through a third” (p. 19).

These methodological assumptions are important considerations when weighing the impact of the limiting factors of this, or any other, qualitative study. The tension, created by the relationships among the researcher, the group and the audience, and stretched by the inductive, comparative and intuitive elements of the qualitative process, may be the force that tests the tensile strength of the conclusions and hypotheses that emerge from the analysis of the data.

## REPORT OF THE FINDINGS

This chapter describes the interaction in one CMC class. Findings are organized into five sections: Context, which describes the milieu of this specific CMC environment; Technology, which describes the part technology played in the class; Communication, which presents a profile of the interaction; Learning, which describes the instructional interaction; and Community, which describes the relational interaction.

### Context

The context, from which the class—*the virtual community* emerged, is critical to a description of the interaction. Five factors create the context of any specific CMC environment: external context, the temporal structure, the infrastructure of the system, the purpose for using CMC, and the characteristics of the group (Baym, 1995). These factors are used to organize the description of the context of the class in this study.

#### External Context

An accredited community college offered the class. It is part of a CMC education program, which offers a full complement of credit classes applicable to Associate degrees of Arts, General Studies, or Applied Science in Fire Protection. The online program is open to anyone who can access the classes via telephone and modem directly or through a connection via the Internet or commercial online CMC service.

#### Temporal Structure

The temporal structure of this class was an ongoing asynchronous electronic meeting that lasted for the duration of the academic quarter. Neither the group nor the *virtual classroom* existed before nor after the start-stop dates of the term. Students and the

instructor were able to access the class at any time of the day or night. There were occasions when they either posted or retrieved messages within minutes of each other, but, they were not online at the same time in a synchronous communication structure.

The temporal structure of the class was further defined by the eleven-week time frame of the academic term. The class was ongoing for seven days each week and for twenty-four hours of each day for the duration of the term. However, students and the instructor were only able to access the BBS for a total of ninety minutes of online time per day. In addition to the ongoing electronic meeting, the class was scheduled for two face-to-face (FtF) meetings during the term. The first for a course orientation and pre-course writing sample and the second for the final exam.

### Infrastructure of the System

The class was offered via a bulletin board system (BBS) which operated with *Wildcat!*<sup>™</sup> and *BBSnet*<sup>™</sup> software on a DOS-based computer system. The BBS was accessed from a variety of computer systems through direct dial-up, Telnet, or through commercial CMC service providers.

Students were required to provide their own computers and modems, as well as telecommunications and word processing software. Students were also responsible for providing a phone line connection. To connect to the BBS, some students who lived outside the local calling area and used direct dial-up connections, had long-distance telephone expenses.

### Purpose

The CMC instructional program was developed primarily to serve the students who had time, place or other barriers that precluded their attendance in the traditional FtF program of the college. Secondly, the online program provided an alternative delivery

medium for those interested specifically in CMC or in taking their coursework in a nontraditional format. This class, Writing 121, was offered in the online program because it is a core class that is required in all three degree programs. It is the first in a nine-hour sequence which is available both online and in FtF classes. The course objective was to improve the writing skills of the participants. To achieve that purpose, students were expected to develop their personal *writer's voice* and to hone their writing, editing and communication skills through interaction, cooperation and collaboration.

### Instructor Profile

The instructor, an experienced educator with 26 years of teaching experience at the community college level, held two masters degrees, one in English and the other in Reading. She undertook this online teaching assignment as an addition to her regular full-time teaching load in the Learning Assistance and Skill Development Department of a community college.

The instructor had had extensive personal experience with CMC and had actively used it since 1983. She had participated in and led CMC discussion forums about teaching, learning and adult literacy for national, commercial online services. She had undertaken CMC classes as a student and as a teacher. She had taught her first CMC class, Writing 121, in 1992 and had taught six CMC classes since then. She had also served as a coach for new CMC faculty, assisting them with planning, developing and delivering CMC courses.

### Student Profile

The students in the class were all community college students who had access to the equipment necessary to undertake a CMC class and who needed (or wanted) to take a Writing 121 class. Nineteen students originally registered for the class. Three students

either attended the FtF orientation or talked with the instructor individually and determined that they should drop the class. The reasons for dropping the class ranged from not realizing it was a modern class section to not having the appropriate equipment. One student registered but did not start the class, he did not attend the FtF orientation or log into the bulletin board system. Of the 15 students who actually started the class, 11 students completed all the coursework and received grades, one student received an incomplete and three students received N grades (started but did not complete enough of the course to receive a grade). No further reference will be made to those who did not complete the course (See Table 1).

The 12 completers (including the student who earned an incomplete), 11 males and one female, made up the group for this study. The severe gender imbalance seems to have been a registration aberration which did not have an impact on the class. When the instructor and the one female student were each asked, in separate interviews, about the gender imbalance in this class, they were both surprised to learn that it existed. Neither of them had been consciously aware of it and both indicated that such an imbalance was not, in their experience, usual in CMC classes. The balance between male and female students had been more even in other CMC classes the instructor had taught; and the female student had taken all of her coursework, except one class, via CMC and had not been the only female in any other class (See Table 1).

The average age of the students was 27.3 years. One fourth, 3 out of the 12 completers, were military veterans. The one woman in the class was among the veterans. All of the participants had declared a program. The majority (8 of 12) were Lower Division Credit (LDC) students, two students were in Computer Programming, one was in Fire Science and one was in Computer Electronics (See Table 1).

All the students had some experience with their computer equipment. The instructor informally assessed the computer literacy level and the CMC literacy level of each student.

Table 1  
Student Profile

	Sex	Age	Vet	Program	Computer Literacy	CMC Literacy	Interaction Level	Grades
Student A	M	36	N	LDC	Intermediate	Beginning	High	A
Student B	M	26	N	LDC	Intermediate	Intermediate	Average	A
Student C	M	26	Y	Computer Programming	Advanced	Advanced	High	I
Student D	M	32	—	Computer Electronics	Intermediate	Beginning	Average	B
Student E	M	19	N	LDC	Beginning	Beginning	Low	F
Student F	M	19	N	LDC	Intermediate	Intermediate	High	B
Student G	M	35	N	Fire Science	Intermediate	Intermediate	Average	A
Student H	M	36	—	Computer Electronics	Beginning	Beginning	N/A	N
Student I	M	23	N	LDC	Advanced	Advanced	Average	A
Student J	M	25	Y	LDC	Beginning	Beginning	Average	B
Student K	M	20	—	LDC	Beginning	Beginning	Low	A
Student L	F	33	Y	Computer Programming	Intermediate	Intermediate	High	A
Student M	M	19	N	LDC	Beginning	Beginning	N/A	N
Student N	M	40	Y	LDC	Beginning	Beginning	N/A	N
Student O	M	21	N	LDC	Intermediate	Intermediate	Low	C

\* The shaded rows indicate students who received N grades (started the class but did not participate enough to be graded).

The computer literacy level (beginning, intermediate, advanced) was based on self assessment by the students and/or by the instructor's observation of their ability to function independently with their computers. Three students were at a beginning level, seven were intermediates, and two students were advanced computer users. CMC literacy levels were based upon the expertise/experience criteria in Table 2.

Table 2  
CMC Literacy Level Criteria

Level	Criteria
Beginning level	(1) word processing (2) no previous CMC experience
Intermediate level	(1) word processing (2) some CMC experience, at least email use (4) no previous CMC classes
Advanced level	(1) word processing (2) CMC experience including email and upload/download of files (3) previous CMC class/es.

Two students had no previous CMC experience using a modem or telecommunications software, three students had a beginning level familiarity with CMC, five students were at an intermediate level and two students were very experienced with CMC (See Table 1). Technical orientation sessions to introduce CMC and the hardware and software necessary to participate, were available to all CMC students. They were not hands-on sessions. The features of the BBS software were demonstrated and technical handbooks were distributed but students did not get an opportunity to try connecting to the bulletin board. The technical orientations were not mandatory and no data are available about whether students from this class attended any of the sessions.

Two of the students had taken at least one modem class prior to this class. This was the first CMC class for the others. Eleven students attended the FtF orientation meeting at the beginning of the term and ten attended the FtF final exam. One student missed both the orientation and the final meetings and another student missed just the final. The instructor worked individually with those students to make-up the activities they missed.

The students engaged in the interaction of the class at various levels. Message initiation activity levels were selected as representative of student activity for the purpose of a profile. The interaction level was determined using the criteria in Table 3. Four students had a high level of interaction, five students an intermediate level, and three students had a low level of interaction (See Table 1). It should be noted that in addition to initiating messages, student interactions also included reading and/or responding to messages.

Table 3  
Interaction Level Criteria

Level	Criteria
High	an average of five to seven message initiations per week
Average	an average of two to three message initiations per week
Low	an average of one message initiation per week.

### Technology

The technology, a combination of hardware (computers, modems, etc.) and software (BBS, telecommunications, text editor, etc.), is the medium of CMC. It also provides the virtual environment of the CMC classroom. Just as the walls, furniture, lighting and equipment are part of the instructional experience in a traditional classroom; the technology itself is part of the instructional experience in a CMC classroom. This section, which describes the part technology played in the class, is divided into three subsections: Access, Technical Difficulties, and Findings.



## Access

The existence of the class, the very *construction* of the virtual classroom in which the class functioned, required the active engagement of BBS personnel, the instructor, and the students. The system operator (SYSOP) had to configure the bulletin board software to establish the conference (#700 - Writing 121) and to grant access rights for the class members. Once the conference was created, anyone with access rights to it could post and read messages. Initially only the instructor had access. To gain access to the class, the students had to register for the class with the registrar and send an email request for access rights to the SYSOP. Once a student appeared on the official class list from the registrar and had sent the access request, the SYSOP granted access rights. Until all of these preliminary actions were taken, the virtual classroom did not exist—it took action and interaction by all parties to engage through the technology to create and populate the virtual classroom.

To send that first email message requesting class access and to get to the class, students had to have successfully configured their personal computers and their telecommunications software to communicate with the BBS via modem and telephone lines. This initial hurdle proved to be very difficult for two of the eight students who were able to *get to class* the first week. Several of the others stated that they were concerned about doing everything right and whether their messages were actually being received. For various technical and personal reasons, five students were unable to get connected during the first week. But, by the end of the second week all of the students were able to be online, request and receive access and post their first messages to the class. A technical assistance person was available and, when contacted, he was able to help students identify and correct their problems. However, students seemed to access his services only as a last resort after spending time, energy and frustration trying to resolve technical issues independently.

### Technical Difficulties

Technical difficulties occupied a good portion of the message traffic for the first eight weeks of the class. The only exception was week four during which only one message referenced a technical problem. The activities during week four only required students to use email messages, which they could all handle.

