AN ABSTRACT OF THE DISSERTATION OF

Marlene G. Cvetko for the degree of Doctor of Education in Education presented on October 15, 2001. Title: Case Study of the Student-to-Student Interactions in an Online Course Offered by a Community College, and How the Interactions Impact Learning Community.

Redacted for Privacy

ABSTRACT APPROVED: _____

Sam Stern

This study was conducted to investigate the student-to-student interactions that take place in an online community college course, and how the interactions impact an online learning community.

The literature review revealed three related themes: (a) the impact of the teaching/learning environment on student interaction, (b) barriers in the online environment, and (c) peer collaboration in the online environment.

The case was selected using four selection criteria: (a) the class was offered completely online (b) the instructor was experienced teaching online classes, (c) computer technology was not the primary content of the course, and (d) the level of interaction was sufficient to investigate student interaction.

Data were collected from public transcripts including bulletin board forum postings, email, group papers, and interviews. Six of the 16 students enrolled in the class and the instructor were interviewed.

In this case, the environment impacted the way students interacted, collaborated, and socialized with peers. It changed the way participants existed within the learning community and impacted how students interpreted meaning and perceived time.

The study generated findings with implications for community college instructors and participants of online learning communities. The online environment may impact: (1) how conflict is handled, (2) the quality of discussion among peers, (3) student involvement with peers, (4) the formation of cohesive groups, (5) a student's ability to interpret the meaning of comments made by others, (6) a student's expectations of the time needed to complete tasks and respond to others, and (7) the ability to design a flexible structure that encourages students to explore outside their comfort zone. Additional research is warranted. It is recommended that future studies be conducted to investigate how conflict, time, and collaboration impact an online learning community.

Case Study of the Student-to-Student Interactions in an Online Course Offered by a Community College, and How the Interactions Impact Learning Community

by
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DISSERTATION

submitted to

Oregon State University

in partial fulfillment
of the requirements for the
degree of

Doctor of Education

Presented October 15, 2001
Commencement June 2002

Doctor of Education dissertation of Marlene G. Cvetko presented on October 15, 2001

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I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Marlene G. Cvetko, Author

Acknowledgments

This project is dedicated to my mother, Wilma, who never went to high school, and my father, Everett who never graduated. Their dream was to see their children get the education they never had the opportunity to receive - here's to you Mom and Dad.

I would like to recognize a number of special people for their contributions to the completion of this dissertation. First and foremost, my major professor, Dr. Sam Stern. His wisdom, insights, and gentle nudging guided me through this process. It is because of his mentoring and leadership that I managed to complete this research project. It has been my profound privilege and pleasure to work with him and learn from him.

I want to acknowledge the other members of my dissertation committee: Dr. Daniel Dunham, Dr. Ilene Kleinsorge, Dr. Linda Gerber, and Dr. Diane Walton. Their insights and suggestions enriched my understanding of learning community. I want to give a special thanks to Dr. Linda Gerber who coached and mentored me through the revision process.

Many thanks to the faculty of the Community College Leadership Program, the members of my cohort, and the staff and faculty at PCC who supported me.

I want to thank the participants of this study. Without exception, their candor and the generous sharing of their experiences and perceptions this study

would not have been possible. They have filled my journey with rich and rewarding memories.

A heart felt thanks to my sister, Marcia for her suggestions and comments. Finally, much love to my husband, Mark and my son, Matt, who held down the fort during the many months I spent working on this project. Without their encouragement and support I couldn't have finished.

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CHAPTER 1 – INTRODUCTION

Learning communities have existed for centuries in one form or another, bringing faculty and students together to discuss classical literature and increasing the intellectual interaction between learners (Kellogg, 1999). It is only recently that the concept of learning community has expanded beyond the finite walls of the traditional institution into the virtual environment of online learning communities. As the Internet and the World Wide Web have become more integrated with the traditional environment, there has been a call for rapid changes in the way education is delivered. The Web-Based Education Commission to the President and the Congress of the United States believe that the pace of educational research and change is too slow and cumbersome for the faster paced and rapidly changing online learning environment. They suggest that education, "will squander a momentous opportunity" (U.S. Department of Education, 2000, p. 20) if classrooms are not connected at a faster pace than in the past. The speed with which the Internet and the World Wide Web are being incorporated into distance education programs and traditional classrooms is prompting changes in

educational delivery methods. This demands that leadership make "informed decisions to ensure that new technologies will enhance, and not frustrate, learning" (U.S. Department of Education, 2000, p. 9). While there are a number of ways to build networks and communities both traditionally and face, technology is changing our lives in every way (Shaffer & Anundsen, 1993; Turkle, 1995). These changes accent the point Shaffer and Anundsen (1993) were making when they wrote:

> Despite the many similarities between networks and traditional communities, it would be a dangerous mistake to assume that the two behave in exactly the same way. Computer communities, in fact, have given rise to so many new communication issues and problems that it is a constant challenge to come up with solutions. (p. 139-40)

Computer, online, or virtual, communities have been described as "cultural aggregations that emerge when enough people bump into each other often enough in cyberspace" (Rheingold, 1992, p. 1). These aggregate communities are voluntary and loosely connected, forming and dismantling as interests rise and wane; over time they become strong communities where persons with common interests come together to share information (Rheingold, 1992). However, creating a virtual learning community is much more complicated than people bumping into each other in cyberspace (Shaffer & Anundsen, 1993; Palloff & Pratt, 1999). Learning is a purposeful and deliberate activity that requires structure, planning, and an understanding of

communication within the context of the learning environment (Laurillard, 1993; Palloff & Pratt, 1999).

Learning community has been defined as a small group of students and faculty that link together for the common purpose of integrating "diverse curricular and co-curricular experiences" (Kellogg, 1999). The purpose of the learning community is to promote coherence and increase a common sense of purpose so that students benefit from an increased motivation to learn. Learners are motivated through empowerment over their learning. They are encouraged to create a stimulating environment of intellectual development (Kellogg, 1999). It is believed that by empowering students to take responsibility for their own learning, a community will form. Community emerges when a group of people "share common practices, are interdependent, make decisions jointly, identify themselves with something larger than the sum of their individual relationships, and make a long term commitment to the well being" (Palloff & Pratt, 1999, p. 25-26) of everyone in the group including themselves. As learners struggle to create meaning form new information, they become more dependent on each other for support. This dependence on one another increases in the online environment and adds to their struggle (Palloff & Pratt, 1999). To be a true learning community there must be, "an increased sense of knowing one another through the shared experiences of

struggling with course material and the medium together...through conflict and through learning to learn in a new way" (Palloff & Pratt, 1999, p. 35).

Within the learning community, an increased level of interaction promotes active participation, collaboration, and a sense of group identity. This involves an exchange of ideas that entails both giving and receiving within a community of practice. This provides students with a, "deeper understanding and integration of the materials they are learning, and more interaction with one another and their teachers as fellow participants in the learning enterprise" (Gabelnick, MacGregor, Matthews, & Smith, 1990, p. 19). Students work collaboratively in teams to actively create knowledge and meaning for team members (Palloff & Pratt, 1999). This kind of environment will not just happen; it will take careful planning (Palloff & Pratt, 1999). Environmental structures must be intentionally designed so that students gain a deeper understanding of the academic materials presented in the course through collaboration, teamwork, shared goals, and increased interaction. However, community building is much more than the frequency and duration of exchanges or the content of interaction. "Community is a dynamic whole that emerges," (Shaffer & Anundsen, 1993, p. 10) through commitment, conflict resolution, trust, honesty, compassion, and respect. The are the same

elements that are needed to build vibrant, collaborative learning communities online (Pratt & Pratt, 1999).

The Online Classroom

In an online classroom, "*attention needs to be paid to the developing sense of community within the group of participants in order for the process of learning to be successful*" (Palloff & Pratt, 1999, p 29, italics in original). Palloff & Pratt (1999) argue that any learning that happens in online courses is dependent on peer interaction (Palloff & Pratt 1999). Without interaction there is no learning community, and without learning community, "there is no online course" (Palloff & Pratt, 1999, p. 29). At the same time, the online learning environment has created new barriers that deprive learners of intimacy and connectedness. This leaves many learners with feelings of frustration and isolation because common social cues are reduced in importance or removed altogether (Hara & Kling, 1999; Hara & Kling, 2000; Sproull & Keisler, 1986; Thiagarajan, 1978). The removal of social clues has been dubbed the "great equalizer" (Palloff & Pratt, 1999). However, evidence suggests that without making peer interaction a required component of the learning process the majority of students will not interact (Hiltz, 1997). By requiring students to interact online, more students participate. The 'equalizing' occurs when the number of interactions per student are counted. The more important questions

about the quality of dialogue in distance classrooms and the impact student interactions have on learning community have not been answered. Research suggests that there is a lack of dialogue among distance learning students, which impacts "the quality and integrity of the educational process" (Sherry, 1996, p. 5). Simply creating a virtual classroom and asking to students to read and discuss posted materials does not automatically create a learning community (Hiltz, 1997).

The Purpose of the Study

The purpose of the case study is to investigate the student-to-student interactions in an online community college course, and how the interactions impact an online learning community.

Assumptions

This study is based on the following assumptions:

- Community college students will continue to demand access to online instruction and support services through an expanding web-based network.
- Interaction within the learning environment is necessary and important for learning.

- Online learning communities form as learners share resources, provide support and encouragement, and collaborate within the online classroom environment.
- Evidence of learning will be apparent in electronic communication among students as learners interact with content, with their instructor, and with each other.

Context of the Study

The class, MSD 115, *Improving Working Relations,* was part of the Management and Supervisory Development series offered at Portland Community College (PCC). The study took place throughout Fall Term 2000 - September 25, 2000 to December 15, 2000. WebCT was the authoring software interface. The interface provided learners access to a number of online services through graphic user interfaces (GUI), commonly called icons. Students accessed instructor contact information, procedural information, course expectations, course syllabus, course content, course calendar, instructional materials, and assignments. Public and private bulletin board forums, email, and online chats were used to communicate. Course materials were primarily text-based, with limited use of multimedia. Books and other course materials could be ordered online or purchased at the campus bookstore.

Significance of the Study

PCC began offering online, web-based courses in 1995. Since then, the number of students enrolled in online classes, and the number of online course offerings has increased each year. In 1997-98, 62 different courses were offered, with a total enrollment of 1251. In 1998-99, the total number of course offerings had increased to 209, with a total enrollment of 3606. During the 1999-2000 academic year, enrollments in campus-based courses in the Business and Government Division fell by about 5%, while online enrollment increased by a staggering 67% during the same period (Portland Community College, 2000a). The trends in other divisions, although not as pronounced, are in the same direction. Nationally the number of different course offerings has doubled between 1994 and 1998 (Lewis, Snow, & Farris, 2000). It appears that this trend will continue, and more students will register for online classes.

The National Center for Education Statistics (Lewis et al., 1999) estimated that nationwide distance education enrollment was 1,661,000 in 1997-98; of this, 1,363,670 (82%) was at 2-year colleges, mostly at the undergraduate level (p. 15). Professional/graduate programs enrolled 281,300 (17%) (Lewis et al., 1999, p. 15). The Web-Based Education Commission to the President and the Congress of the United States predicts that 15% of student enrollments will be in distance classes via the Internet by 2002, up

from five percent in 1998 (U.S. Department of Education, 2000, p. 24). The report estimated that 58% of all postsecondary students had a computer, but that only 39.6% of public community college students had computers (U.S. Department of Education, 2000, p. 44). They described this finding as "particularly troubling" (U.S. Department of Education, 2000, p. 44) because minorities attend 2-year institutions in greater numbers. This suggests that the gap in educational opportunity may be increasing for some populations. Despite reports that estimate that 82% of the students enrolled in distance learning classes are attending to 2-year colleges, the majority of distance education studies have targeted 4-year university professional or graduate level classes (U.S. Department of Education, 2000). Further, many of the studies have focused on courses offered to students with some level of technical experience (Bates, 1996; Cheng, Lehman, & Armstrong, 1991; Palloff & Pratt, 1999; Schrum, 1998). These conditions may tend to skew the findings. This has left a gap in the research about online interaction and learning communities, particularly at the community college level.

PCC online enrollment is expected to exceed 20,000 within the next few years according to Dan Moriarty, President (Personal Communication, September 20, 1999). The PCC Distance Learning Strategic Plan outlines its vision and goals for 2000-2003. The plan calls for continued expansion of

online classes. It outlines goals to begin offering three to five new programs totally online by 2003 (John Sneed, Personal Communication, October 31, 2000). These programs are likely to have no campus-based options for students.

Currently, PCC has two servers to support online courses through Distance Learning. One of the servers is for courses offered completely online; the other is for campus-based courses that offer online components that compliment or supplement face-to-face instruction. Additionally, Cascade Campus, which offers 56% of the online class sections, has four servers that are supported through the Business and Government Division. Courses are approved through the Subject Area Curriculum Committee (SACC). Once the course is approved, an instructor is found. The instructor works with a technology design team to get the course online. The instructional team primarily offers technical assistance. It is the instructor's responsibility to provide lessons, materials, and presentations for the class. Informal conversations and meetings with faculty and staff at PCC suggest that there is a general lack of knowledge concerning the nature of the online communications, and how communications facilitate learning in web-based classes. Concerns have been expressed about how non-traditional students and

non-native speakers of English fare in online classes. Additionally, there are concerns about the lower retention and success rates of online students.

PCC Institutional Research records of enrollment by course number for all campuses report that dropout rates in distance education courses are higher overall than campus-based courses. This has been cause for concern because of the dramatic increase in enrollments in online classes. Just over 12% of the students who enroll in online classes withdrew early; this is approximately three percent higher than campus-based classes. Another six percent of the students who take online classes, drop out, which is twice the rate of campus-based classes. The success rates for those who complete online classes is 71.1%, slightly lower than for campus-based classes at 73.2% (Portland Community College, 2000b). There has been no formal investigation conducted by the college to determine why dropout rates are higher or why the success rates are lower in online classes. Only online voluntary surveys have been done. According to the Spring 1999 Web Course Survey Results, 39% of the students taking web classes had no interaction with peers, 32% had online discussions with peers, and 25% used private email to contact their instructor. When asked how valuable online discussion was to their learning, 34 % responded that it was never offered as an option. Because the number of students enrolling in online classes at PCC is increasing, and the impact of the

environment on peer interaction and learning is not well known, it is critical that educators have a better understanding of the peer interactions in online classes.

Interactivity and Interaction

In the debates about distance learning, very few topics have generated as much fervor as the tension between interaction and interactivity. Interactivity has often been given a "universal endorsement" (Baker, Harvell, & Yuan, 1997, p. 2) and "is seen as an indication that students are participating in learning" (Baker, Harvell, & Yuan, 1997, p. 2). Much of the confusion results because the terms are used interchangeably. But, these are two very different concepts. Interactivity requires no human contact, no exchange of ideas; interaction is dependent on them. Interaction involves an exchange of ideas among humans that technology can readily facilitate. It is a dynamic exchange of ideas and a complicated communicative process, "which entails a multitude of systems interacting on different levels" (Palloff & Pratt, 1999, p. 1).

Interactivity involves the way humans interact with technology. Gilbert and Moore (1998) provide an operational definition of interactivity as a learner adaptation to information provided by technology, and a technological adaptation by the computer to the learner. It is the action within a specific

technologic environment that offers unique opportunities for users.to connect with information resources and instructional experiences on his or her own terms (Wagner, 1997). Microsoft founder and former CEO Bill Gates (1996) boasts, "Today's personal computers offer interaction. Ask a question, get an answer" (p. 37). The 'interaction' is entirely with the machine. There is, in this scenario, no need for human interaction.

In the learning environment, interactivity happens when the learners actively participate in highly sequenced instruction, primarily with machines (Livengood, 1987) with little human interaction. Sequenced instruction is controlled within the machine environment providing options for learners to explore (Livengood, 1987). Within in this sequenced environment there is a perception that learners are actively engaged because they are allowed to make choices. However, like the interactivity described by Gilbert and Moore (1998), learners remain subjected to the control and limitation of the machine environment. Learners are only allowed choices within the structure of the environment, not outside the environment (Gilbert & Moore, 1998). In this scenario learners are passive because the machine that controls the interaction.

Research and literature about the new technologies has not clearly separated computer-mediated instruction and learning from online instruction and learning, making the research and subsequent findings more difficult to

interpret. For the purpose of this study the researcher is defining computer-mediated instruction and learning as that instruction and learning that takes place in a place bound class utilizing computer and/or web-based technologies as part of the instructional and learning process. Online instruction and learning are defined as classes offered wholly in a web-based online environment.

The Paradox of Technology

Technology has created a paradox. It has been called "a social technology that reduces social involvement" (Kraut, Lundmark, Petterson, Keisler, Mukopadhyay, & Scherlis, 2000). However, research has consistently demonstrated that learners desperately need to establish a feeling of belonging and this need drives them to form communities "for validating their own experiences and for overcoming isolation" (Haythornthwaite, Kazmer, & Robins, 2000 p. 8). These researchers might agree with Shaffer and Anundsen (1993) that community is a system of interdependence which, "if it isolates itself from the human and natural systems of which it is a part, both the individuals and the group become weaker" (p. 12). Successful distance education students "perceive a community" (Haythornthwaite et al., 2000, p. 2) of support that develops early in a student's program. Haythornthwaite et al. (2000) concluded that the need to support diminishes as the student gets more

comfortable with the online environment. If this is true, it appears to be very different than traditional educational environment where socialization becomes an important element of the learning process and a predictor of persistence and academic success. (Tinto, 1993) When the finding of diminished support is coupled with lower retention and success rates, it takes on a new perspective.

High Cost and High Expectation

The United States Department of Education (2000) estimates that investments in online education were $3.6-billion dollars in 1999, and they are expected to top $25-billion by 2003. Venture capital in 1999 was over $3-billion dollars, more than triple the investment made between 1990 and 1998. Using a broader scope that includes costs for infrastructure and support, it has been estimated that investments in online instruction topped $670 billion dollars in the United States in the year 2000 (Green, 1999). The differences in these estimates emphasize how difficult it is to determine how just how much financial investment in technology is being made at the federal, state, and local levels. It is clear, however, that huge investments are being made and that with those huge investments come high expectations (Green, 1999), of decreased costs (Thompson, 1998), improved access (U.S. Department of Education, 2000), and enriched learning environments (U.S. Department of Education, 2000). Much of the drive to implement computer-mediated instruction is

fueled by the prospect of reducing costs, increasing student populations (Palloff & Pratt, 1999) and meeting the demand for a workforce with advanced technological skills (U.S. Department of Education, 2000).

A.W. Bates (1996), at the Queensland Open Learning Network Conference noted, "those of us who are investing in and developing technology-based distance learning programs are taking a leap of faith" (p. 4). The World Wide Web and the Internet are rapidly changing the exceptions of the learning community and its ability to support enriched learning environments. At the same time, higher education is facing criticism of traditional classroom instruction (Hara & Kling, 1999). Institutions have had precious little time to understand the formation of virtual learning communities, or how they impact learning. Existing research has not sufficiently focused on the context of online instruction or the educational methods used in the online learning community (Holt, Kleiber, Swenson, Reese, & Milton, 1998).

> Computer-mediated courses and programs have been appearing so rapidly that little thought seems to have been given to the possible impact of the delivery method-either educationally or socially. Nor has much thought been given to the need to modify the educational approach; traditional teaching methods are being attempted in a nontraditional environment. (Palloff & Pratt, 1999, p. 4)

The online medium is sufficiently different from other forms of distance education to warrant further investigation in order to determine the impact of this new form of delivery on socialization (Aoki & Goto, 1995; Hara & Kling, 1999; Harasim, 1987; Hiltz, 1994; Johnson, 1997; Palloff & Pratt, 1999; Rajani & Rosenberg, 1999). Vincent Tinto (1993) wrote that norms learned within the context of local communities are a socialization process that should be preparing students for entry into a larger community. It is only through understanding the online learning community environment in context that educators will better understand how the interactions impact that transition.

What is Lost and What is Gained?

In distance education, the individual learner is separated from the instructor and other students. When this happens, there are things gained and things lost. Robert Campbell (1998) believes that the "student's ability to write serious, thought-provoking research papers has dramatically declined" (p. 27) in online classes. He charges that reliance on electronic communication damages a student's ability to communicate effectively, and that online communication leads to a "hypermind" (Campbell, 1998, p. 24) characterized by poor communication and thinking skills because it, "places emphasis on quantity over quality" (Campbell, 1998, p. 27). Although online

communications may be more frequent, students tend to make their communications shorter. They tend to abbreviate with "net" spelling, and use mechanics that fail to reflect good writing (Griffin & Anderton-Lewis, 1998). Online communication may actually provide students with an excuse to avoid studying the rules of grammar and spelling that have traditionally been an important indictor of an educated person.

The nature of text-based communication makes online interaction less social and more pointed. Students tend to work in isolation with materials that are placed online (Campbell, 1998). This isolation makes students particularly vulnerable to the "just do the task" (Beaudoin, 1990) syndrome; they have a tendency to study only what is required in the syllabus. Beaudoin (1990) concluded that learners working in isolation with printed instructional materials are particularly vulnerable to the syllabism. "The outcome [of syllabism] may be a series of assignments that satisfy course requirements, but which have resulted in very little actual learning" (Beaudoin, 1990, p. 26).

Changing delivery locations forces educators to rethink "what we take for granted" (Walker, 1993, p. 25) about traditional classrooms and instruction. It is not where the instruction occurred or whether it was mediated; it is rather the relationship between students and learning that is critical. The online environment makes it more difficult to meet the learning needs of other types

of learners. Because of the strong text-based nature of online communication, students who type slowly, or spell or read poorly are at a distinct disadvantage. The text-based nature of online communications favors visual and auditory learning styles, which are the same learning styles supported in traditional learning environments (Eastmond & Granger, 1997). However, unlike face-to-face environment where the instructor has the ability to modify the environment to meet individual learning styles, the online environment is limited to the tools of the technology. These criticisms suggest that online learning environments may not be well suited for adaptation to the needs of some learners.

Advocates claim that online learning and communication technologies are causing a paradigm shift unlike any previously seen in education, and that this shift promises "greater learning effectiveness, more learner centred *(spelling is retained as it appears in original)* approaches, and better quality of interaction" (Bates, 1996, p. 2). However, to date, research on computer-mediated instruction has failed to clearly demonstrate that the communications and interactions (whether with bots or other people) that take place in an online course contribute to learning in any meaningful way (Merisotis & Phipps, 1999; Thompson, 1998). The problem for students becomes one of social and environmental context and the learner's reconstruction of what is 'real' within

that context (Walker, 1993). Online environments create a more de-centered social identity which will have a dramatic impact on how people understand themselves and each other (Turkle, 1995). Further, many of the online environments are filled with "bots" (Rheingold, 1992; Turkle, 1995). As more of these bots are created, it is likely that people in online learning communities will be interacting with a programmed computer rather than a real person. This interactivity with machines and bots has created a shift in thinking about context which may have unintended consequences on learning communities.

The shift has resulted in an emphasis on technology and structure. This emphasis on technical structure ignores the socio-culture context that encourages divergent thinking because decision making is directed toward the machine. The impact of technology on the socio-cultural context and interactions between different cultures is often ignored (Moore & Thompson, 1997). By ignoring diversity issues, some groups will not build effective learning communities. This impedes social interaction, a sense of presence, and a sense of group - all critical elements that cannot be ignored when building an effective learner-centered class (Boggs, 1993; Palloff & Pratt, 1999). Researchers like Frances, Pumerantz, and Caplan (1999) have found evidence that subjective differences on the "human factor" (p. 33) raised unanswered questions about the impact interaction has on learning in an online

course. The transformation of teaching and learning as a process from one that is teacher-centered to one that is learner-centered whether in the classroom or online "will not be focused on better methods of teaching, but on better methods to promote and support learning" (Boggs, 1993, p. 2).