Almost all of the students experienced difficulty uploading and downloading messages the first time/s they attempted to transfer files. After tenaciously attempting to learn the various functions of the system over the first week and a half, Student E wrote “I think I finally downloaded that jokes file. But now how do you upload a file. [sic] Hopefully I’ll get the hang of this before I get to [sic] far behind or go crazy, whatever comes first.” In week seven, student K still had not mastered the downloading function and so had not been able to read the instructor’s comments on his work, nor had he seen the grades for the first three papers. He belatedly posted this call for help: “K here, I’m completely confused with the downloading thing. I haven’t got a clue as to what my grades are in your class. I don’t know if my papers are good enough, or what. Please help me!”

After people learned to upload and download files, the next problem was to get the files transferred in a format that all could read. Although the directions, to save the files as text-only (ASCII text) before transfer, were in all the resource materials and were reinforced regularly by the instructor, students continued to try to transfer their files in the formats created by their word processing applications. Trying to open and read the files transferred in formats other than ASCII text, caused frustration and wasted time for the editing groups and for the instructor.

Two other technical problems caused some students delays in completing their work. The first was equipment failure. Two students had hard drive problems during the term and another had a mother board failure which caused a lengthy delay. The college bulletin board system caused some problems also. Students experienced problems with accessing the

BBS during certain, busy times of the day and on some occasions the board was *down* for a period of time due to a technical problem.

The participants in this class invested considerable time and energy in overcoming technical difficulties. Most of the difficulties arose from the students' lack of knowledge about how to perform the basic functions of telecommunications, not from glitches or malfunctions of the BBS or of their own hardware and/or software. The students' desire to take the class in this format seemed to be so strong that they were willing to keep working on class assignments in spite of the technical problems and to keep working on the technical problems until they were resolved.

### Findings

1. Unfamiliar and/or unreliable hardware/software presented barriers which distracted the participants' attention from the course content and activities.
2. The request for access process was cumbersome and caused delays.
3. Students tolerated technical and/or system difficulties.

### Communication

This section presents a profile of the interaction in this class. It is organized into five subsections: The Interaction, Formality and Relational Tone, Grounding, Summary and Findings.

### Interaction

The message headers which accompanied each message posted to the conference were a rich reservoir of information about the actions and interactions in this class. They provided the data about who talked to whom, when, about what, and whether and how often messages referenced one another.

The online exchanges in this class totaled 902 messages during the term. Six hundred of those messages were a combination of all the public messages and the private messages between students and the instructor. The other 302 messages, 34% of the total interchange, were private messages exchanged between students, only 11% of the total messages were exchanged between students in the public forum of the conference. Student-to-student messages marked private were not available to the researcher. These messages are not considered to be part of the class interaction, they occurred *outside* of class in the same way that students exchange private phone calls or engage in private conversations outside of the traditional classroom. Students initiated 68% of the messages and the instructor initiated only 27% of the message traffic (Figure 4).

Students *came to class* (accessed the BBS to either post or read messages), on a schedule and frequency of their own choosing. Some students came a few times a week, others came daily and still others came multiple times on some days. Students were motivated to access the class by five reasons: (1) to see if they had mail (message/s), (2) to post a message, (3) to reply to a message, (4) to contribute to the discussion assignments, or (5) to upload/download an assignment.

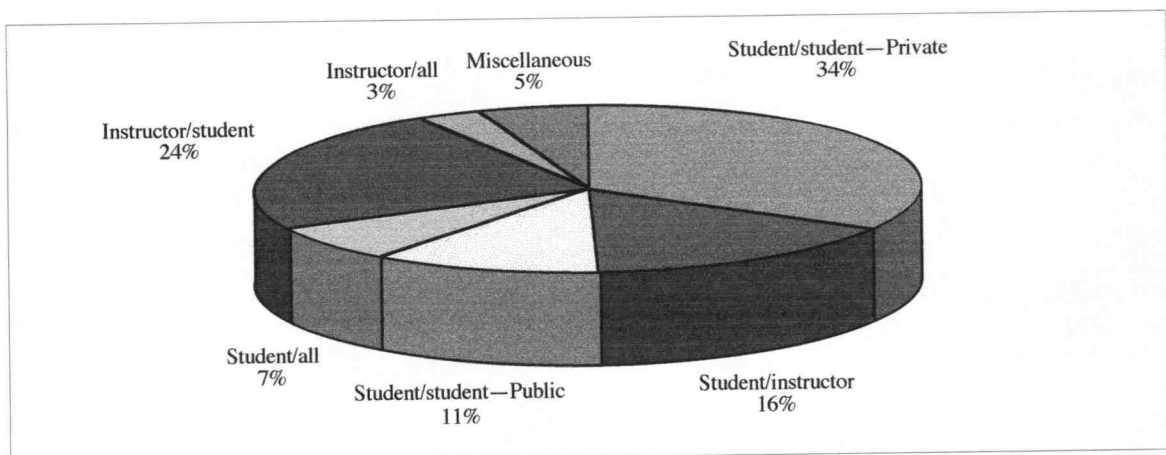


Figure 4. Message Initiation Distribution

Students accessed the class to post or reply to messages on all but three of the days in the term, including Saturdays and Sundays. Students posted or read messages every day of the week but the most active days were Wednesdays and Thursdays (See Figure 5). The three days in the term which had the highest level of message activity were the days that papers one, two, and three were due. The activity levels on the paper due dates descended through the term until, for paper number four, the activity was spread over several days (See Figure 6). Weeks two, three, and five were the most active weeks of the term (See Figure 7). During week two, students were trying to learn the technology and getting clarification, from the instructor, about the course requirements and about how the class would operate. The first paper was due during week three and the second paper was due during week five.

Because of their various responsibilities and activities all the participants including the instructor, needed flexibility in the time and place they could access this class. The students had jobs and families, most worked full time and several of them worked on rotating shifts or had to travel. The instructor was teaching this class as an overload to her regular full-time teaching assignment and she had two out-of-town trips during the term.

To work around the other demands on their time, the students and the instructor came to this class at whatever time worked best on a particular day. Before three weeks of the term had passed, someone had either read or posted a message during all twenty-four hours of the day. No one developed a strict routine for class access, but, they accessed most often in the evening. The peak time for the students was between 8 p.m. and 11 p.m., but they maintained a moderate level of activity around the clock. Their lowest level was during the early morning hours from 3 a.m. to 5 a.m. (See Figure 8).

The instructor's peak access times were between 10 p.m. and midnight and between 7 a.m. and 8 a.m. She never accessed the class between 1 a.m. and 5 a.m., but she did access the class sometimes during the day (See Figure 9).