Studies focusing on the nature of online learning communities will advance our understanding of the influence technology has on learning environment, and its relationship and value to learning community (Holt et al., 1998). As community colleges continue to expand course offerings through this medium, educators need to do research to help inform the practice about how online communications and interactions facilitate the learning process. This case study will contribute to the existing body of knowledge about online interaction and online learning communities. The following questions will guide the design and scope of the study:

- What is the nature of the student-to-student interactions that take place in an online learning community?
- How do the student-to-student interactions impact learning?
- What impact do the student-to-student interactions have on the formation of an online learning community?

Limitations of the Study

This study investigated the student interactions in the context of a learning community in one online course at a community college, and how peer interactions impact learning. A limitation of this study was the small size of the sample, which limits the generalizability of the findings to a larger population. Nevertheless, much was learned that will add to the body of knowledge pertaining to online instruction and learning at the community college from the examination of experiences of the students who participated in the online class. Much of the research in distance education and distributed learning has focused on older technologies that have dominated distance education to date. Conversely, the technologies that were reviewed in this case are still evolving. This potentially constrained the study to the context in which it emerged, limiting the generalizability of the findings beyond the scope of this case. However, these limitations are intrinsic to any study of evolving contexts; and the themes, issues and concepts that emerged will add to the very limited knowledge we have about how electronic communication and interaction impact the online learning community.

Definition of Terms

Asynchronous – Computer-mediated communication - any exchange of messages or information through electronic media allowing student to post at any time (Palloff & Pratt, 1999, p. 4).

Bot – A software application that responds to questions using key words to simulate human speech patterns (Turkle, 1995).

Cyberspace – A conceptual space where words and human relationships, data and wealth and power are manifested by people using computer-mediated technology (Palloff & Pratt, 1999, p. 21).

Distance Education – All education where the teacher and student are separated geographically the majority of the instructional time (Palloff & Pratt, 1999, p. 16).

Flaming – "Sending insulting email" (Capron, 2000, p. 550) or "a rash of anger" (Shaffer & Anundsen, 1993, p 141). Uninhibited and/or inflammatory remarks found in computer-mediated groups (Siegel, Dubrovsky, Keisler, & McGuire, 1986).

Hyperlink – A line of text, an image or and icon that can be clicked to access another web page on the Internet.

Definition of Terms continued

Hypermedia – Audio-visual media that is connected through links over the Internet. These media can be simulations, music, photographs, or other media that is not text.

Hypermind – A state of mind emphasizing quantity of information over quality of dialogue, characterized by impatience, poor communication, and lack of critical analyses.

Lurking – A person who observes virtual interaction without revealing his presence to others.

Self directed learning – "The concept of self directed learning implies empowerment of learners through lessened dependency on teacher direction" (Beaudoin, 1990, p. 24).

Syllabism – The tendency for students to focus study only on what is found in the syllabus rather than pursuing new ideas (Beaudoin, 1990, p. 26).

Synchronous – An exchange of messages or information through electronic media done in real time.

Acronyms

GUI – Graphical user interface, an icon.

MUD – Multi-user domains are user groups that create personas and virtual environments to create worlds of fantasy and illusion.

JPEG – Joint Photographic Experts Group, a commonly used format for photographs posted on the Internet.

Emoticons

;-) – Wink

:-) – Smile

LOL – Laugh out loud

CHAPTER 2 – REVIEW OF THE LITERATURE

Technology and the movement toward an information society are placing increasing pressures on educational institutions to change the way they deliver instruction. The Internet is viewed as a way of accelerating this change (Batson & Bass, 1996). The way in which educational institutions choose to use Internet technology to transform service delivery "will shape the future of higher education" (Brand, 1995, p. 39). Pressure continues to push colleges to transform themselves. Distance education has re-emerged with new online delivery models in this push. Online delivery models are promoted as the means to "remove the constraints that prevent institutions from responding" (Duderstadt, 1999, p.1) to the barriers of distance and time (Cahoon, 1998; Harasim, 1987; Palloff &Pratt 1999). These models are having a dramatic affect on the learning environment and the way educators facilitate student learning in an online classroom. As the push to change continues, new barriers to intimacy, continuity, and community will emerge, and online instructors and designers must pay particular attention to provide an educational environment that creates connectedness and builds community (Brod, 1984).

Barriers

A number of barriers in the online learning environment impact student behavior:

- Bonding (Feenberg, 1987; Kraut et al., 2000)
- Visual cueing (Aoki & Goto, 1995; Kiesler et al., 1984; Lea & Spears, 1991; Rice & Love, 1987; Rice-Lively, 1994; Sproull & Keisler, 1986)
- Anonymity (Collins, 1998; D'Souza, 1991; Griffin & Anderton-Lewis, 1998)
- Conflict (Herrmann, 1998; Lea & Spears, 1991; Siegel, Dubrovsky, Keisler, & McGuire, 1986)
- Frustration (Boston, 1992; Gunawardena, 1994; Hara & Kling, 1999; Hara & Kling, 2000)
- Isolation (Pugliese, 1994)
- Loneliness (Hara & Kling, 1999; Hara & Kling, 2000; Pugliese, 1994; Thiagarajan, 1978; Thiagarajan, 1998).

The barriers imposed by distance increased the likelihood that students will experience difficulty bonding with others in the class (Feenberg, 1987; Kraut et al., 2000). Past studies found that students began to doubt that a learning community existed because they felt isolated (Pugliese, 1994) and

frustrated (Hara & Kling, 1999; Hara & Kling, 2000; Pugliese, 1994; Thiagarajan, 1978). Learners complained that they missed the reinforcement from instructors and the "misery-sharing" of their peers when participating in telecourses (Thiagarajan, 1978). Students "were lonely, lacking interpersonal skill, apprehensive about face-to-face communication, and resigned to their fate" (Pugliese, 1994, p. 34). The inability to physically see the instructor and peers increased their anxiety because it failed to provide students with social cueing about behavioral expectations which made them more unsure of themselves (Boston, 1992; Gunawardena, 1994; Hara & Kling, 1999; Hara & Kling, 2000). Some learners used the distance learning environment to create "mischief-major and minor" (Hiltz, 1994, p. 134), sending offensive and objectionable messages.

Even a limited numbers of face-to-face encounters strengthens the learning community because meetings provide students with social and visual cues they need to create an image of their class mates (Keisler et al., 1984; Palloff & Pratt, 1999; Rice-Lively, 1994; Sproull & Keisler, 1986). The majority of networked communities are "face-to-face communities that continually negotiate with, communicate with, and coordinate with each other directly in the course of work" (Brown & Duguid, 2000, p. 143). Electronic communication supports this face-to-face communication. With this in mind,

some distance researchers (Hara & Kling, 2000; Harasim, 1986, Palloff & Pratt, 1999) suggest that face-to-face meetings in electronic communities are very important for increasing user interest and confidence, and strengthening the learning community. Face-to-face meetings "may have significantly contributed to the very active participation of users....It also contributed to creating a group dynamic and sense of connectivity on-line" (Harasim, 1986, p. 64). The meetings helped learners resolve ambiguity and decreased the level of anxiety felt by students (Hara & Kling, 2000; Palloff & Pratt, 2000).

Students at University of Illinois at Urbana-Champaign were required to attend a two-week campus boot camp before beginning the university's distance education program (Carnevale, 2000b). During their two-week stay on campus, a power outage left the distance education students in the dark. The experience helped students develop bonds that remained with them as they began their online courses. Because of the experience, students felt connected to others they had met on campus (Carnevale, 2000b). Open University, Phoenix University, and Fielding Institute all require that students meet periodically in face-to-face groups. These face-to-face meetings provide opportunities for students to bond and create the social connections they need to form strong learning communities. When face-to-face meetings are difficult

or impossible due to proximity, Palloff and Pratt suggest using photographs to help establish a sense of social presence.

Distance and Dropout Rates

Distance education literature has not clearly associated barriers of distance with higher dropout rates that are typically seen in distance classes despite evidence to suggest that loneliness, communication competence, and locus of control have been found to be predictors of persistence in community college telecourses (Pugliese, 1994). Research indicates that without the social contact drop out rates increase (Hiltz, 1990; Holt et al., 1998; Tinto, 1993); yet, some distance researchers predict that new technologies will overcome these constraints (Palloff & Pratt, 1999). However, Hilary McLellan (1998) notes that "eliminating the constraints of distance is only one consideration. The key issues we face in cyberspace are community, communication and collaboration" (McLellan, 1998, p. 59).

Community

Part of the college educational experience has been built on a strong sense of connection, inclusion, and social community (Tinto, 1993). Shaffer and Anundsen (1993) define social community as a dynamic process that fulfills our sense of belonging, kinship, and connection to a greater whole. It is

a conscious community with goals, ethics, liabilities, and communication styles established and agreed upon by the members of the group.

A learning community develops through the cooperative efforts of those within the environment by allowing members to achieve shared, meaningful goals (Palloff & Pratt, 1999). "When understood as socially situated, learning can be described as a process of becoming part of a community of practice" (Wegerif, 1998, p. 1). The learning community becomes a caring and supportive environment that is highly social and personal (Cahoon, 1998; Hiltz, 1990; Johnson, 1981; Johnson, Johnson, & Holubec, 1994; Palloff & Pratt, 1999). However, in the online classroom, elements of the environment change, which dramatically changes the way students interact with each other. This, in turn, changes the way a learning community forms (Palloff & Pratt, 1999; Spitzer, 1998). Communities develop in their own unique way, taking on a form and ambiance that are as different from one another as they are from physical communities (Palloff & Pratt, 1999; Shaffer & Anundsen, 1993), and they take on a personality very different from the traditional classroom (Palloff & Pratt, 1999).

As members of the group establish and agree upon boundaries of the community, they gain citizenship within that community (Shaffer & Anundsen, 1993). Online learning environments go through the same community

building process (Palloff & Pratt, 1999). Students gain citizenship in the online community by agreeing to standards of behavior that support learning, inclusion, and respect for others in the class (Palloff & Pratt, 1999). "With citizenship in such a community comes an ethical code that includes rules about students being prepared for class each day, paying attention in class, being their personal best, and respecting other people and their property" (Johnson et al., 1994, p. 105). Through collaboration, students develop mutually agreed upon standards. It is through these collaboratively negotiated guidelines for group behavior, communication, and interaction, that students will embrace the concept of community (Palloff & Pratt, 1999; Shaffer & Anundsen, 1993).

Communication

Group communication has been hailed as a way to achieve group outcomes and build online learning communities. However, it has been reported that the more students communicated electronically, "the less effective the group outcome tended to be" (Kuehn, 1994, p. 175). Group members created a set of mutually negotiated guidelines that were, "less bound by precedents set by societal norms" (Keisler, Seigel, & McGuire, 1894. p. 1130). Groups created a more extreme set of norms that resulted in more polarization and choice shift within the group decision making process.

Individual members become frustrated when the extreme norms created by the group resulted in a medium that was inefficient. This inefficiency lead to more anger and more uninhibited and extreme decision making within the group (Keisler et al., 1984). The less restrictive norms made messages more confusing, more impersonal, and led to more of a unpredictable style (Keisler et al., 1984). Decision-making and consensus took longer. Fewer interactions occurred within the group when time limits were imposed, and there was a lack of coordination in communication (Keisler et al., 1984).

The majority of students did not believe that communications with peers impacted their learning (Hiltz, 1990). They resisted "an instructional design which calls for them to work with others in a cooperative or collaborative manner" (p. 133) and "were impatient about reading material contributed by their peers" (Hiltz, 1994, p. 133). When providing feedback to peers, students were reluctant to offer any kind of criticism about each other's work. Students showed "little interest in communication from other students" (Hiltz, 1994, p. 133) and would not communicate about the course content unless it was mandatory. "On only two or three occasions did anyone ask for a clarification of course content material" (Hiltz, 1994, p. 344). There was, however, considerable communication between student and instructor - most often about absences, and nonparticipation. In surveys, learners rated their

experiences with distance learning positive, even though they did not view communicating or working with peers as favorable (Hiltz, 1994).

Other studies have found very different patterns in distance education classes. Egan, Sebastian, and Welch's (1991) qualitative study investigated the perceptions of distance education students taking classes in rural Utah over the Utah Education Network. Participants met face-to-face in small groups and interacted directly with their instructors over a televised network at specified distance learning sites. An onsite facilitator provided guidance, conducted planned learning activities, clarified course assignments, answered content questions, led groups discussion, and provided timely feedback to students. In this environment, Egan et al. (1991) found that students perceived that group dynamics played a "significant role" (p. 10) in team learning. The learners indicated that the learning groups were supportive and contributed to their motivation. Group members provided each other with encouragement to finish the courses and feedback about assignments and projects.

Email Communication

Email is the most commonly used method of communication in distance education classes. This is particularly troubling when one considers that interaction using email is "weak"(Harasim, 1990, p. 42) and "collaboration among learning peers has not even been considered in the literature" (Harasim,

1990, p. 42). On a positive note, email has been found to increase the level of communication for some of the quieter students (D'Souza, 1991; King, 1994). Students with language difficulties interact more often (King, 1991) when using email. However, the level of interaction is determined by counting "hits". These hits have been viewed as the "defining attribute of a contemporary distance learning experience" (Wagner, 1997, p. 19). The increased numbers of hits have led researchers to conclude that email democratizes learning and provides more students with voice (Collins, 1998; D'Souza, 1991; King, 1994; Palloff & Pratt, 1999). These conclusions have been made despite findings that suggest that a few students tend to dominate discussions in much the same way that happens in face-to-face classes (D'Souza, 1991). No studies were found that investigated if students who tended to dominate email discussions might be the same students that would tend to dominate face-to-face discussions. Further, while email interaction may increase in number of "hits," the amount of dialogue that happens may actually decrease (Burge & Howard, 1990). Collins (1998) concluded that email increased the number of interactions among students, but that few messages were content-related. This brings up the question of "whether or not the use of these systems contributes to better student learning" (Collins, 1998,

p. 86). Collins (1998) warned that researchers must be cautious in the assumptions they make about how electronic messages impact learning.

The Impact of the Internet on Communication and Social Interaction

The Carnegie Mellon University (Kraut et al., 2000) did a case study of computer home usage for 169 people in 73 households. The study monitored Internet usage during the first 1-2 years each household was online and examined the impact Internet communications had on the social involvement and psychological well-being of each person. Researchers found that the "greater Internet usage was associated with declines in participants' communication with family members in the household, declines in the size of their social circles, and increases in their depression and loneliness" (Kraut et al., 2000, p. 1-2). Although their findings are restricted "to outcomes related to social behavior" (Kraut et al., 2000, p. 17) and not educational outcomes, the work of Tinto (1993) suggests that these social behaviors may be equally important for learning communities. There is evidence that the Internet is impacting the social communication and learning on some campuses. This has lead to social isolation, declining grades, increased depression, and loss of sleep (Reisberg, 2000). Some colleges are concerned that the "Internet has become a nuisance in many classrooms" (Mangan, 2001, p. A46) because students tune out the instructor and do not contribute to class discussions.

These concerns appear to support Andrew Feenberg and Beryl Bellman (1990) who found that lack of bonding in computer-mediated classes "contributes to low student performance" (p. 92).

David Johnson (1981) argues that social interaction among peers is not a "superficial luxury" (p. 5) that can be ignored. Peer relationships contribute to achievement and the "socialization of values, attitudes, and ways of perceiving the world" (Johnson, 1981, p 6). But as noted earlier in this discussion, establishing norms of behavior online poses some different challenges. Dean Spitzer (1998), Senior Performance Consultant, with IBM believes "that those involved in distance education grossly underestimate the difficulty" (p. 53), distance education poses for both the instructor and the learner. He insists that "distance learning necessitates radically new forms of communication" (Spitzer, 1998, p. 53). However, because developers of online instruction have forgotten the social needs of the learner, "very rarely is the design of a distance learning system learner-focused" (Spitzer, 1998, p. 54). Resulting limitations in design features make it more challenging to create and support a collaborative learning environment.

Collaborative Learning

Learning communities are dependent on the ability and willingness of learners to communicate and collaborate with others. Collaboration allows

participants to create patterns of engagement that encourage deliberation, require critical thinking, and provide increased opportunities to reflect on issues presented by the course materials (Holt et al., 1998; Johnson et al., 1994; Palloff & Pratt, 1999). As learners collaborate they become interdependent, make joint decisions, and build consensus (Johnson, 1981; Palloff & Pratt, 1999). This creates a noteworthy tension between interdependence and independence in the online environment. This tension makes collaboration more challenging and more time consuming. This is, in part, because of the tension between interdependent characteristics of collaborative learning and the independent nature of distance learning. As part of a learning community students are expected to work collaboratively toward consensus - or at least propose strong substantive arguments that support an opinion that differs from others in the learning community (Laurillard, 1993). On the other hand, the nature of distance learning is independence, self-reliance and self-directed learning; these tensions highlight the complexity of learning environments.

Classrooms are complex social systems, "made up of a network of interpersonal relationships structured to facilitate the achievement of educational goals" (Johnson, 1981, p. 5). Building interpersonal relationships requires two skill objectives: one academic, one social (Johnson, 1981). Without both academic and social skill objectives, no activity is wholly

collaborative (Johnson, 1981). Online communities may provide limited support for academic outcomes, but to date there is little evidence that supports the social skill outcomes that Johnson (1981) identified as part of the collaborative learning and community building process (Burge & Howard, 1990; Collins, 1998; Hiltz, 1990; Kember, 1991; Laurillard, 1993; Sugar & Bonk, 1995). Some believe that web forums will overcome this weakness.

Web forums are seen "as a powerful tool" (Holt et al., 1998, p. 44) which "offers an unprecedented environment for experimentation in collaborative learning" (Holt et al., 1998, p. 43) and consensus building through feedback and interaction among members of the group (Palloff & Pratt, 1999). However, collaboration and consensus building are more complex and difficult than the literature suggests (Burge, 1994; Holt et al., 1998). Learners tended to interact independently when using email or mailing lists as a form of communication (Hiltz, 1986; Holt et al. 1998). This resulted in a lack of coherence and order (Holt et al., 1998). Peer communications were disconnected and disorganized (Holt et al., 1998) making it more difficult to create a sense of presence, and impacting group collaboration (Burge, 1994; Holt et al., 1998). Feedback response delays were a noteworthy weakness (Burge, 1994; Holt et al., 1998). To cope with delays, students used "selected neglect" (Burge, 1994, p 33) and message filtering. Limited feedback and low

quality discussion within web forums made it unlikely that convincing arguments were presented in peer interactions (Burge & Howard, 1990; Hiltz, 1990; Holmberg, 1990; Laurillard, 1993; Marton & Saljo, 1976; Spitzer, 1998; Wagner, 1997). For example, Goodwin et al. (1993) found that while students perceived the quality of dialogue was high, they perceived the quality group discussion and feedback with his or her peers as low. These findings seem contradictory. However, researchers appear to be reluctant to openly criticize the impact distance has on the quality of peer interaction. It seems unlikely that the quality dialogue among peers will be high if the quality of discussion is low. To date, the data on web forums are unconvincing. Without high quality discussion and critically reflective feedback it is unlikely that strong arguments will be presented that will challenge learners to create new mental models (Laurillard, 1993).

Collaborative Learning and Mental Models

Collaborative learning environments increase the likelihood that students will construct new mental models as they engage in cooperative consensus building (Henderson & Milstein, 1996; Johnson, Johnson, and Holubec, 1994). Some researchers submit that the pedagogy behind hypermedia is constructivist because the learner creates "mental models that allow the learner to reason about problems, predict probable events, and

discover solutions" (Cahoon, 1998, p. 7). Others maintain that hypermedia is merely knowledge management that is difficult to retrieve (Brown & Duguid, 2000). Knowledge management leads to a tunnel design that does not capture the essence of learning (Brown & Duguid, 2000).

People learn and make sense of their world by constructing mental models to interpret what they experience (Brookfield, 1987). However, evidence reveals that students often pass classes with gross misconceptions about even the most fundamental concepts of the course (Kember 1991). As students interpret new information, they tend to incorporate it within his or her existing mental models, rather than adopting new conceptual models. Kember (1991) believes students of all ages "construct individual meanings around their existing naïve framework" (p. 293). This results in a new mental model that is as inadequate as the old one (Kember, 1991). Without appropriate and adequate mental models, learning fails to challenge learners about pre-existing ideas about the world and threatens to create educational programs that "may delude [learners] into thinking that they are engaged in the highest form of learning" (Boga, 1999, p. 5). Without challenges to his or her learning, students may experience only surface-level information processing. Marton and Säljö (1976) defined the relationship between outcomes and process:

> in the case of *surface-level processing* the student directs his attention towards learning the text itself...which means he is

> more or less forced to keep a rote-learning strategy. In the case of *deep-level processing*....he is directed towards comprehending what the author wants to say. (Marton & Säljö, 1976, p. 7-8, italics in original)

Deep-level information processing is vital to understanding complex issues (Laurillard, 1993; Marton & Säljö, 1976). This literature review suggests the level of peer interaction seen in distance classes is primarily low level questioning and surface-level processing.

Sugar and Bonk (1995) investigated peer interaction and dialogue between students and content experts in an asynchronous environment. Students participated in a world forum addressing complex social and environmental issues over eight weeks. They found that student interaction was minimal throughout the project. Students, most often, used low level knowledge questioning, reflective of a surface approach rather than a deep approach to learning (Garrison, 1990; Kember, 1991; Marton & Saljo, 1976). Learners failed to engage in deep-level processing even when they were communicating with experts from around the country. While Sugar and Bonk's research looked at middle and high school students, their findings are similar to Hiltz (1986, 1990) who investigated adult interaction. The data suggest that despite the ability to expand communications networks, some students may not have developed the necessary skills to successfully participate in online learning communities effectively. Even when students

were provided direction and clear expectations for electronic collaboration, it did not appear to be sufficient to develop new mental models for the students.

Facilitated Learning

Learning must be facilitated to help learners construct new mental models (Bruffee, 1993; Burge, 1994; Harasim, 1987; Hiltz, 1990; Hiltz, 1994; Johnson, 1981; Johnson et al., 1994; Laurillard, 1993; Palloff & Pratt, 1999). In the online classroom, teachers become facilitators who define the structure of learning and facilitate learners by providing support, explanations, references, reinforcement, points of departure, and guidance to learners. Facilitators remain in the background to provide guidance and a "neutral, third-party" (Holt et al., 1998, p. 47) voice. This provides a different type of support as students take more control of the learning environment, which creates new challenges for the learners (Palloff & Pratt. 1999).

Burge and Howard's (1990) study on audio-conferencing education investigated how communications facilitated student learning. The results were not encouraging. Only 3.5% of students surveyed believed that the communications that took place in a distance education audio-conferencing class facilitated their learning by helping him or her understand ideas generated by other students taking the course. Slightly more, 4.4% believed that the communications helped them understand the instructor. Nearly 56% of the

respondents believed that the communications had no discernible effect on understanding the ideas of other students, and 69% did not think the interactions helped them understand what the instructor was trying to communicate. Just over 22% actually felt the technology hindered their understanding of the instructor; and 37% believed it hindered their understanding of other students. Less than 10% of the students surveyed believed that the communications they had in the course helped them learn, generate ideas, or solve problems. Burge and Howard (1990) found that the students had "concerns and difficulties with interpersonal communications" (p. 10) and "felt inhibited" (p. 10) in conversations and in their attempts to synchronize responses. The case study revealed that just over 49% of the students found communications in their distance education environment distracting. Over 70% of students felt they could not interrupt a communication to interact with or clarify what was being said. Nearly 70% of the respondents felt that the communications inhibited their ability to gain feedback from others. The lack of face-to-face interaction did not provide students with the expressions that they needed to "know" that the others in the course understood "what I had said" (Burge & Howard, 1990, p. 6). Others felt that the required interactivity put them "on the spot" (Burge & Howard, 1990, p. 6). Fear, distraction, and feelings of inhibition can all impact the

learners' anxiety and stress levels, making it difficult for them to feel comfortable in the learning environment (Burge & Howard, 1990). These distractions, inhibitions, and anxieties can impact the ability of learner's to work collaboratively in a team environment.