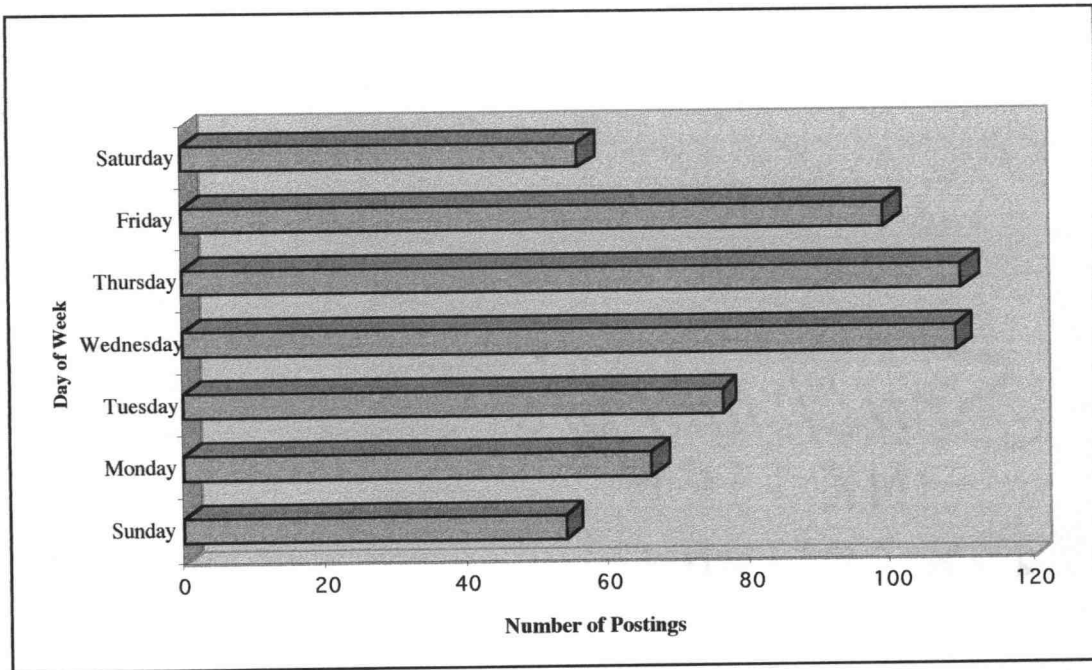


Figure 5. Postings Per Day of the Week

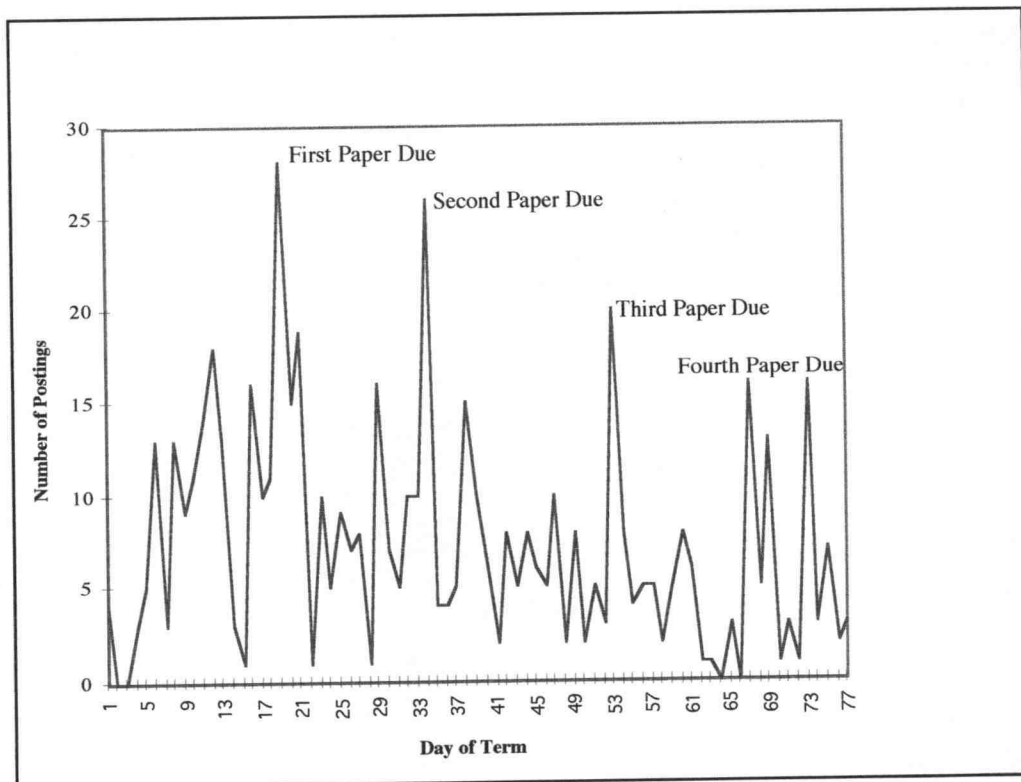


Figure 6. Postings Per Day of Term

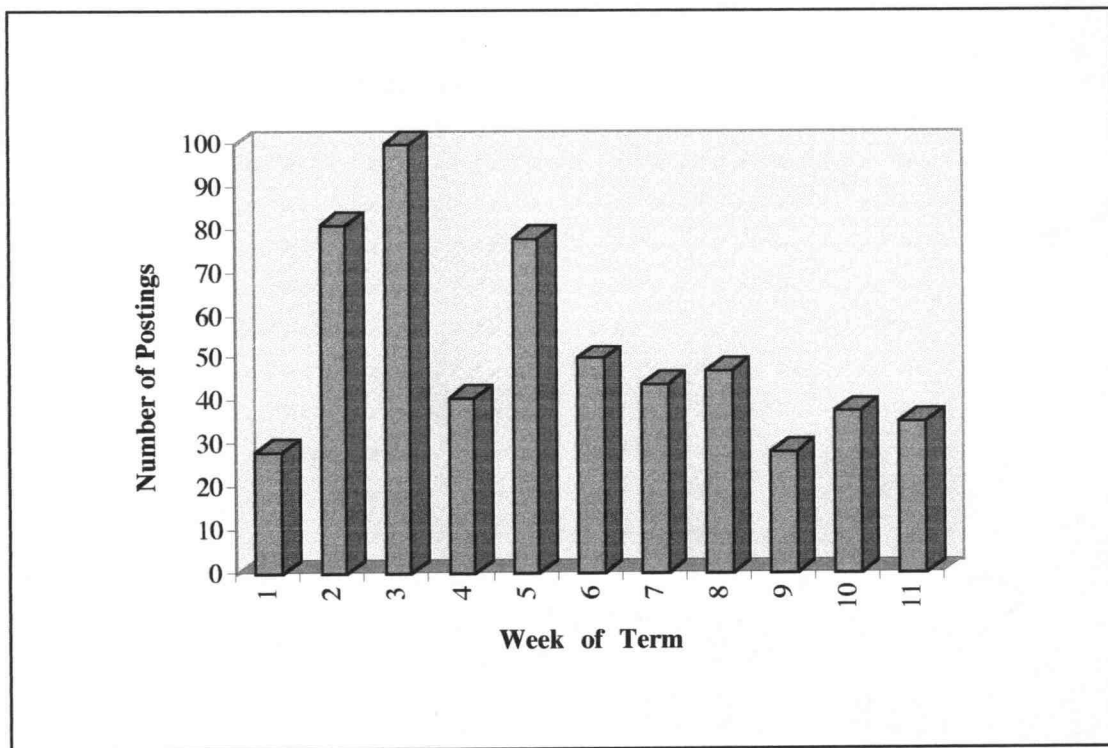


Figure 7. Postings Per Week of Term

The round-the-clock access reveals a lively and responsive interaction. The messages were most often read within a day or two of their posting. Some messages were posted and read in less than thirty minutes. A few messages were not read for as many as 10 days and some messages were posted that were never read at all (See Figure 10).

### Interaction Content

An analysis of the contents of the messages, revealed that the students focused their attention on different things at different times during the term. There were three areas of focus: the technology, the required activities, and the content of the class. The weeks of the term also seemed to separate into three separate phases of focus.

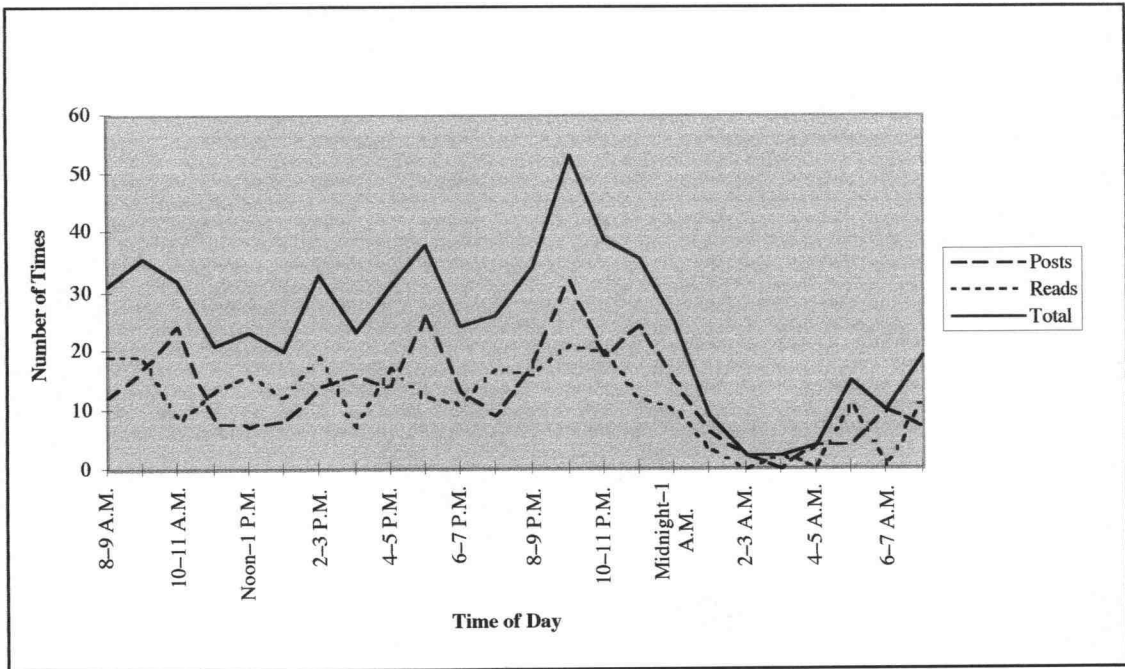


Figure 8. Times of Day Students Went to Class

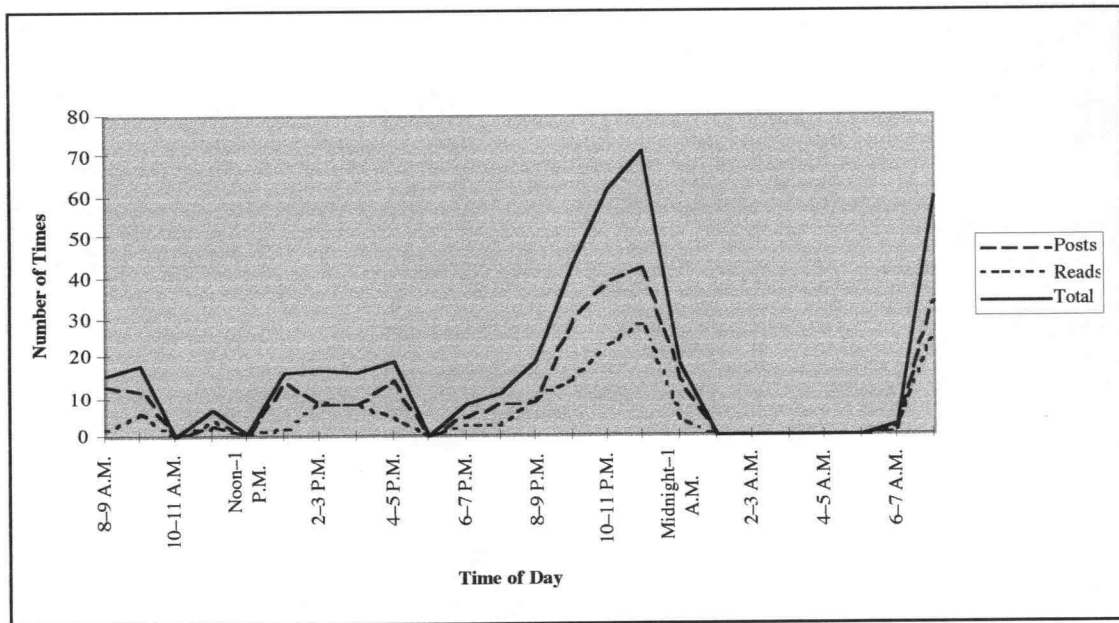


Figure 9. Times of Day the Instructor Went to Class



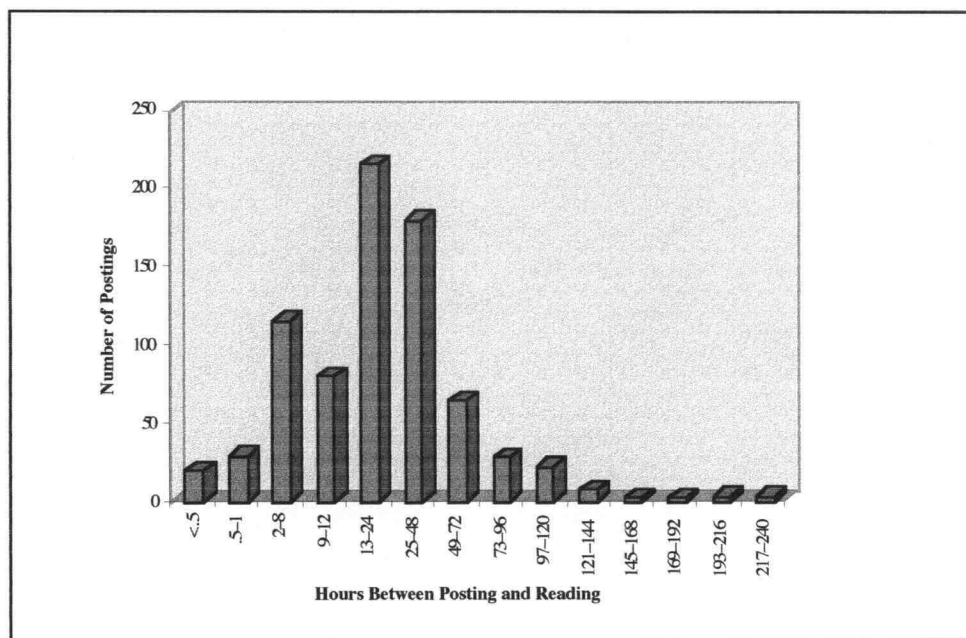


Figure 10. The Time Between When Messages Were Posted and Read

The energy and attention of the participants during the first three weeks of the term were consumed primarily by:

- getting the technology connected and configured to communicate properly
- introducing each other and/or themselves
- understanding and clarifying the requirements of the class
- getting organized with editing groups and operational procedures.

Of the eleven week term, weeks four through eight were most clearly focused on and synchronized with the syllabus and the schedule/activities prescribed in the course calendar.

Students were:

- participating in the discussion activities
- mastering uploading and downloading of files
- drafting writing assignments
- commenting on and editing the work of the people in the editing groups
- submitting papers to the instructor.

During weeks nine through eleven some of the focus of the interactions was again partially diverted from the scheduled activities to address such things as:

- checking up on the status of course requirements and grades
- catching up on course requirements not yet completed
- making individual arrangements and special requests for the end of term FtF meeting and final.

### Formality and Relational Tone of the Interaction

Both the messages initiated by students and those by the teacher were informal in tone. All the participants employed strategies that made them seem like real people to each other. For example, even though the message headers contained the To: From: information for every message, nearly all the participants made their messages more personal and informal by including salutations and/or signatures. Many messages were complex; they contained multiple message lines often combining some personal or social content, some task-oriented content and a closing comment. This structure made the messages seem more like conversations or friendly letters than email among unacquainted students in a class setting. This message is a good example: “Hello editing group 3! Hopefully you will find an attached file to this message. The file is titled Illusd1.mmp. Let me know what you think and any suggestions for a title. Thanks, L.” This message accomplished the task of requesting help from the peer editing group. It expressed a friendly collegial feeling and it made student L seem like a real person—a friend or neighbor needing help, rather than a disembodied student in a required writing class.

A variety of strategies were used by the instructor and others in the class to communicate nonverbal cues. Some students sent such cues unintentionally. When students sent whole messages in capital letters, the instructor let them know that, in CMC, ALL CAPS means YELLING. She would then try to clarify whether the messages had been created in capitals by accident, or whether, the initiators of the messages were really

upset and meant to be YELLING. Sometimes a single word in a message would be in caps, NOT to yell, but, to indicate special emphasis. Other messages contained explanations, or little asides to the conversation, expressed by enclosing words or phrases in parentheses. From the very first week some people used emoticons such as a smiling face :-), a wink ;-), or a grin <g> to indicate nonverbal expressions (See Appendix A). These symbols were used to express emotions, to accompany little jokes or to soften a statement the communicator thought might be misinterpreted in some way. One student designed an elaborate smiling face to express his elation at finally getting to the class and successfully posting a message (See Figure 11).

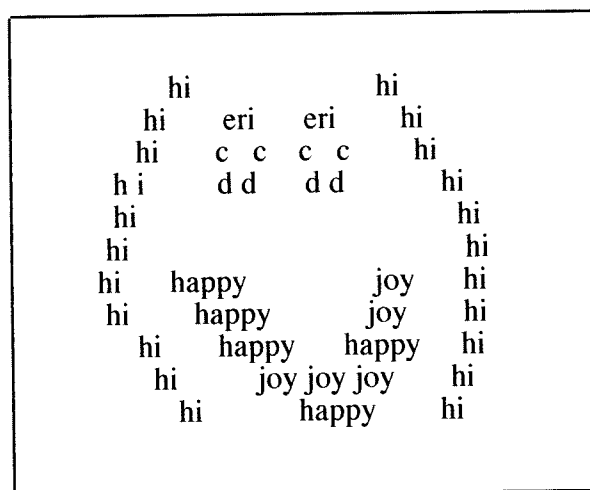


Figure 11. Smiling Face in Text

Information about everyday life and personal anecdotes integrated into the discussions, messages and writing assignments served to humanize the dialogue and helped to make the participants seem like real people. In a discussion where participants shared experiences about driving all over the world, the instructor told of a personal experience and made it even more human with the use of capital letters to indicate verbal emphasis and then added a little aside followed by a winking smiley:

I would have LOVED to try [driving] in Saudi Arabia, but women were NOT ALLOWED to drive. For 2 years and 8 months, I couldn't drive! If I were caught driving, my husband would go to jail. I did threaten a couple of times! ;)

### Grounding

There was ongoing concern about the grounding of the messages (whether the messages being communicated were being received and understood). Students were not sure that they were posting correctly and when they did not receive confirmation or an answer to a message, they worried that their messages had not been received or that the messages had been received but had not been understood or interpreted correctly. Some of the editing groups did not function well. Students posted their papers and requested editing help and then had to wait for some response. Without any indication of whether their message had even been received, they were unsure about the status of their communication. Student B began to think that he was alone in cyberspace waiting for a response from his group: “Hi, INSTRUCTOR, here's my essay. I finally got some input from the editing group, for a while I thought I was alone out here <g>....B”

Relatively few messages were sent as direct responses to other messages. In other words, few messages referenced another message in the message headers. However, messages referred to other messages and/or topics regularly in the body of the messages. The dialogue about the discussion topics often developed along rather linear paths where messages referred to the shared topic but did not directly respond to other discussion messages. This pattern, of indirect rather than direct responses, to messages caused people concern about the reception and acceptance of messages that they sent.

Seven percent of the messages were unread. The content breakdown of those messages revealed that 26% of them referred to graded papers and had the corrected papers attached, 38% of them were coaching and feedback comments from the instructor, 24% were edit requests from students, one message (2%), from the instructor to a student,

carried the subject line: Emergency! READ AT ONCE! and 10% of the unread messages were just administrative messages from the mailroom or the SYSOP. The unread messages were evidence that people sometimes chose to ignore communications even when they may have contained important information.

### Summary

The class was very active. The students demonstrated their acceptance of the responsibility for participation by initiating most of the messages. The instructor stimulated their interaction through activities which required their participation and by personal, prompt, and responsive replies and/or initiations of her own. The interactions were informal and almost everyone participated at a level and in a way that allowed them to project a sense of being a real person. The instructor came to class nearly every day and the students came more often than the usual three times per week expected for a traditional three credit class. These students and the instructor epitomized the profile of nontraditional access by coming to class from home, work, and while away on business trips. They did not establish strict patterns of access, but rather seemed to fit their attendance to the dictates of their own schedules and timelines. Most of the messages were read within a short time of being posted, but, some were not read for as many as 10 days and a few were never read.

### Findings

1. The participants came to class at the times and at the frequency that fit their schedules and their choosing. They accessed class at all hours of the day and night, on all days of the term, and sometimes more than once per day.
2. Time and place independence was essential for some participants.

3. The term was divided into three phases of content focus: Getting started (three weeks), course activities and interaction (five weeks), and wrapping up (three weeks).
4. The students accepted the responsibility for interaction by coming to class often and by initiating most of the messages. The frequent access and message activity stimulated interaction.
5. Participants quickly found ways to exhibit a social presence, utilizing various techniques that compensated for the lack of non-verbal channels.
6. Participants, new to CMC, needed models and instruction to learn accepted CMC communication mores such as: All caps means you are yelling, single words capped express verbal emphasis, and emoticons supply non-verbal kinds of expressions (See Appendix A).
7. Posting messages, especially those containing personal information and/or personal anecdotes, stimulated additional interaction.
8. Participants were unsure that messages had been received, read, and/or grounded (understood) if they were not acknowledged or responded to in any overt way.

### Learning

This section describes the instructional interaction in this class. It is organized into seven subsections: Goals and Preparation, Writing to Talk, Editing Groups, The Instruction, Individual Learning, Summary, and Findings.

#### Goals and Preparation

The students' primary goal was to successfully complete Writing 121. To do that, their first priority seemed to be to understand and to *fulfill the requirements* of the class.

The instructor's primary goal was the improvement of each student's writing. Her first priority was to facilitate the *learning* which would result in the achievement of her goal. One student stated that he looked forward to improving his writing; but, for most, the student focus seemed to be on navigating the requirements in order to earn the credit. For the students, anything beyond the credit seemed to be secondary. The instructor was faced with a challenge—to achieve her goal through the efforts students would make to fulfill the requirements to get the credit.

The instructor began to set the tone of the interaction and established an *atmosphere* for learning well before the students registered for this class. Believing that the best way to learn how to write *is* to write, she designed the course to take advantage of the interactive potential of CMC as well as its text-bound environment. In this course students interacted in writing, in the formal assignments and in the activities which caused them to discuss, to collaborate and to cooperate.

Using text, graphics and color, the instructor designed a syllabus and materials package specifically for this class of students who would be working independently. The package was complete and colorful. It clearly stated the class objectives and provided all the information needed to navigate the requirements of the course. The packet was a working tool for the course. The instructor acknowledged that she could have posted the information online for students to download, but felt that the look and feel (color, design, graphics) of the materials was an important part of preparing the instructional environment and of setting the tone of the class. Also, Writing 121 was often the first CMC class a student takes and she wanted to provide students with the *what, when, where, why, and how* information about the class, in a format that they would be comfortable with and that would not require them to use the technology to get it (See Appendix C).

The instructor's first message was waiting on the board the first time students logged into the class. It reinforced the tone set by the syllabus package and in the orientation

meeting—there would be plenty of work, but this class would operate in an informal and collegial manner.

Welcome to Wr. 121. This is a very exciting and new way to “come to class.”

You will have ample opportunity to join in class discussion, get help in your papers both from the instructor personally and from other students. You will also have technical support help as we move through this new technology.

Most of all, you should have fun. :-)

### Writing to Talk

The instructor stated that because everything had to be expressed in writing, this class provided more skill building and practice than happens in a FtF class, where both the teachers and the students tend to talk more than they write. Student L said, “You really have to choose your words carefully so you express exactly what you want people to get out of it. It gives you best practice to write.”

The discussion assignments started the students writing to *talk*, before they actually had to *write* their formal papers. The discussions were based on reading assignments which were selected, by the instructor, to stimulate interaction and to provide examples of the various kinds of writing the students would be doing in their papers. The discussions were not usually give-and-take kinds of dialogues. Some discussion messages referenced the input of others, but others seemed to be more like individual monologues. Students tended to personalize the discussions with anecdotes, bringing corroborating incidents from their own experience into the discussions. In this discussion example, student J moved between relating the reading to his own family and a thoughtful critique of the writing in the essay.

Hi everybody this is J. I liked the essay about the two grandmothers very much, [sic] the grandmother in paragraph #2 seems to remind me of both my grandmothers. It would be kind of nice to have one of each like the writer.



The frames of reference are very good in both paragraphs, you get a good visual picture of what the women look like physically and a peak [sic] into what there [sic] personalities are like. The writer has chosen to use the block method and it suits the passage quite well. It is fairly balanced in its descriptive qualities, but could use a little more insightful information about the grandmothers [sic] mental characteristics. I think that would make a much more interesting paper and draw the reader into those two people.