Decision Making Process and Polarization

Martin Lea and Russell Spears (1991) investigated the computer-mediated group decision making process. They found that computer-mediated communication in a group, "produced more polarized decisions than face-to-face groups" (p. 83) when discussing controversial issues via email. Their findings concluded that individuals experienced a reduced self-awareness (Lea and Spears, 1991). This lead to anti-normative behavior and group arguments that resulted in greater polarization. Polarization occurred between group members when shorter messages with fewer remarks on topic were sent to group members (Lea & Spears. 1991). Group polarization was strongest in those groups where norms were pre-established, and group members viewed themselves as part of the group (Lea & Spears, 1991). Polarization was less strong when group members viewed themselves as individuals (Lea & Spears, 1991). Lea and Spears' (1991) findings support the conclusions of Keisler et al. (1984) and may explain the issues associated with differentiation found by Alavi (1994) and Palloff and Pratt (1999). The more strongly individuals

identified with the group, the more likely there was less differentiation of opinion (Alavi, 1994; Palloff & Pratt, 1999). Less differentiation may have impacted by the fragmentation of messages or the fear of receiving a negative evaluation (Alavi, 1994). Polarization and fragmentation of messages may also lead to an increased potential for conflict. Françoise Herrmann's (1998) five-year study of online communities found that conflict online was particularly destructive. In online communities conflict, "was marked by an escalation of tone ranging from exasperation and annoyance to sarcasm and heavy-handedness" (p. 20). Conflict lead to greater polarization within the community and posed a threat to its continued existence (Herrmann, 1998).

Self-Direction

Distance education research has indicated that computer-mediated instruction is effective for students who are motivated and self-directed learners (Harasim, 1986; Palloff & Pratt, 1999). However, Richard Robinson's (1992) study of Canada's Open College concluded that, "Open College students were *not* interested in self-directed learning. They wanted explicit directions on how to do the assignments" (p. 3). Students indicated that they wanted strong faculty guidance and support in the learning process. Robinson identified three possible reasons: (1) courses were not set up to be self-directed, (2) students weren't exposed to self-directed learning, and (3)

students perceived self-directed learning to be more time consuming. He noted that "this time requirement is particularly important because the student population is already leading busy lives with multiple roles" (Robinson, 1992, p. 13).

Self-Reported Learning and the Novelty Effect

Computer-mediated teamwork and communication appear to have significant effects on students' self-reported learning, interest in learning, and evaluations of their classroom experiences and group exercises (Alavi, 1994; Kulik & Kulik, 1986; Kulik & Kulik, 1991). Past research has concluded that incidences of notably higher perceptions of student learning might be caused by a novelty effect in the computerized environment (Alavi, 1994; Collins, 1998; Hiltz, 1990). The novelty effect happens when students become interested in the learning because there is something new in the environment-in this case, technology. If one assumes that the novelty effect impacted student interest because it was unfamiliar, then one may make the assumption that the novelty effect will decrease as learners become more familiar with computer technology (Alavi, 1994). This should result in less interest attributed to the novelty effect. As the influence decreases, the heightened interest in learning attributed to computer-mediated communication may change.

Ability Grouping in Collaborative Learning Environments

Most research on ability grouping in collaborative learning environments has been done in traditional classrooms with K-12 students. Noreen Webb (1980) conducted studies on collaborative group interaction and achievement. She found that "groups have profound influences on the behaviors, thoughts, and feelings of their members" (Webb, 1980, p. 77). These influences affect student achievement. Her findings are noteworthy in this discussion because group makeup may have an influence on the achievement of adult learners. Webb (1980) categorized observable peer interaction within a group and individual responses to individual behaviors. Observers recorded when students worked alone, and when they participated in the group process. Observers also noted when student questions were answered, and when students gave or received help. They recorded if students appeared introverted or extroverted in their group participation behaviors. Webb (1980) found that, "group characteristics had major influences on participation" (p. 79). She also found that, "not only was participation important for learning, but the nature of an individual's interaction with other group members also had important effects on performance" (Webb, 1980, p. 79). In her 1982 studies of junior high collaborative groups, Webb found that uniform ability groups had more unanswered questions than mixed ability

groups. She concluded that ability grouping was the only significant predictor of achievement. Uniform ability groups tended to not answer team member's questions. This resulted in lower achievement levels and lower levels of enjoyment in the group process (Webb, 1982a). In a second study, Webb (1982b) found that enjoyment of collaborative group projects was positively correlated with whether or not students received responses to their questions. Students who did not receive responses to their questions showed lower achievement levels (Webb, 1982b). They also were less likely to report enjoyment in the group process (Webb, 1982b). These findings may have important implications for online classrooms using collaborative learning groups. No study was found that specifically investigated the influence of adult skill levels on group achievement, or how group diversity might impact individual achievement. It is possible that online instruction attracts students that have similar ability levels and interests, which may make it more likely that the groups that form online are less diverse than would typically be found in face-to-face classes. This question is outside the scope of this study; however, the implications warrant further understanding of how the skill level and ability of team members in adult groups impact achievement.

Technology vs. Socialization

Strong supporters of online learning argue that institutions will be able to re-create the social aspects of the classroom through email and other interactive tools (Carnevale, 2000a). It is their position that taking time to understand the impact technology has on the learning environment will cause institutions be left behind (Duderstadt, 1999). Technologists believe that students who do not use or understand computer technology need to adapt and accept the change technology brings to learning. However, Brown and Duguid (2000) argue that, "to accuse society of lagging lets technology off the hook too easily. It implies, in the end, that you can tear down walls, issue laptops and cell phones, or send people home with industrial strength technology and then blame them if they don't adjust" (p. 85). It isn't society that needs to adjust to technology; it is technology that must adapt to the needs of society (Brown & Duguid, 2000).

The use of computer-based instruction began with the premise that its main advantage would be to individualize instruction. Individual instruction has typically meant rote, tutorial models in which learners search, retrieve, and parrot information using pre-designed options that were marginal teaching/learning tools at best. However, Brown and Duguid (2000) maintain that human knowledge, "is not simply a matter of search and retrieval" (p.

124). Investigating how service representatives work, they found that, "the reps formed themselves into a small community, united by their common practice....As part of this common work-and-talk creating, learning, sharing, and using knowledge appear almost indivisible" (Brown & Duguid, 2000, p. 125-26). Workers "ignored divisions of rank and role" (Brown & Duguid, 2000, p. 127) to form integrated groups. While the community of practice may appear slow and tedious, the value of learning communities is that they are "capable of generating, sharing, and deploying highly esoteric knowledge" (Brown & Duguid, 2000, p. 127). Sharing information is not dependent on technology. The current emphasis on technology may create more barriers for using and creating the kind of shared knowledge that society needs. When technology is over-emphasized, it leads to over-simplification of instruction and course content. Oversimplification of course content may limit, "diversity of thought or forms of knowledge in the field of study" (Garrison, 1990, p. 14). These limitations may discourage students from focusing on a critical reflection of their values and may impact students' ability to generate and share knowledge.

Socio-Technical Perspective of Learning

Supporters (Palloff & Pratt, 1999) argue that because all learning is inherently social, technology increases the ability of learners to socialize and

reflect on their learning through the integration of learning theory with technology tools and models. This has spurred the development of socio-technical models that focus on learning theory integrated with technology models like that of Goodrum, Dorsey and Schwen (1993). They used a socio-technical perspective to understand how technology supports intellectual processes of teaching and learning by performing specific tasks in a particular context. In their model, learners used technology tools to conduct real world tasks, which allowed learners to conceptualize and resolve problems and build new refinements. Users were the customers; designers were the technology experts. The problem with their model it is that is was designed to resolve issues of productivity and increased functionality. Goodrum at al. (1993) claim that the model is grounded in the ideology that technology "preserves...the *intellectual community* of the school" (p. 18, italics in original). But, it was not designed as an instructional or learning model. Further, the model investigated patterns of formal and informal communications and feedback in relation to technology. It created a polarization between technology and communities of practice because it placed technology at it core. In their socio-technical model, technology concentrates the control of interactivity with the machine, shifting decision making away from the teacher/learner so that neither has input into what is taught nor what is

learned (Brown & Duguid, 2000). The tension this creates prevents the formation of vibrant learning communities (Brown & Duguid, 2000).

Brown and Duguid maintain that the debate over social issues versus technological issues is confusing. Clearly, there are two issues: one technological, one social. While technology can help learners reach out and communicate with experts, "for all technology's prowess, social distance is not overcome by 'a few strokes of the keyboard' " (Brown & Duguid, 2000, p 224). Rather, technology is a set of powerful tools for building a community of interpretation. These tools provide an illusion of inclusion.

> Certainly, the word community crops up all over the Web sites of distance courses. But it refers to groups that are communities in little more than the sense that eBay is a community. More generally, the 'Net can give the appearance of membership or access that it does not provide in any meaningful way. (Brown & Duguid, 2000, p. 225-26)

Beaudoin, (1990) points out the role of learners in distance education classes will change. Learners will have less control over their learning as technology decreases dialogue and increases highly controlled rote learning techniques. The distance factor "minimizes dialogue between teacher and learner" and imposes a "relatively high degree of structure" rather than developing "critical thinking and self-directed learning" (Beaudoin, 1990, p. 23). The distance factor appears to be in conflict with the educational outcomes that are typically attributed to adult learning programs.

Learning Theory

Several adult learning theories currently dominate distance education and online learning. Adult learning theory is grounded in the idea that the learner assumes primary responsibility for their learning, thereby changing the instructor role from teacher to facilitator (Harasim, 1986). Learning occurs as learners integrate themselves within the environment. However, integrated learning suggests that local environmental resources cannot be separated from "how it is learned and used" (Brown, Collins, & Duguid, 1989, p. 32). The environment shapes its learners (Hiltz, 1990, Palloff & Pratt, 1999). Knowledge becomes situated. It is a product of the context and culture "in which is developed" (Brown et al., 1989, p. 32).

Several teaching/learning approaches have been introduced into the literature to explain how students use computers to learn. The difficulty in attempting to investigate and compare online instruction lies in the variety of methods used to convey information to learners. However, most one of the most common forms of online instruction is a computer tutorial. Computer tutorial models do not appear to support the building of the deeper-level processing techniques necessary for critical thinking identified by Marton and Säljö (1976). This is because they are often incremental. The incremental approach is a behavioral model that emphasizes skill acquisition. The

computer provides immediate feedback that is used to guide students to find the 'correct' way to solve problems (Harasim, 1997; Hiltz, 1994). This method of instruction provides little opportunity for critical reflection. It is, however, a very behavioral model that tells students very clearly that there is one correct response. In doing so, the computer tutorial is not even capable of distinguishing between correct responses that may be worded or written in an ever so slightly modified form. The computer's lack of ability to recognize slight variations in student responses leads to increased levels of frustration on the part of the learner.

As web-based technologies have expanded the use of the Internet, online learning has become more aligned with Constructivist Theory. Learners construct their knowledge based on past experiences. Constructivist Theory is grounded in the belief that learners' gain independence by using technology to interact with content. This is assumed to be out of a self-motivation to learn and understand the content. Students in this model are self-directed. The model stresses that learning is dependent on what a student does in the learning environment (Harasim, 1997; Palloff & Pratt, 1999). However, as noted earlier, Robinson (1992) found that self-motivated does not necessarily mean students are self-directed.

Constructivist ideology has spawned other theories like Pask's (1976) Conversational Theory. Conversational Theory breaks down the subject matter into basic elements and provides a map for the learner to follow. Learners are guided through structured subject matter with rules that cover how transactions are carried out (Pask, 1976). "The distinction between teacher and student can no longer be maintained" (Pask, 1976, p. 23). If the learner fails to follow the rules, the computer stops the learner from moving ahead in the material. The computer interactivity described by Pask (1976) suggests that "transactions" are allowed only "within the framework of the entailed structure" (p. 21). This transactional interactivity does not support the collaborative model that Palloff and Pratt (1999) or Schrum (1998) describe. Transactional activity does not create an environment in which learners build learning communities. This model is based on behaviorism because like the computer tutorial model, the machine controls the learner.