### Editing Groups

The editing groups, assigned by the instructor, were designed to give students the opportunity to work together to get and to give each other help in learning to write. The groups also provided the writers with an audience and the way for that audience to indicate whether or not the writings communicated the intended meaning. The editing directions instructed the student editors to identify problems in the writing, *not solve* the problems, and suggested that students just respond honestly about things that did not seem to work, did not hold the reader's interest, or were unclear or confusing. Most students, however, went beyond simply identifying problem areas in the writing. They consistently provided specific suggestions and in some cases offered spelling and grammar advice also. The editing messages were composed in a *note to a friend* tone and a structure that combined a personal comment, some editing content, a friendly closing comment and, in most instances, they also had a salutation and signature. The following message demonstrates the kind of comments students contributed to help their editing partners:

Hi K! I think you did a wonderful job getting your main point of your essay across - safety! Maybe you could use a few more descriptive words in paragraph 4 and 5; as you were sliding down the roof were you calm? scared? terrified? panicked? and how did you feel when your partner reached out and helped you? relieved? shaky? [sic] Overall I think you did a good job of tying

[sic] each paragraph to the next. But I would like to know just how high off the ground you were, you did mention a 25 foot extension ladder. One more item could you put in an example to go with your opening statement in paragraph 2 regarding how men and women die by being unsafe? I hope this is helpful. I really enjoyed reading your essay! L

Student A put a strong emphasis on the editing groups. He felt that the anonymity of individuals, in the CMC environment, helped them to be more comfortable and open in their opinions and criticisms of the writings. He said, “no one was trying to skate by for an easy credit,” explaining that everyone commented with “good intent” and that people were able to take the comments in the “spirit in which they were offered.”

At the beginning of the term some students posted their peer editing comments as public messages. Later on in the term students tended to exchange private editing comments with their editing groups. The public messages did, however, reveal that the students in most editing groups were exchanging editing comments. Not all of the students participated in the editing groups, some elected to forgo the grade points for this part of the class. Therefore, some requests for help were never answered and some of the editing groups had to be rearranged by the instructor to ensure that people who wanted feedback got it in a timely manner.

### Instruction

Instruction was provided in several ways. The instructor monitored all the activity in the class and posted short messages of encouragement, instruction and coaching. Because messages, unless marked private, were available for everyone in the class to read she regularly used her public messages to serve multiple purposes. For example, in the following message the instructor responded to the student to confirm that his message had been received and that his initiative had been noted. But, through this message she also

communicated additional messages and dispensed a little instruction to *all* the students: (a) that they should be getting their own messages online, (b) that interaction was very important, and (c) that early starters often get A's.

Congratulations, ...for being the first student online! In studies of student behaviors, the secret of an A student was discovered. Out of all the possible behaviors of students, it turns out that the A student does something very simple: they start early! See already you are on the right path! ;-)

Commenting on working with the instructor, student L said, "you don't ever have to wait in a line to ask a question and you have time to frame the questions. Plus, they are answered in writing, so you can always go back and review exactly what she said."

The instructor invested considerable effort into giving students feedback on their papers as she graded them. These comments were a major instructional component of the class. Some students seemed to have continued difficulty understanding that they had to download their graded papers to access the instructor's comments, suggestions for improvement and their grades. The instructor became somewhat frustrated trying to get students to download their graded papers. She tried several strategies including publicly praising those who did download their papers, sending personal messages, and even offering to post the papers and comments by email (upon request) for those who still were unable to download. In spite of all these attempts, one student completed the entire class without ever downloading a single corrected paper!

The instructor always answered questions about writing in public messages so all could benefit. The only private messages that dealt with writing instruction were those that accompanied the graded papers. The private messages between the instructor and students fell into four categories: (1) requests for help with technical difficulties, (2) excuses for missed deadlines or requests for special accommodations on deadlines or absences, (3) clarifications about course requirements, and (4) status of grade or requirement fulfillment.

To assess the learning, the instructor looked for improvement in student writing between the initial writing samples and the final writing assignments. In the accepted manner of quantifying achievement, letter grades were awarded to indicate the level of achievement for each student. The letter grades were determined by combining the writing assessment points with points for assignments and participation in interactive activities. The grades are displayed in the Student Profile. (See Table 1 p. 41)

### Individual Learning

Learning seemed to follow different paths for different people. A close look at students A and L revealed that, although both students achieved A's in the class, their learning paths were quite different. For student A the collaborative learning strategies employed in this class complemented his independent learning style. He used the reading assignments and the syllabus materials independently for instruction and the editing group members as his coaches. He relied very little on the instructor for instruction. This class allowed him to take advantage of the assigned materials to study and learn on his own, to measure his understanding by applying the information to his own written work, and then, to try it out on his editing group. After carefully assessing the editing group members' feedback, he acted only on those suggestions he thought contributed to improving his writing.

Student L was active in the collaborative activities also. She demonstrated a thorough understanding of the independent assignments through her thoughtful, engaged comments to her editing partners about their writings. But for her, the learning seemed to be based more in her acute awareness of crafting her writing for an audience than in profiting from the editing group members' specific comments about her writing. It seemed that just her own awareness, that the editing group members were going to read her work, was enough to encourage improvement in her writing. For student L, the learning seemed to happen

through her awareness of an audience and the necessity for her to craft all her exchanges in writing.

Demonstrating a high level of learning, student K achieved an A in the class but he *only* participated in the required portions of the class and had a very low level of social interaction. Other students engaged in average levels of interaction in public messages but participated with their editing groups and achieved improved writing, as demonstrated by satisfactory or better grades.

Some students did not participate in either the editing groups or the discussions. However, with one exception these students were able to achieve improved writing by working with the course materials independently. These students chose to treat this class more as a *correspondence class* than the interactive experience it was designed to be.

### Summary

The instructor specifically designed activities that caused students to discuss, collaborate and cooperate in writing. To achieve the instructor's goal of improved writing, the instruction and practice had to be a part of the *requirements* for completing the course and earning the credit.

The discussion and editing activities caused the students to synthesize and apply what they were learning about writing, to the work of published authors and to the work of their peers. The application of their learning, combined with the instructor's coaching and the performance, in writing, of the entire interaction of the course, resulted in improved writing by students. Their achievement was documented in the award of satisfactory grades and academic credit for all but two of the students who completed the course.

## Findings

1. The primary goal for students was to complete the class and earn the credit. They wanted to understand the requirements of the course, exactly what they must do and when they must do it.
2. The tone and formality of the instructor's initial messages set the tone for the interactions in the class.
3. CMC provided the potential for interactivity and collaboration, to take advantage of that potential the instructor designed the assignments and activities specifically to encourage students to interact collaboratively.
4. Students made autonomous choices about the level of their interaction and collaboration. Even though interactive and collaborative activities were considered part of the grade, some students chose not to participate.
5. Students achieved learning in different ways. The way one person learned from a particular set of activities was quite different from the way another person learned from the same set of activities.

## Community

This section describes the relational interaction of the students in this class. It is organized into four subsections: Making Connections, Micro View, Summary and Findings.

### Making Connections

The syllabus outlined a series of assignments that required the students to have to do the same activities and to share their thoughts, in writing, with the other members of the class. The first activity, to interview and introduce one another, was not totally successful because not everyone completed it; however, those who did, posted messages to the group

thus initiating the engagement of the members with one another. As they shared bits and pieces of information about themselves, they discovered similarities right away. In one of the introductions, a little joke about a student's home town, touched a common thread for students and references to it emerged in these messages over the first week. "My name is student A, I live in the thriving metropolis of Sublimity" (message 1); "Thriving metropolis... Sublimity... Yeah thats [sic] a good one. :-)" (message 9); "Thriving metropolis... Sublimity...Love your sense of humor, student O." (message 16); "Hello all, my name is student E and I also live in a thriving metropolis, DALLAS" (message 29). This small thread of relatedness was a beginning of connecting with one another.

The first discussion question started another thread of relatedness in the messages. This time, a student drew upon his experience driving in a foreign country to frame his comments on a reading assignment. Several other students picked up on his example and related their driving horror stories. In doing so they connected with one another over shared experiences and shared attitudes about careless drivers. Even though these messages did not directly refer to each other and the students were not participating in a give-and-take, back-and-forth kind of discussion, they were identifying and sharing information, experiences and feelings. They were continuing to connect with one another.

When the students wrote their first papers, many chose to write about their own lives. The papers were personal and dealt with powerful subjects that were important to the writers. The students' willingness to write such personal stories in papers that they knew fellow classmates would read demonstrated that there was a level of comfort or trust operating. Those who got their papers out to their editing groups and received comments back did not just get writing form comments. They got praise and best wishes along with the comments about the writing. When one student wrote about his feelings while his wife was in danger of having a miscarriage, the editing partner concluded her comments with: "I was happy to hear that the outcome was positive, I wish you and your wife the best." Another editor wrote, before pointing out a series of spelling and punctuation errors: "Your

paper provides a lot of humor and vivid descriptions of your sailing trip. It keeps the reader entertained and flows smoothly.” The students were connecting with their fellows as people. Their comments were laced with compassion and particular care to present their critiques in a way that would preserve the relationships that were beginning to form, while still providing constructive suggestions for improving the writing.

For those students who participated fully and frequently in all the interactive activities of the class, a sense of community seemed to develop. Students continued to reveal themselves to one another by writing about topics that they knew well and by sharing information about personal events in their lives. Four students chose not to engage actively in the interactive activities of the class exchanging few, if any, messages with other students. However, the required discussion messages, posted by these students were informal and friendly in tone, as were the messages they exchanged with the instructor. The few messages these students sent, did not seem distant nor uninterested, but, their messages to the instructor made repeated reference to how busy they were. Two of the students repeatedly sent excuses for work that was late. It seemed that these students simply did not have time to get more involved with the class than to just meet the requirements at whatever level they could.

### Micro View

Just as students had different learning experiences from the same class activities, students also experienced different feelings of community. In another close look at students A and L, student A said, “it takes time, working together, to develop a sense of community.” He added that he had taken another CMC class, in the summer term, and that it had been too short (eight weeks). He felt that the 11 or 12 weeks of a regular term were an advantage, giving people time to feel comfortable and to develop a good rapport. The community that student A described seemed to be one that consisted only of a shared purpose and good, congenial working relationships. He had good feelings about the other



students, but, was connected only by his collaboration and cooperation in this one virtual class. He would be glad to *see* the others again in another class, but probably would not seek them out on his own.

Student L experienced community somewhat differently. She liked to get people talking. She said: “Other members of the class had some really interesting stories. And so I really wanted to communicate more with them.” This extra effort to connect with people caused student L to have enough contact with some of the other members of the class to report high levels of comfort and trust with them. She and some of the other students had taken other CMC classes together and real friendships had had time to develop “sight unseen.” This level of relationship, she said, supported their work together in class because “you don’t have to second guess [them]” and “you don’t have to worry about hurting their feelings.” The sense of community that she felt, with the members of this class, was developed beyond the level of a collegial common cause and was less bounded by the existence of this particular class.

### Summary

The students had to interact with each other to satisfy the requirements of the class. The interactive format of the assignments created an environment in which a sense of community could develop. Through sharing their writing and participating in the required discussions, most of the students began to connect with one another on a personal level and did seem to feel a sense of community with their classmates and their instructor. That sense of community, however, was individual to each participant.

### Findings

1. The informal atmosphere and/or the anonymity of CMC allowed participants to feel comfortable enough to reveal personal information about themselves.

2. Participants developed a feeling of belonging as they perceived similarities in the experiences and feelings of others and made personal connections with others.
3. A sense of community developed over time through the interaction of the participants.
4. The sense of community that each participant felt was the product of their individual levels of interaction and their personal styles, needs, interests.

## CONCLUSION

The purpose of this study was to describe and interpret the interactions, of the participants in one CMC class, in a report that would provide educational policy makers, instructors and students with information about this new and popular educational domain. This chapter is organized in two parts: The Summary Discussion and Conclusions and the Hypotheses and Recommendations.

### Summary Discussion and Conclusions

This study was sparked by questions about the interactions of students in CMC classes. These questions frame the summary discussion and the conclusions of this study.

#### Question One

What actions, interactions, relationships, or group dynamics occur among the participants (students and instructor) in a CMC community?

#### Question One Discussion

A CMC classroom is an environment rich with the potential for interaction and collaboration (Harasim, 1990). In this study, the participants actively accessed the class to interact and collaborate with one another, at all hours of the day, almost every day of the term and sometimes one or more times per day. They took advantage of the elements of time, space and medium to come to class from wherever they were (school, home, work, in-town, out-of-town), at whatever time that worked for them on a particular day.

From their very first messages, the participants used an informal note-to-a-friend style, emoticons and various textual forms of emphasis and were able to appear as real people to each other. They interacted on a comfortable, interpersonal level. Some of the

first messages were highly task oriented (trying to get the technology functioning and requirements clarified), but, even those messages were informal and projected immediacy and social presence. For this group, the length of the engagement and message frequency did not seem to influence the relational tone of their messages. These findings are not consistent with Walther's (1990) elapsed time and frequency hypotheses about relational communication in CMC. However, they are consistent with research that concluded that people find ways to express immediacy and compensate for the lack of physical intimacy in CMC (Gunawardena, 1994). The relational communication factors of formality, immediacy, and social presence seemed to be defined, for this group, by the model established by the instructor's online comportment, her message style, and the format and tone of syllabus and materials packet.

The participants consistently maintained a friendly, collegial tone in their interactions, but, the nature of their relationships and their levels of involvement developed according to their individual styles, time commitments and autonomous choices. Some students did not participate enough to achieve a regular grade. Some students participated in interactions with the instructor and other students, only when required to do so, by an assignment which would be graded or would earn points toward their final grade. Others turned in all the papers and required discussion comments, but, did not participate in the interactive/collaborative activity of the peer editing groups, choosing to forgo earning points for those activities. Others engaged actively with one another in the class activities and public messages and also in private personal messages, outside of class.

#### Question One Conclusions

- A. The formality, immediacy, and social presence of the instructor's style defined the relational communication model that was adopted by the class.
- B. Individual styles, time restraints and autonomous choices shaped student learning, relationships, and level of class involvement.

## Question Two

What kinds of communication patterns do participants use?

### Question Two Discussion

The communication patterns identified in this study were similar but not exactly like those described by Levin, Kim, & Riel (1990) in their study of a CMC class. Similarly, the messages were complex, combining both socio-emotional content and task-oriented content. The initiation-, evaluation- and reply-type messages (IRE sequence) were not evenly distributed between the instructor and the students. In a slightly different balance than Levin et al. found in their CMC study, the students in this class initiated most of the messages and the instructor replied. Only the evaluation-type messages were fairly evenly distributed between the students and the instructor. These findings are the exact opposite of those in Mehan's (1978) FtF study where the instructor initiated nearly all the exchanges and students only replied. In the FtF study the instructor was the dominant figure in the interaction pattern. In this study the students initiated 68% of the messages, playing a much more active and responsible role in the interaction. The instructor was able to facilitate, respond, instruct and coach through reply- and evaluation-type messages. She used only a few initiation type messages.

In their CMC study, Levin, Kim and Riel (1990) found messages in star patterns and in thread patterns; whereas, the majority of the messages, in this group's interactions were split between simple initiate/respond patterns and thread patterns. A few (7%) of the messages were initiations without responses. The star pattern did not emerge from the interaction in this class perhaps because the students were not skilled with using the feature of the software that would have allowed them to reply directly to messages. Had they used the reply function, the *many responses to one message* interaction, that creates the star pattern, might have been evident.

It was unclear whether some of the communication of this group was received and/or accepted and grounded (understood). Since the reply function was not used often, related messages formed the thread pattern which was less obvious and, therefore, somewhat less effective in communicating understanding of other messages. Participants (both the students and the instructor) experienced anxiety when messages they initiated seemed to be left waiting at, what Clark and Brennan (1991) describe as, the presentation phase. When messages were not replied to or directly referenced in another message, people felt unclear about whether their messages had been received and/or whether they had been grounded.

### Question Two Conclusions

- A. The students were active communicators and initiated the majority of the messages.
- B. The instructor's communications were predominately responsive.
- C. The effectiveness of communication was constrained when it was unclear whether messages had been received and/or grounded (understood).

### Question Three

Do the actions and interactions support, encourage or engender participation, collaboration, or learning?

### Question Three Discussion

The instructor invested particular effort to design this class specifically to take advantage of the time and place independent and interactive characteristics of the medium and to integrate teaching methodologies that were appropriate to both the content and the CMC context. This effort was contrary to Wolcott's (1993) findings, that most instructors just adapt their usual FtF strategies to their EDE courses, focusing only on the content

without consideration of the context. The interactive and collaborative focus of the instructor's course design and her attitude were directly and positively related to the student participation, collaboration and learning in this class. This kind of direct relationship between instructor-related factors and student participation, satisfaction and achievement has also been identified by other CMC researchers (Crook, 1994; Harasim, 1989; Rosenthal, 1991).

The instructor was unaware of Paulsen's (1993) Hexagon of Cooperative Freedom model when she designed the curriculum for this class. However, the findings revealed a close alignment between that model and the design and practice in this class. Taking advantage of the interactive potential in CMC, the instructor designed and facilitated the curriculum to *require* and to *support* interaction. The participants had the freedom, even the responsibility, to act individually. The interactive assignments involved them cooperatively in the discussions, editing groups and the pacing of the class, and thereby, operationalized *cooperative freedom*.

Consistent with Baynton's (1992) control concept which emphasizes interdependency in the teaching and learning process, the instructor and the students drew upon each other's strengths to achieve the learning. The instructor shared the control and responsibility for the learning with the students. The students and the instructor came to class often, increasing the potential of their getting involved in interaction, and they shared personal information and anecdotes which seemed to draw others into the discussions and stimulated the interaction. Each of the students who actively contributed to the peer editing group activities engaged the others as writer, audience and coach. These interactions caused them to get help, learn from the others, and also, to apply their own learning in their coaching comments. Each person, except those who opted out of the interaction, contributed to the achievement of the others in some way.

The mix of activities required for this class caused students to act and interact individually, collaboratively and cooperatively. Students had to write, discuss, read, coach,

edit and support each other. These activities provided a variety of opportunities for learning and different students seemed to experience and learn from them in different ways.

Validating Lauzon's (1992) argument that CMC instruction could facilitate active learning, the students in this class were not the passive recipients of learning, but rather, each, in his or her own way, was actively engaged with the learning. Some students experienced the class like a correspondence class and learned. Some students acted very independently, yet still benefited from the interaction, and others depended heavily on the interaction to support their individual learning. The main goal for students was to earn the credit, but, in navigating the required mix of activities, almost all of the students had whatever combination of experiences they needed to achieve the instructor's learning goal of improved writing.

Although this study did not undertake a serious investigation of the *learning through writing* hypothesis suggested by Emig (1977), the learning in this class did happen in, through and by writing. The students had to present their thoughts in writing for everything they did in this class. Vygotsky's (1962) "deliberate structuring of the web of meaning" (p. 100) was at the core of all the interaction. The instructor captured the essence of this phenomenon in her message to a student about his comments in one of the discussion assignments: "Great comments...I especially like your specific examples...*This helps us "see" your thinking* [italics added]."

### Question Three Conclusions

- A. The attitude of the instructor and the design of the course strongly influenced student participation, collaboration and learning.
- B. The instructor and the students shared the responsibility for the interaction, the pace, and the learning.
- C. The process of writing facilitated the process of learning.



### Question Four

Does this virtual community resemble other communities?

### Question Four Discussion

In this class, the participants worked in a virtual classroom. The space existed only in essence, in the perception and experience of the participants. In a literal sense then, the CMC community of this class did not resemble, in a physical form, a community such as a town, a city, or even a regular FtF class. But, this group of students and their instructor did meet together, in their virtual classroom, over the eleven week period of an academic term. In just that short period of time the group progressed through the first three stages of Stamm & Fortini-Campbell's (1979) four-stage process of how individuals become members of communities; they had come together for the shared purpose of this class, they had undertaken interaction with one another, and through their interactions, they had recognized similarities and connections with each other.

Through the accomplishment of the required activities they shared personal information and anecdotes, they helped one another, and they offered each other praise and encouragement. These actions helped students to deal with the isolation of working independently at remote sites. Through their interaction and their papers, they discovered that they had similarities and common experiences. These commonalities caused them to begin to connect with one another. These actions and interactions indicated that they were in the process of developing the kind of community described by Harasim (1987). However, the time this group had together was too short to form a group identity or the *genuine* community that Freeman & Freeman (as cited in Hiltz, 1984, p. 176)) reported in their seven-month study. When the term ended, most of the members of this class were in the communication phase, somewhere between resource sharing and community on Quarterman's (1993) continuum of the evolution of CMC relationships.

Although the data did not corroborate Walther's (1990) hypotheses that the nature of relational communication is a result of the length and/or the frequency of engagement, these factors did seem to play a determining role in the development of a sense of community. In addition to the time and frequency factors, the people in this class participated and interacted at different levels, depending upon their individual styles, needs and interests. These factors also contributed to each participant's development of a sense of community. For some, the sense of community seemed similar to that of a transient who passes through a physical community without really connecting with the inhabitants except in the interaction necessary to exchange goods and/or services (those who did the assignments but did not engage in the interaction in a personal way). For others, the sense of community seemed to resemble that of co-workers who share a purpose within the community of their workplace, but have only superficial personal connections. For others, the sense of community extended beyond the virtual classroom and common purpose to include considerable social interaction in the virtual environment outside of class in the private messages between students.