Collaborative Learning Theory attempts to explain how learners actively create knowledge as they work together in teams to solve complex problems in the online environment. As learners collaborate and share their understanding of complex issues, students gain a "deeper understanding of the subject they are studying" (Palloff & Pratt, 1999, p. 125). Collaborative Learning Theory suggests that learners are active in their own learning process

and that "knowledge is not something that 'delivered' to students, but rather something that emerges from active dialogue among those who seek to understand and apply concepts and techniques" (Hiltz, 1994, p. 23). However, as researchers have pointed out, collaboration can break down if students do not fully engage with others in the classroom (Hiltz, 1994; D'Souza, 1991; Burge & Howard, 1990; Schrum, 1998).

Some suggest that multimedia has the potential to bring authentic activity to the learner in ways that have escaped more traditional models. If however, online environments change the context of learning as has been supported by past research, can we assume that the nature of learning within the context of the web environment is equally as unique to real-life environments as traditional models? Is the "breach between learning and use" (Brown et al., 1989, p. 32) which has concerned itself primarily with a transfer of knowledge challenged by virtual environment? These questions are interesting but remain the topic of another study.

Summary

Chapter Two examined the literature about learning communities in the electronic environment. Several themes and concepts emerged from the review of the literature. Elements of the teaching/learning environment change in ways that require students to interact through technology. Learners face

additional barriers of bonding, visual cueing, anonymity, conflict, frustration, isolation, and loneliness in the online environment. To overcome these barriers, instructors are encouraged to build supportive learning communities. However, students do not necessarily like to interact with peers, nor do they prefer to become self-directed learners. Student interactions suggest that online communications may encourage information processing rather than critical thinking. Further, online classes may attract less diverse student populations, which may impact achievement and interest. Several theories have been used to describe online instruction, including Social-technical perspectives and Constructivism, Conversational, and Collaborative Learning theories. However, these theories may not explain how the online learning context reflects or differs from the real-life context, or how the online context bridges from learning theory to practical use.

CHAPTER 3 – RESEARCH METHODOLOGY

Case study methodology was used to investigate the public student-to-student interactions that took place in an online learning class, and how those interactions impacted learning community. Case study methodology was used for this study because it provided an in-depth description of the environment in such a way as to capture the richness of the data (Merriam, 1998; Patton, 1990; Stake, 1995). The online learning environment is multi-faceted, and there are multiple elements within the web-based structure that are potentially important for understanding of the formation and sustainability of an online learning community. Because online learning communities are complex social units, they are best understood through the use of case study. The study was done to understand the uniqueness of this case, rather than to generalize or understand other cases. However, by studying the unique particularities of this case and striving to understand any commonality that might exist with similar cases, patterns emerged that may lead to a more generalized understanding of the online environment, although it is not the primary intention of the case study to generalize findings.

The instructor assigned the researcher a student account so that she could view the class as a participant-observer. This allowed her full access to all of the public student areas for data collection. Case participants posted

introductions, questions, responses, group papers, and feedback to public areas through a Main Forum Bulletin Board. Public broadcast email was used as an additional medium for introductions, for communicating expectations and class policies; and, as a method of attaching documents like group papers, additional reading materials, and JPEG files. Participants could meet at any time to discuss any topics they chose to explore in any one of six chat rooms. Public chat transcripts were saved and included in the findings. Small group forums were setup by the instructor so that the participants could work on group tasks outside the larger class community before placing their final group product in the public forum. The researcher was assigned to a small work group as a participant-observer. Small group forums were intended to be quasi-private. Transcripts from the small group interactions were saved, but because small group's interactions were intended to be private within the small group, specific communications are not included in the study. However, general conclusions about the chat room interactions are referred to in the findings because during the interviews participants talked about their chat experiences in the small group forums. Private email was also available for all participants. Private email communications were not included in the study.

For triangulation, data were gathered from participant-observation, transcripts of the public interactions, and semi-structured interviews (Hara &

Kling, 1998; Palloff & Pratt, 1999). All public transcripts including email, bulletin board postings, forums, and chats were saved and analyzed to understand the impact of those interactions on learning. Selected participants were interviewed during the final two weeks of the term. Interviews were recorded and transcribed.

The researcher looked for evidence that electronic communication facilitated learning and supported learning communities. This methodology has been used in a number of studies of computer-mediated instruction (Aoki & Goto, 1995; Boston, 1992; Collins, 1998; D'Souza, 1991; Hara & Kling, 2000; Hillman, Willis, & Gunawardena, 1994; Palloff & Pratt, 1999). The email, postings, forums, chat transcripts, and interview transcripts were analyzed using a distance education framework first introduced by Palloff and Pratt (1999). Their *Framework for Distance Education* was first used to investigate patterns of interaction that support learning communities in a virtual environment. This framework is discussed in more detail in Chapter Four.

Selecting the Sample

A purposeful sample was chosen for observation. Merriam (1998) describes purposeful sampling as, "based on the assumption that the investigator wants to discover, understand, and gain insight and, therefore,

must select a sample from which the most can be learned" (p. 60). The selection of this case represents Patton's (1990) point that,

> the logic and power of purposeful sampling lies in selecting *information-rich cases* for study in depth. Information-rich cases are those from which one can learn a great deal about the issues of central importance to the purpose of the research. (p. 169, italics in original)

Selection of the case was guided by the following criteria:

1. The class was offered completely online, with no required face-to-face meetings.
2. The instructor was experienced teaching online classes.
3. Computer technology was not the primary content of the course.
4. The level of interaction was sufficient to investigate student interaction within the context of the online learning community.

It was important that the class selected for the case study was offered in a completely online environment with no required face-to-face interaction. This was important because Palloff and Pratt (1999) have stressed that the online learning community differs from learning community in a traditional classroom. Because participants could elect to meet face-to-face with others in the class at any time during the term, it was not possible to predict if participants would voluntarily elect to do so throughout the term. However, by

selecting a course that did not require face-to-face meetings, it was more likely that all peer interactions would occur online.

Some of the frustrations experienced by students in web-based, online classes have been attributed to inexperienced online instructors who have not yet learned to adjust their teaching styles to the online environment. Hara and Kling's (1999) ethnographic case study revealed students became frustrated in web-based classes. They concluded that students' frustrations might have increased because the instructor was a Ph.D. graduate student and a first-time online instructor. The instructor's inexperience may have "inhibited their educational opportunity" (Hara & Kling, 1999, p. 1). To reduce the influence that instructor inexperience might have on the participants' learning experience, a class taught by an experienced online instructor was selected. The instructor of the course selected for this case study holds a Ph.D. in psychology. He was an experienced teacher in both the traditional and online teaching environments, and has taught distance education classes since 1988. He has taught this particular online course for several years.

Existing research may be skewed more favorably toward the expanded use of online instruction because past researchers have tended to rely on computer-content and technology-content courses for their studies. Computer and/or technology student populations were selected for past studies primarily

because the participants were more accessible and more likely to be familiar with web-based environments. However, students who enroll in computer-related content courses may be more likely to support and/or favor technology more than students who do not take computer and/or technology classes. This may have caused past research findings to be more supportive of online learning environments than might be found if the participants were enrolled in classes with a content area that was not a computer or technology related subject. To reduce this possible influence, a course unrelated to computers or technology was selected. The course that was selected for this case study focused on improving individual effectiveness, interpersonal relationships, functions within work groups, multicultural relations, and productivity and quality at the organizational level.

In the process of searching for a class to observe, it was found that online courses offered by the college had considerable variation in the required and actual levels of student interaction. Some classes required no student interaction and, therefore, had little or no interaction. Other classes had clearly defined weekly minimum levels of student interaction. Because of the nature of the questions posed in this case study, it was important to select a class that included activities and/or projects that required student interaction. Therefore, classes that did not require student interaction were eliminated. It was also

decided that because collaborative learning and teamwork are important elements of an online learning community model, at least one-half of the student activities should be designed to use a collaborative online learning model with participants working together on projects. Using this threshold, it was expected that there would be sufficient peer interaction to provide an information rich case for data collection.

The PCC Director of Distance Education and the Dean of Instruction were initially contacted and asked for recommendations of instructors that might be willing to participate in the study. Eight instructors were recommended. Each of the instructors, who were recommended, met criteria one and two. That is, they all taught classes completely online and all were experienced in online instruction. When criterion number three was taken into consideration, four instructors were eliminated because they taught computer classes. The four remaining instructors were contacted by campus phone, and all responded favorably. Each of the instructors who were contacted taught more than one course online. Between them they taught 11 online classes.

The next part of the selection process looked how the courses structured student activities. Specifically, were the activities designed so that the students had to work collaboratively on team projects? What was the expected level of interaction among peers based on class requirements? All

four instructors allowed the researcher to look at the class structure, the type and level of student interaction during two terms immediately preceding fall 2000, and review the course syllabus, outcomes, and assigned tasks. One class taught by each instructor was observed during summer 2000, the term prior to data collection. During this observation no data were actually collected. The courses were observed to get sense of the level of peer interaction in the class. Because the purpose of the study was to investigate student-to-student interaction, it was important to select a course that would allow sufficient peer interaction and feedback to understand the online learning community. The final criteria for interaction was based on the following criteria:

1. Student-to-student interaction can occur through several interfaces, including bulletin boards, email, and chat rooms. To maximize student options for interaction, courses that did not provide access to bulletins boards, email, and chat rooms were eliminated.
2. Hiltz (1986) recommended that instructors require peer interaction because students tended not to interact with peers unless peer interaction was a required component of the course. To ensure that students interacted, courses that did not require 50% threshold level of student activities designed for peer interaction were eliminated.

3. Collaborative learning and teamwork have been identified as important elements of online learning communities (Palloff & Pratt, 1999). Courses that did not incorporate team project with collaborative activities were eliminated.
4. Active creation of knowledge and meaning has been identified as an important element of online learning community (Palloff & Pratt, 1999). Courses that used a discussion format to support interactive activities that provided opportunities to engage students in active creation of knowledge and meaning were preferable. Courses that primarily used quiz tools for student assessment were eliminated.

Two of the classes that were observed during the summer had less than ten interactions between the students during the entire term. Neither of these classes had minimum interaction requirements for students, nor was any student assigned to work collaboratively. Interaction was primarily with the instructor via email. Although forums were available for students to use, their use for group discussion was not part of the course design. During the initial observations, it was concluded that students in these classes did not use the forums to communicate with peers at sufficient levels for the case study.

The remaining two recommended classes had required minimum levels of participation outlined in the syllabus. Both classes provided forums and

chat rooms for the students to interact. One course required students to complete one group project. The second class required students to work collaboratively throughout the term to complete four group projects. This class also required students to post comments for each group project. Four additional tasks had to be completed independently. It was concluded that this was the only class that provided a sufficient level of required peer interaction to gather enough data for the case study.

The course, MSD 115, *Improving Working Relations*, was chosen because it met all four criteria. It was expected that the required level of class interaction would provide an information-rich learning community environment. Students accessed instructor contact information, procedural information, course expectations, course syllabus, course content, course calendar, instructional materials, and assignments through a software interface called WebCT. Public and private bulletin board forums, email, and online chats were provided as the vehicles of communication. Course materials were primarily text-based, with limited use of multimedia. Books and other course materials could be ordered online or purchased at the campus bookstore.

The Student Participants

There were a total of 17 students initially enrolled in the course. On Day Two of the class, one student posted her intention to drop the course,

leaving the enrollment at 16. The enrollment stayed at 16 for the remainder of the term. The instructor posted an introduction of the researcher online. After the introduction, informed consent forms were sent to each student via email as an attachment. Participants were asked to print the form, sign it, and return it to the researcher. Three participants and the instructor returned the forms during Week One. Seven participants returned the signed form during Week Two. At the end of Week Two, a second email request was sent to the participants who had not yet returned the signed consent forms. Five sent the consent forms at the second request. The last student sent the form during Week Four with a note that he had forgotten to mail it.

The Interview Participants

Participants self-selected to be interviewed. A call for participation in the interview process was sent over the Public Bulletin Board during Week Three. The first call got two respondents. In Week Four, the researcher sent the second call for participation through private email to each of the students who had not responded. All 14 of the participants that were contacted via private email responded via private email. Initially, twelve participants were willing to be interviewed. Three participants responded that time constraints would make interviewing difficult. One responded that her pregnancy was

causing her some problems and interviewing in person might be problematic. She was willing to conduct a phone interview.

During Week Five of the term, the names of the 12 participants who initially agreed to be interviewed in person were written on small pieces of paper and put in a box. Six names were drawn from the box. During Week Six, these participants were contacted via private email to request contact information for scheduling the interviews. At that time, one of the participants declined the interview citing schedule changes that created additional work conflicts. Another name was selected to replace this participant using the same method. Because of the small number of students registered for the course, interviewing six participants was expected to be sufficient to reach a point of redundancy, and still provide for "a reasonable variation" for understanding the student interactions (Merriam, 1998, p 64) within the case study population.

The participants who were selected for interviewing provided phone contact information via private email. Each was contacted by phone in Week Eight. Face-to-face interviews were scheduled during the initial phone contact. All interviews took place during Week Eleven and Week Twelve of fall term 2000 in public locations. Interviews were recorded and then transcribed following each interview.

The Interview Format

Participants were asked questions using a semistructured guided interview format as suggested by Merriam (1998). The semistructured guided interviews used in this study contained both structured questions and opened ended questions that all participants were asked. An interview guide with a set of six questions was prepared. The interview guide provided a consistent focus and structure. It was anticipated that the semistructured guided interview process and the probing questions would provide added depth of understanding to the case. The first three questions were designed in a closed response format to put the participants at ease. The last three questions gradually became more open ended to encourage participants to provide more a detailed description of the learning environment. The opened-ended questions led to issues and topics that were not obvious at the onset of the study (Merriam, 1998). They initiated probing and follow-up questions that were used to add depth, detail, and clarity to the initial responses. Probing and follow-up questions were not written out prior to the interviews. They varied based on the participant's responses to the initial questions (Patton, 1987).

Participants were asked questions that provided an in-depth examination of the students' experiences in the class and the impact peer interactions had on the learning community within the context of the class.

Past research has found that positive experiences can strengthen the community, while negative experiences can create an environment of mistrust and caution (Palloff & Pratt, 1999). It was expected that participants in the study might have both positive and negative experiences that would contribute to the understanding of this case.

The Interview Questions

1. As you know I have been observing your class, MSD 115 this term. I have noticed that during the term you posted _____ times. Is that more or less than you thought you sent, or is it about what you thought?
2. Online classes have been shown to increase the amount of communicating some students do in class but has shown to decrease the amount of communicating other students do in class. Do you think that you communicated more, less, or about the same as you would do in a face-to-face class?
3. Students use online communications to ask questions, clarify assignments, share ideas, and give feedback to each other. In your postings, what kind of communications did you use most often in your interactions with your peers?

4. Some studies about online interactions have shown that communication among students increases their understanding of the ideas being presented in the course materials. Other studies have concluded that the interactions have little impact on a student's understanding. Did the interactions with other students increase or have little effect on your understanding of the ideas presented in the course materials?
5. How did your online interactions affect your learning?
6. Is there something more that you could tell me about the learning community?

Data Collection

All public transcripts including bulletin board forum postings, email, chats, and group papers were saved and analyzed for evidence of the formation and support of a learning community. The interviews were recorded, transcribed, and analyzed. Hara and Kling (1999) noted that some students might be reluctant to express frustrations within the learning environment to the instructor-facilitator. It was anticipated that at least some of the reluctance to be open in their answers was overcome during the interviews because the researcher was not responsible for grading the participants. Because the researcher was a participant- observer, not the instructor-facilitator for the course, it was likely that this allowed the participants to express their

experiences openly. The methodology used was similar to the methods employed by Powers and Mitchell (1997) and Palloff and Pratt (1999) to explore the benefits, issues, and concerns that are inherent in online learning communities.

Palloff and Pratt (1999) created a community-centered model to investigate the formation of online learning communities. They developed their *Framework for Distance Education* to investigate how learning communities were built and sustained in cyberspace. Their research investigated the human elements of electronic communication by developing an electronic seminar. Palloff and Pratt (1999) collected student and instructor transcripts including bulletin board, email, white board, and chats of ten doctoral students in a distance learning seminar. They conducted interviews and evaluated all public and private data collected. Their research identified four phases of interaction: (1) testing the waters, (2) conflict, (3) intimacy, and (4) termination (Palloff & Pratt, 1999). Additionally, they identified four key elements of a learning community: (a) collaborative learning, (b) teamwork, (c) shared goals and, (d) active creation of knowledge and meaning (Palloff & Pratt, 1999).

Analyzing the Data

Palloff and Pratt's (1999) framework was selected for analyzing the data collected during this study. Data were collected and analyzed for evidence or lack of evidence to support the formation and support of an online learning community by critically examining the content of student interactions. Transcripts were collected and analyzed for evidence of key elements of a learning community. The researcher used a descriptive, narrative style to allow the voices of students to emerge from the data. Qualitative research methodology focuses on the construction of multiple perspectives and realities as they are constructed with the environment (Lincoln & Guba, 1993). It was anticipated that each participant in the online class would bring a unique perspective to the study, based on their own experiences as they interacted within the online learning environment. By describing key characteristics of the interactions that took place, the researcher attempted to capture and communicate some of the important dimensions of the interactions and how those interactions impacted the learning community.

The Framework for Distance Education

Palloff's and Pratt's (1999) *Framework for Distance Education* was selected as the guiding framework for the study because it was the only distance education model found that placed community at the center of its

learning model. Their model identifies four key elements that are critical to the formation and sustainability of an online learning community. The model emphases collaboration, teamwork, shared goals, and active creation of knowledge and meaning in a unified framework (Palloff & Pratt, 1999).

The Framework for Distance Education (Palloff & Pratt, 1999) identified collaboration and teamwork as elements that must be nurtured for a healthy online learning community. Palloff and Pratt (1999) defined collaborative learning as a process through which students, "work with and depend on each other to reach their learning objectives" (p. 125). Teamwork is the formation of small groups "for the purpose of completing assignments, having discussions, or completing evaluations" (Palloff & Pratt, 1999, p. 56). Both are key teaching/learning strategies that have long been associated with both traditional and computer-based instruction and facilitated learning (Collins, 1998; D'Souza, 1991; Haythornthwaite et al., 2000; Hiltz, 1986; Hiltz, 1990; Holt et al., 1998; Palloff & Pratt, 1999; Rice-Lively, 1994; Siegel et al., 1986). In the online environment, the instructor becomes the facilitator in the process, while students assume an active role in their own learning. In a facilitated learning environment, students are expected to work collaboratively in teams, exchange information, generate discussion, and provide meaningful feedback to each other (Palloff & Pratt, 1999). Palloff and Pratt (1999) point

out that, "the failing of many computer-mediated distance learning programs has been the inability or unwillingness to facilitate a collaborative learning process" (Palloff & Pratt, 1999, p. 82). Because of the structural design of the case, it was anticipated that this failing might be overcome.

Shared goals are important to the success of the online classroom. Alan Rogers (1996) describes the element of shared goals as a common identity among groups members that forms out of a common purpose through shared attitudes, feelings, and norms. Successful groups move forward in the learning process through active participation (Rogers, 1996). Palloff and Pratt (1999) reason that "the learning community is the vehicle through which learning online occurs" (p. 29), and without support for the learning goals from all members of the class, learners are likely to become discouraged. It is through this active participation that learners "collaborate and create knowledge and meaning communally" (Palloff & Pratt, 1999, p. 32).

The fourth element is active creation of knowledge and meaning through peer interaction and feedback (Palloff & Pratt, 1999). Johnson et al. (1994) determined that peer interaction and feedback are important elements that provide learner's with the skills they need to actively create knowledge and meaning. Student's gain mutual benefit, positive interdependence, and a shared sense of pride and celebration for group members. Johnson (1981)

(1981) argues that student-to-student interaction and feedback is an important yet neglected aspect of educational research. He points out that,

> it has been the assumed by some that students' learning, socialization, and development are primarily dependent on their interaction with teachers; that peer relationships have little impact on the students, and therefore, could be ignored. (Johnson, 1981, p. 5)

The strength of Palloff and Pratt's (1999) framework is its placement of community at the center of the model, its emphasis on collaboration and teamwork through student-to-student interaction, and its interconnecting elements of the learning environment. Because of the emphasis on collaboration, teamwork, and student interaction in Palloff and Pratt's model, elements of the learning community are emphasized over the technological aspects of computer-mediated tutorial environments. This differs from the more commonly found emphasis on the technological aspects of the online environment that has characterized other distance learning models (Hiltz, 1997; Kulik & Kulik, 1986; Kulik & Kulik, 1991; Moore & Kearsley, 1996; Schrum & Lamb, 1996). By emphasizing the collaborative, human, and social elements, Palloff and Pratt (1999) provide the most comprehensive model for investigating the online learning community to date. The weakness of the framework is that it excludes a method to examine other influences on community building like trust, honesty, conflict resolution, dealing with the

impact of an altered sense of time, and peer pressure that surface in the formation of a learning community.

The WebCT Learning Environment

The online classroom was created using an authoring software interface called WebCT. The WebCT interface provided technology-centered functions that allowed the instructor to create a virtual classroom using both synchronous and asynchronous technology. Interface tools linked web pages together. WebCT has a number of web tools pre-designed web pages that provide access and navigation though the site. A Course Information Page is included in all WebCT courses at the community college, including that of the case study. The Course Information Page included the course name, number, description, and information for students with disabilities, instructor contact information, system user information, and login procedures. Participants used the Course Information Page to access the class by logging in through a guest account. During the first week of the term all interested students, whether registered or not, were allowed to login into the course through the guest account to review the syllabus and online materials. After formal registration closed at the end of Week Two, the guest account was locked and access was limited to registered students with an assigned account and password. As a participant-observer, the researcher was provided an account and password by the instructor, which

allowed her access to all student accessible interfaces. Because of the anonymity of the online environment, registered students were required to complete a sign-in form and email it to the instructor before being officially recognized as a member of the class. In the online environment this equated to attending class the first week.

A Welcome Page was the opening page of the class (see Appendix F). It included the class name, course number, and several icons that students used to navigate the web site. The Welcome Page interface provided students access to instructor contact information, procedural information, course expectations, syllabus, course content, course calendar, instructional materials, and assignments through navigation icons. Twelve icons were used in the course structure: Course Content, Bulletin Board, Private Mail, Calendar of Course Events, Course Tools and Other Useful Links, General Tools and Other Links, View Your Progress Tracking Information, View Your Marks and Course Record, PCC WebCT Tech Support, Chat, Resume Session, and Presentations.

Navigation Icons

The Course Content icon accessed the main classroom interface (please refer to the Appendix F). The Course Content interface was divided into two frames. The left frame was a table of contents listing the materials posted on

the site, including the sign-in form, expectations, procedures, syllabus, lessons, assignments and an instructor introduction. The right frame displayed the contents of the active page. Students navigated the table of contents by selecting the page and using a mouse point and click method. Pages could be accessed both linearly and non-linearly.

The first page of the site was a sign-in form that all students used to officially announce entry to the course. The form provided basic information to the instructor including name and contact information, the type of computer used, the operating system, and system features (e.g. the computer had a sound card) and the type, speed, location of connection, and a message posting area.

The Course Content interface included an introduction and photograph of the instructor. Researchers have recommended this as a way to help reduce the feelings of isolation students may feel in the online environment.

> Instructors begin their classes with the use of student introductions as a way to begin to know one another as people. Simply jumping into the course material without this creates an atmosphere that is dry and sterile, devoid of any sense that there are people engaged here. (Palloff & Pratt, 1999, p. 76)

A Procedures interface provided students with the instructor's teaching philosophy and methodology. This page also provided detailed descriptions of the course requirements, class routines, assignment due dates, instructor expectations, textbook availability, and assessment and evaluations procedures.

It also included private and public posting requirements. Palloff and Pratt (1999) noted that the public and private posting requirement is one of primary distinctions of the online environment. The expectation that students will post comments "differs significantly from the face-to-face classroom" (p. 31). Without posting requirements to a public area, it was impossible for other students to know who was attending the class sessions. For tracking purposes however, WebCT provided detailed information through the account ID so that the instructor had access to that information regardless of the amount of public interaction.