#### Question Four Conclusions

- A. Assignments and activities which required interaction and information sharing facilitated the development of a sense of community.
- B. Multiple factors, including the length and frequency of interaction and the individual styles, needs and interests of the participants, contributed to the development of each individual's sense of community.

#### Question Five

What impact does the CMC environment have on participant feelings of satisfaction, comfort, inclusion or exclusion?

### Question Five Discussion

This class provided the kind of highly interactive and social environment that research has shown to support student satisfaction and achievement (Boston, 1992; Davie & Wells, 1991; Gunawardena, 1994; Harasim, 1990; Nalley, 1995; Shedletsky, 1993). The two students who were interviewed reported that they had been satisfied with the class. Student A commented several times, in both the class transcript and in the interview, about how much he liked the format, how convenient it was for him and how satisfied he was with the whole class. Like the CMC students in Davie's (1988) study, both students expressed particular satisfaction at being able to undertake the coursework without being tied to a FtF class, which would have required them to be at a particular place, at a particular time, on a regular schedule. Student A worked full time on a rotating schedule and had regular out-of-town business trips, all factors that might have excluded him from taking a FtF class. Similarly, student L worked full-time, had children at home and was extremely busy with a complex schedule of activities, her own and those of the rest of her family. The limitations of a FtF class would not have worked well, or at all, for her.

The difficulties that many of the students had with getting connected, getting class access and/or mastering the functions of the BBS or their own telecommunications software, had a negative impact on the feelings of comfort and satisfaction of the whole group. The students were distracted from content-related interaction by technology-related interaction for at least the first three weeks of the term, but, they persisted because they really needed (or wanted) time and place independent instruction. Once the technical difficulties were overcome, the students worked comfortably with the technology. It became the tool that allowed them time and place independence and as such it ultimately had a positive impact on student satisfaction.

Consistent with the NKI Electronic College study, student comfort and satisfaction in this class was also closely related to the nature of student interaction with the instructor (Paulsen, 1992). Student A and student L reported that the tone and informality of the

instructor's interactions helped them to feel comfortable and a part of the group. The whole atmosphere of the class seemed comfortable. The messages were friendly. They were not stilted, strained or formal. The personal anecdotes, contributed by the students in their discussion messages and in their papers, demonstrated the contributors' levels of comfort and their feelings of inclusion. These students, knowing that other students and the instructor would be reading their writing, revealed personal information about intimate kinds of situations such as a wife's potential miscarriage, a father's abuse, and negative feelings about one's siblings. Students who are uncomfortable or who feel excluded *do not usually* reveal such personal things about themselves.

#### Question Five Conclusions

- A. CMC technology distracted from instruction and student satisfaction until it became transparent.
- B. The technology was transparent only when the CMC system was stable, when the equipment functioned reliably, and when participants performed the necessary telecommunications functions easily and efficiently.
- C. Time and place independence was a primary enrollment factor and contributed positively to student satisfaction.
- C. Feelings of comfort and inclusion increased when personal information and anecdotes were shared.

#### Hypotheses and Recommendations

##### Hypotheses

The findings and conclusions of this study can be summarized in two hypotheses:

### Hypothesis One

Four elements of CMC instruction have critical impact on student participation, satisfaction, learning, and achievement:

- (1) the operational transparency and functionality of the technology;
- (2) the course design;
- (3) the instructor's attitude, style and expertise;
- (4) the student's autonomous choices about participation, interaction, collaboration, and cooperation.

### Hypothesis Two

In CMC instruction student participation, satisfaction, learning, and achievement are positively impacted when:

- (1) the technology is transparent and functions both reliably and conveniently; or
- (2) the course is specifically designed to take advantage of the CMC characteristics of time/place independence and interactivity to support learner-centered instructional strategies; or
- (3) the instructor's style is collegial and he/she operates as facilitator, model and coach; or
- (4) there is a reasonable level of flexibility to accommodate the autonomous choices students make about interaction and collaboration.

### Recommendation for Policy

Policy decisions about infrastructure, student services, curriculum, staffing and operational systems for CMC programs, should be based on:

- the needs, desires and motivations of CMC students;
- best practice in instructional methodologies;

- the context of CMC instruction;
- the commitment of the institution to fund and support the decisions.

### Recommendations for Action

1. Require that all CMC curriculum be purposefully designed for the context of CMC.
2. Provide the training, time, and compensation that instructors need to develop and deliver curriculum appropriate for the CMC instructional environment.
3. Require that participants demonstrate competence with all telecommunications functions used in the CMC program before beginning classes; and, provide training (hands-on classes and/or self-paced training) in the use of the CMC technology (hardware and software) for CMC participants who cannot demonstrate competence with the technology.

### Recommendations for Research

Pursue research in the following areas:

- The impact that an instructor's relational communication style and writing style have on participant experience and on relational communication in a CMC class.
- The validity of *learning through the process of writing* hypotheses and the potential of CMC instruction to engender such learning.
- The CMC system interfaces and/or configurations of hardware and software that provide robust functionality, stability and operational transparency.
- The impact and implications that the autonomous choices students make about interaction, collaboration, and cooperation have on their satisfaction and achievement in CMC classes.

- The impact that the length (quarter, semester, one-or-two year certificate or degree programs, four-year degree programs) of a group's engagement together have on the development of a sense of community.

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## **APPENDICES**

## **APPENDIX A**

### Emoticon Samples



# :-) Smileys

Along with the wonders of electronic mail, comes a problem – it's hard to show when you're bemused, being ironic or just plain kidding. *Smileys* are the answer. Just type a colon for eyes, a hyphen for the nose and a parenthesis for the mouth. To see the face, tilt your head to the left. Now by typing a few keyboard characters, you can demonstrate how you feel; no matter what you say.

Feel free to make up your own smileys. To see others, read *The Smiley Dictionary* compiled by Seth Godin. Berkeley, Ca.: Peachpit Press, 1993.

;-(	Crying	:-e	Disappointed
:-!	Foot in Mouth	<g>	Grin
{ }	Hugs	<i>	Irony
<jk>	Just kidding	<l>	Laugh
:-#	My lips are sealed	< >	No Comment
:-P	Nyahhh!	:(	Sad
:-@	Screaming	8)	Smile by someone who wears glasses
<S>	Sigh	:-W	Speak with forked tongue
:-&	Tongue-tied	:-\	Undecided

Now, if you want to SHOUT, just type in all caps!

**APPENDIX B**

Informed Consent Form

## Informed Consent Form

Modem Course Study

Terri L. Johanson, Research Investigator

You are invited to participate in a research project. This study will look at the kind of interactions, relationships, and group dynamics that occur between students and between students and their instructor, in a community college, modem-based writing class. The research investigator will analyze the transcript of all interaction of the class and may contact some participants for follow-up interviews. Demographic and academic information, from the Registrar's files will be used to develop a profile of the student participants. Except face-to-face or electronic interviews, with a limited number of participants, the only requirement for participation is this consent form granting the research investigator access the transcript of the class and to the demographic and academic information from the Registrar's office.

There are no foreseeable risks for the participants. Only the investigator and her supervising professor will have access to the data. Confidentiality is assured because only identification numbers (no names) will be used in the research documents and in the report of this project.

The outcome of the study may be useful for those who are making decisions about modem delivery of courses, for those who design the curriculum and teach modem courses, and for those who consider participating in modem courses.

Participation is voluntary. There is no penalty if you do not wish to allow the investigator access to your portions of the transcript of class participation.

Questions about this research should be directed to Dr. Charles Carpenter, Professor of Education at Oregon State University, at 503-737-5961; or Terri Johanson, research investigator, at 503-390-1007.

---

My signature below indicates my consent for Terri Johanson to read, analyze and report her findings from the transcript of my Writing 121 class. I understand that my name will not be used in any research documents and that the confidentiality of my demographic and academic information will be maintained.

---

Signature

My signature below indicates my willingness to participate in follow-up interviews with the investigator if requested.

---

Signature

## **APPENDIX C**

Syllabus and Materials Packet

**Class Information:**

*English Composition*  
WR 121

**Instructor:**

**EMail:**

**Office Information:**

Building 38, Room 108

**Office Hours:**

9:30 - 10:15 MWF  
4:00 - 4:45 W  
MUHF evenings  
by appointment

**Phone:**

399-5242  
Leave a message on voice  
mail, so I can return your call.

**Wr. 121 Syllabus - Spring 1995**

**Textbook:** Reinking, Hart, Von der Osten. *Strategies for Successful Writing*. 3rd ed. Englewood Cliffs, NY: Prentice-Hall, Inc. 1993.

**Course Description:**

English Composition is a three-credit college transfer course. Most students take this course as the first of a nine-hour sequence that includes WR 122 and WR 123/227.

The emphasis of content in this course is on the understanding and development of various writing modes. The writing modes that you will study and develop are Illustration, Definition, Comparison/Contrast, and Analysis.

**Course Objectives:**

As you successfully progress in this course, you will be required to:

- ✓ Write essays that are grammatically, structurally, and developmentally correct.
- ✓ Develop a sense of audience as you plan, write, and revise the content of each essay.
- ✓ Develop editing techniques so that you can get a sense of what makes writing effective for both the writer and the reader.
- ✓ Develop your individual writing style that includes your writer's *voice*.
- ✓ Develop compositions that are coherent, unified, and focused around a central thesis and controlling idea.



### Course Requirements:

- Each student must complete four essays in a timely fashion within the 10 week term.
- Each student must comply with required timelines. I will certainly be willing to accommodate any problems that arise throughout the term, but want you to recognize the importance of due dates for all assignments.
- Each student must participate in the learning communities assignment, which includes class discussion and editing groups that will function as a way of giving and getting input not only from your instructor but also from each other.
- Each student must complete the initial writing sample and the final exam. *Note:* there will be no Incompletes in this course.
- Each student must log on to the computer a minimum of three times a week. However, it will be better to log on more frequently staying a shorter time, than trying to log on three times and staying on hour. Instead of "going to class" three times a week for an hour, you can spread out your class time in many mini sessions. Remember, at the beginning of term the board is very busy as everyone is trying to get in. This will settle down. Don't worry. Be patient. If you don't get in right away, call back later. Don't get frustrated. This takes a little while getting used to. Class attendance will be taken and posted on the board.

### Grading Criteria:

You will earn letter grades on all essays. I do issue plus and minus letter grades which carry this grade point equivalent:

A = 4.0	C+ = 2.5
A- = 3.8	C = 2.0
B+ = 3.5	C- = 1.8
B = 3.0	D+ = 1.5
B- = 2.8	D = 1.0

10% of the grade is the learning communities activity. Each paper is worth 20% of the grade. The final exam will be used to assess progress throughout the course from the beginning writing sample to the writing sample at the end of term. The final will be used to improve the grade from .3 to .5. For example, if a student had a low score on one paper, but had improved throughout the term as demonstrated in the final, the grade could move from a C+ to a B.



## General Information

Since this is a new delivery system for teaching and learning, I recognize that some problems may arise. I am here to help you through these problems whether they be technical, motivational, or personal. If you have trouble uploading, please refer to the additional bulletin board numbers and the resources recommended by Gary Halleen during the technical orientation.

If I notice that the writing concepts or techniques are confusing, I will clarify for the class as a whole or I may offer other strategies that might work for individual students. Remember that we all have a learning style that favors some strategies over others.

You should send any messages to me by 9 PM on the date due for each assignment.

In order to find messages in a long string, it will be important to establish a naming protocol. Discussion answers should be labeled by the number of the question. See the Naming Protocols sheet for further directions. Drafts for editing groups should be identified as drafts. Send only final copies to me. All graded papers will be returned privately.

Finally, there will not be any formal lectures on the board. I will provide "lectures" on an as needed basis. You will find that the bulletin board class is much more personalized. Each of you will receive personal, individual attention. As common problems arise, I may send messages to small groups or to the whole class.

## Editing groups

Students are expected to send their papers to their editing groups for assistance. This will help give you a sense of audience. Editing groups will be composed of 3 to 4 people. I will reserve the right to reassign people to editing groups as the need arises. You may use your editing group as a sounding board in the prewriting stages, when you are trying to decide what to write on or you may use them just in the final stages, after you have drafted your paper. Your use of editing groups will be part of your learning communities grade. Your participation in this activity gives you extra grade points, which can enhance your overall grade and cushion against one low grade on a particular paper.

# Wr. 121 Course Calendar

## MacDonald

### Spring 1995

Dates	Class Discussion	Editing Groups	Papers Due
March 30	Wr. 121 Orientation		
March 31- April 1	Post "Hello" on board. Send interview to partner.		
April 1-3	Edit interview and post on board.		
April 4-6	Crisis/Resolution discussion. See discussion questions in textbook and in the Illustration Packet.		
April 6		Begin Illustration Paper with Crisis/Resolution theme	
April 9-11		Rough Draft <b>due</b> . Send out drafts to editing groups.	
April 10-12		Editing groups send back feedback. See directions in Chapter 3 on Peer evaluation.	
April 12-13			Revise Paper.
April 14			PAPER #1 DUE.
April 17-18	Definition discussion from textbook and Definition Packet.		
April 19		Choose definition format: factual, point of view, imagery	
April 21-23		Rough Draft <b>due</b> . Send out drafts to editing groups.	
April 24-25		Editing groups send back feedback. See directions in Chapter 3 on Peer evaluation.	
April 26-27			Revise and edit final paper.
April 28			PAPER #2 DUE
May 1-2	Comparison/Contrast Chat from textbook and the Comparison/Contrast Packet		
May 3		Select block or zig zag.	



Dates	Class Discussion	Editing Groups	Papers Due
May 4-6		Rough Draft due. Send out drafts to editing groups.	
May 8-10		Editing groups send back feedback. See directions in Chapter 3 on Peer editing	
May 11-12			Revise and edit final paper.
May 15			PAPER #3 DUE
May 16-17	Analysis Chat. Use discussion questions at end of student papers in text. Refer to reading assignment sheet.		
May 18-19		Choose which of the analysis papers you are going to write: Process, classification, cause and effect.	
May 19-20		Begin writing	
May 22-24		Rough Draft due. Send out drafts to editing groups.	
May 24-26		Editing groups send back feedback. See directions in Chapter 3 on Peer editing	
May 30-31			Revise final paper.
June 2			PAPER #4 DUE
June 8	Final Exam - in 3-272 6-8 pm		

<h1>MESSAGE MENU</h1>		
CHENEKETA COMMUNITY COLLEGE		
R ead Messages S earch Messages H elp Level J oin a Conference	E nter a New Message Q uit to Main Menu U pdate Conf Scan/Read T omcat Offline Msg Door	F iles Section K ill a Message  ? Command Help

Class: Writing 121

Time On: 10 Time Remaining: 80

Most of the class participation will take place in this Message Menu area. You will use R to read messages and E to enter messages. Another useful command is S for search. You can search by name, either who the message is from or who the message is to or by subject or by a word in the text. So if you ever "lose" a message, use Search to find it.

If you want to track your attendance use Search to find all the times you have been on and left a message. I will do this the beginning of the third week of term and report class attendance to everyone.

```

Chemeketa BBS 5
From : LUCY MACDONALD          [ESCAPE] Save/Edit
To : LUCY MACDONALD          [Ctrl-Z] Display Help
Subject : Screen Shots        [Ctrl-U] Insert mode : On
(-----1-----2-----3-----4-----5-----6-----7--)
1: This is just a sample screen shot.  Students in Mr. 121 will need to
2: know
3:
4: * how to attach a file
5: * how to carbon copy a message
6: * how to download a file
7:
8: :-)
9:
10:
11:
12:
13:
14:
15:

Edit Message [C]ontinue, [I]nsert, [U]iew, [S]ave, [A]bort, Ca[r]bon
Subject, [F]ull Screen, [D]elete, [L]ist, [H]elp, [Q]uote, At[t]ach
S[p]elling, [W]ord Replace, [U]pload, [E]dit ?

13:03 26x80 27k 2400 MB 1

```

To attach a file to a message (upload a file) use T. This will attach your paper to this message.

To send your paper to multiple members of your editing group, attach your paper to a message and then use R for carbon copy. The computer will prompt you for each name that you want to carbon copy your message.

To get someone else's paper use D for download to save this file on your hard drive.

Remember all files should be saved as ASCII or text only or DOS text. You will lose formatting, bold and italics. Do not worry about this. It's the text that is important here.

```
From      : BARBARA VIRI          Number   : 2 of 3
To        : ALL                  Date     : 03/28/95 9:49pm
Subject   : Modem Course Syllabus Reference  : NONE
Read      : NO                   Private   : NO
Conf      : 730 - GS143 - Earth's Oceans
```

Attached is your modem course syllabus

NOTE: This message has a file, MODENSYL, attached.

Read mode : (2+)

Msg Read [1 - 3], [F]orward, [H]elp, [N]onstop, [W]rite, [Q]uit,  
[R]eply, [T]hread, [D]ownload, [ENTER = next]? █

When you attach a file, you will see this message "NOTE: This message has a file ... attached."  
Now use D for Download to get this file to your computer.

You must know how to attach a file and download a file for this class. This is how we will send papers to each editing group, how we will send the final copy to the instructor and how the instructor will get the grade back to the student.



WR. 121  
Topic Directions and Naming Sheet

Topic	Subject on Board
-------	------------------

**HELLO** must include:

- Are you a first time student at Chemeketa? If not, how many terms have you been here?
- What is your course of study?
- How did you hear about this modem class?

**Hello**

**INTRODUCTIONS**

Try to capture the personality of the interviewee. You may include such things as hobbies and interests outside of Chemeketa as well as family interests and school topics.

Imagine that others will not have a description of this person. At final exam time, will we recognize the person from your description?

**INTRO of <name of person interviewed>**

**CHAT DIRECTIONS** (*Learning Community Project =10%*):

Chats or class discussions will use the questions at the end of the packets as guidelines. *Talk* about the questions.

**Note:** Everyone need not answer all the questions. However, all the questions need to be addressed by the end of the chat. If everyone contributes just a little, then we will all benefit from the group's insight. Bonus points will be given to the initiator of the discussion. After the chat has started, others may just respond (reply) to what is being said. 2¢ worth is fine.

Just as in a regular class, everyone is expected to participate. Only now on the board, you don't have to "wait" your turn!

**CRISIS/RESOLUTION CHAT**

**Crisis Chat**

**Editing groups (*Learning Community Project =10%*):**

Use your group to bounce ideas, e.g. "I want to define love..." Let the group help in the pre-writing as well as the writing stage. Send your draft to your editing group. It is your responsibility to help them with their homework and vice versa. If editing groups will be reassigned for each essay. This way you will meet more students in the class and have the opportunity to share expertise. If the group feels it needs help, please send me an alert message.

The group itself must decide on its own protocol, i.e. how to correct each others papers, i.e. comments at the end, \* \* around pieces that need help, etc.

*Use the following naming protocol to help us keep track of which draft is which.*

**Headers on all papers**

All papers should have a header with your name, Wr. 121, date, and title of paper. This way if there is any discrepancy in the file name, there is still a reference on the paper. Although this is the usual procedure in paper copy of essays, somehow in online copy, the header is often forgotten.

**ILLUSTRATION**

If you get several drafts going, please number them in the subject line: draft 1, draft 2, etc. Your final copy that you send to me for a grade, should be labeled with your initials **Illus draft**  
**Illus.ltm**

If you attach a file you **must** make you initials part of the file name, e.g. Illus.ltm means Illustration paper by Lucy Tribble MacDonald. Otherwise, once the paper is downloaded and detached from the message, I have no way of knowing whose paper it is, if the header is missing. Also, if two people use the same file name, the last file overwrites the first one in the download process and I lose the first file. **Illus.ltm**

**DEFINITION**

Attached file should read..... **Def Chat**  
**Def Draft**  
**Def Final**  
**Def.ltm**

**COMPARISON/CONTRAST**

Attached file should read..... **CC Chat**  
**CC draft**  
**CC final**  
**CC.ltm**

**ANAYLYSIS**

Attached file should read..... **Anal chat**  
**Anal draft**  
**Anal final**  
**Anal.ltm**

## Wr. 121 - BBS MacDonald Reading Assignments

The assigned readings are from the text: Reinking, Hart, Von der Osten. *Strategies for Successful Writing*. 3rd ed. Englewood Cliffs, NY: Prentice-Hall, Inc. 1993 and from the packets for this class.

Topic	Readings	Pages
Chapter 1	Writing a First Look	3-10
Chapter 2	Planning and Drafting Your Paper	11-31
Chapter 3	Revising and Editing Your Paper • Peer Evaluation of Drafts	32-48 49-56
<i>Illustration</i>	Illustration Rambos of the Road : Questions 3,4,7  Illustration Packet Discussion questions on Crisis Resolution	91-94 400-402
<i>Definition</i>	Definition The Sweet Smell of Success ... Questions: 3 and 5  Definition Packet Discussion questions on fact, imagery, point of view	129-136 450-452
<i>Comparison / Contrast</i>	Comparison / Contrast  That Lean and Hungry Look: Question #3  Comparison/Contrast Packet Discussion Questions - Grandmothers	107-113 423-425
<i>Analysis</i>	Process Analysis The ABC's of CPR: Questions 2,4,5  Classification Undesirable Product Market Customers Questions: #1,2,3  Cause and Effect Why Students Drop Out of College Questions: #2,4 Analysis Packet	81-87 87-89 98-104 104-106 118-125 125-128