The instructor included clear expectations of posting requirements in the syllabus. The course was broken into five modules. Each student group was required to post the final copy of their group work for each module for comment by other students in the course. In addition, all students were required to respond to a minimum of three other group's work. Overall, this meant that each student had to post at least 21 times to the Public Bulletin Board to meet the minimum posting requirements of the course.

The Bulletin Board icon was used to access the primary communication area of the course. Although WebCT is capable of supporting several forums, the class used only the Main Forum for public interaction. During the Week Two of the term, the instructor created additional group forums for use by the

participants and assigned them to the small study groups. WebCT assigned these study groups – not the instructor. The group forums were accessible to only group members and the instructor.

The Private Mail icon provided the participants with a classroom email system. The participants could email the instructor and any student in the course privately using this interface. Students were allowed to add a personal outside email address to the email interface. Four of 16 participants chose to do so.

The Calendar of Course Events icon provided participants with a day-by-day breakdown of readings, lessons, assignments, and due dates. A memo feature allowed the instructor to provide additional information and instructions about class assignments. The Course Tools and Other Useful Links icon allowed participants to generate customized study guides, search the course content by keyword, change passwords, and access the student list. The Course Tools interface also included a customized study guide feature that pulled all the course notes throughout the entire site together into one page for the student.

The General Tools and Other Links interface provided participants with direct links to the campus library, student services, and other campus offices. Two icons, View Your Progress Tracking Information, and View Your Marks

and Course Record allowed participants to monitor how they were doing in the class. The View Your Marks and Course Record interface allowed participants to view their scores for every assignment. The View Your Progress Tracking Information interface included a student profile page that tracked login information including the first and last login dates and times, the total number of accesses, and the last page visited. It also tracked the number of different pages and total number of pages accessed by participants, the distribution and frequency of hits, the number of articles read by participants, the number of original posts, and the number of follow-up posts. A History of Accessed Pages included the number of times each page was accessed and a detailed list of access times and dates. Tracking information has traditionally been the data that researchers use to support their conclusions that student participation increases and equalizes in online classes.

A PCC WebCT Tech Support icon provided students with detailed information about the system requirements. It provided access to online technical support directly from the college help desk staff. Students were also provided a link directly to the WebCT site where they could ask for technical support from WebCT staff.

The Chat icon allowed participants access to the six public chat rooms. The first five chat rooms were accessible only by students registered for the

class. The instructor made these comments about the chat rooms during his initial interview,

> I leave the chat rooms to the students to use at their discretion. Occasionally the study groups will use them while they are hammering out one of their projects, but they don't use them very often.

Chat Rooms One through Four were reserved for small group work. The instructor saved all chats that took place in rooms one through four. Chat Room Five was a general room, which was intended to provide students in the class with a place to socialize. The instructor publicly announced that he saved no chats that took place in Chat Room Five. Chat Room Six was created for the entire MSD certificate program. This area provided all students enrolled in the MSD program to place gather, regardless of which classes they were taking or how much of the program they had completed. No mention was made by participants about using the Chat Room Five to socialize outside their study groups, or about Chat Room Six to access students outside the class during the interviews or in the public communications, so it is likely that they did not use these features.

A Resume Session icon allowed participants to begin the reading at the precise location they had previously left off. This icon is designed to help students navigate the site faster and reduce the student frustration. A Presentation interface was available for participants to post PowerPoint

presentation materials. The Presentation interface was not used during the case study.

Course Materials

Course materials were broken into five modules. Each module included a text-based brief lecture and an assignment including an outside reading list. Some of the assignments provided links to other additional readings posted on the WebCT site or at sites elsewhere on the Internet. Students were encouraged to attach hyperlinks to web-sites, interesting sites, or reference materials that supported their ideas or opinions. The instructor built redundancies into the site pages that allowed participants to navigate the site using a number of paths. No assignments or materials used interactive video, streaming video, multi-media, audio recordings, or cameras.

Researcher's Bias

The researcher has taught computer classes for over 10 years and has been involved in teaching technology and computers at the community college for seven years. She has also taken distance education courses as a student. During the most recent three years, the researcher has been involved with developing and teaching online courses and adding online coursework to campus-based classes. The issue of how to encourage collaboration and

teamwork in an online environment that is fundamentally individualistic was problematic. The research available about online classes was theory-based and focused on implementation of technology programs. Much of the material reviewed about the potential of web-based instruction was anecdotal with little evidence to support the claims made in the literature. From the perspective of an instructor, the findings were of little practical value. There was little research about the development and support of a learning community online. The research that was available suggested that computer-based communication was an excellent disseminator of information. However, student-to-student interaction is an important, yet often overlooked, element of the online learning environment. Teaching and learning are much more than sharing information or performing outcome specific tasks. Education is a change process that is created though a conscious decision to create an environment that supports personal growth (Rogers, 1996). Online learning environments must have the ability to adapt to the needs and educational goals of the participants. This implies that courses that are set up in an online environment that is rarely, if ever, altered can only be called education "with difficulty" (Rogers, 1996, p. 44). Computer-based models of instruction are most often teacher-centered models that allow learners to select pre-determined options. More often than not those options are limited by design to selections made by the programmer.

Computer-mediated instructional models are primarily computerized tutorials with an unchanging environment. This suggests that they may be a moderately good method of providing individual instruction using rote learning. The designs may have any number of paths leading to discussion topics through hyperlinks, but even multiple links most often lead to the same location the text. Students are forced to move through these pre-determined options and paths independently. This may lead to a false perception that students are motivated, self-directed learners in control of the learning environment. While computer-mediated instructional tutorial models may be appropriate for some learning outcomes, they are not appropriate when the learning outcomes are focused on critical thinking and problem solving.

CHAPTER 4 – REPORT OF THE FINDINGS

This case study was conducted to investigate the student-to-student interactions that took place in an online class, and how the student interactions impacted learning community. The researcher observed student interactions through a student account provided by the instructor. Public Bulletin Board postings, emails, and chats were collected throughout fall term 2000. Six student participants and the instructor were interviewed face-to-face during the final two weeks of the term. The data collected through observations, public postings, and interview transcripts were compiled and analyzed using the *Framework for Distance Education* introduced by Palloff and Pratt (1999) in *Building learning communities in cyberspace: Effective strategies for the online classroom*.

The official start date of the course was Monday, September 25, 2000; end date was Friday, December 15, 2000. However, between Friday, September 22, 2000 and October 6, 2000, the last day of registration, anyone was allowed to log in as a guest to review the course syllabus and materials. Logging into the guest account was tracked by the WebCT software, but did not constitute official registration or attendance in the class. Participants returned a completed sign-in form to the instructor via email. The sign-in form let the instructor know that the student was actually in attendance and intended

to take the course. The instructor also suggested that students post a short self-introduction to the Public Bulletin Board. When it was completed, the sign-in form was automatically emailed to the instructor's private course email account, and the introduction was posted to the Public Bulletin Board. Students were encouraged to respond to the introductory posts. Responses were most often a short, "Welcome to the class," post by other students. Although distance researchers have recommended that students be encouraged to post photos because it provides a face to the name, no students posted photographs of themselves (Palloff & Pratt, 1999). One participant posted a photo of his motorcycle. One participant in the class commented during the interview,

> I suggested we post a picture....I think it would be good. I think it would be good to have a face with the name. You know, when you're in an online chat, you see the name and you can kind of incorporate a face. They become more of a person. That's why I wanted to send pictures. (Participant 2, Interview)

Ten (63%) of the students posted self-introductions on the Public Bulletin Board as their first public post. Two (13%) of the students included self-introductions with the post of first assignment, rather than as a separate post. This was primarily because they had entered the class late and felt a need "to play catch up" (Participant 11, Bulletin Board). Four students included no self-introductions in their posts. Of the 12 introductions posted, 11 (92%)

received comments. At the end of Week Two, the instructor used WebCT to generate four student work groups, and set up private forums for each group. Beginning with Week Three, some interactions took place in private forums, in chat rooms, and through email as well as through the Public Bulletin Board.

The Study Population

There were originally 17 students registered for the course. One student logged in through the sign-in form on Day Two and posted her intention to drop the course. This student never posted after the initial post. Her post was eliminated from the study since it added nothing to the case. This left the study population at 16 participants. Each of the 16 participants was assigned a number to protect their identity. Participant 1 and Participant 2 posted introductions prior to Monday, September 25, 2000. Ten (63%) participants posted introductions during the first week of the term. Three of the remaining four participants that made public postings did not include introductions. Participant 13 did not post to the Public Bulletin Board until Week Four, although the participant had logged on to the course before Week Four. An informed consent form was received from Participant 13 prior to Week Four, which is a clear indication that he was "lurking" in the background. After Week Two, Participant 9 made no further postings to the Public Bulletin Board. It is assumed that this participant dropped the course,

although no there was posting indicating he intended to drop. The remaining 15 (94%) participants posted through the final week of the term. Postings made by Participant 9 are included in the study data. The two introductory postings made by participants prior to the official start date were included with Week One postings.

The study population was composed of ten (63%) females and six (38%) males. Three (19%) were non-native speakers, 13 (81%) were native English speakers. Fourteen (88%) of the participants worked full-time. Two (13 %) worked part-time. Ten (63%) were full-time students, six (38%) were part-time students. Eight (50%) of the participants were registered for only online courses, eight (50%) were registered for both online and campus classes during the term. Table 1 describes the breakdown of the class demographics:

Table 1 Work and Enrollment Status of Participants by Gender

Participant Number	Gender M/F	ESL	Work FT/PT	Student PT/FT	Enrollment Status
1	F	N	FT	PT	Online only
2	M	N	FT	PT	Online only
3	F	N	FT	FT	Online only
4	F	N	FT	PT	Campus and online
5	F	N	FT	FT	Campus and online
6	M	N	FT	FT	Online only
7	M	N	FT	PT	Online only
8	F	Y	FT	PT	Online only
9	M	Y	PT	FT	Campus and online
10	M	Y	FT	FT	Campus and online
11	F	N	FT	PT	Campus and online
12	M	N	FT	FT	Online only
13	F	N	FT	FT	Online only
14	F	N	PT	FT	Campus and online
15	F	N	FT	FT	Campus and online
16	F	N	FT	FT	Campus and online

Shading indicates participants that were interviewed face-to-face.

The Interview Participants

Six participants were interviewed. Interview participants were selected because they were available to meet within the time constraints of the study and they were willing to participate in face-to-face interviews. The characteristics of the interviewees are as follows: one (17%) was male, five (83%) were female. One (17%) was a non-native speaker, five (83%) English was the native language. Four (67%) were full time students; two (33%) were

part-time students. Five (83%) worked full-time. One (17%) worked part-time. Three (50%) took all their classes online; three (50%) took some classes online and some on campus. Overall it was a fairly consistent representation of the entire case population.

The Public Bulletin Board Posts

All Public Bulletin Board posts were collected and recorded for this study. Public postings were done in asynchronous time using a function similar to email. Participants could send replies to any public or private post in the same manner as email. All replies, regardless of the level, were attached to the original post, creating the threaded discussion. Each new reply post was capable of generating a new thread. The threads and levels are discussed in further detail in the section entitled The Posting Threads.

There were a total of 427 Public Bulletin Board posts. Three hundred ninety-four (92%) were student-to-student posts. Although fall term was a 12-week term, participants were required to be complete all group work by the end of Week Eleven. Because of this, all data were evaluated on an 11-week basis. Table 2 is a summary of the public posts by participant. The total number of posts in Table 2 indicates the number of posts made to the Public Bulletin Board each week by each participant throughout the term. Table 2 shows that although certain students tended to dominate conversations, all of

the participants posted comments. As noted earlier in this discussion, each participant should have posted 21 times during the term to meet course requirements. Eleven (69%) students posted at least the minimum. Five (31%) posted less than the course requirement. This finding shows weak support for the work of Keisler et al. (1984) who concluded that online interaction is an equalizer because it distributes comments made by students over the wider class population than is typically found in face-to-face classrooms. It is likely that the distribution is, at least in part, because posting comments was a course requirement. Hiltz (1986) concluded the when interaction was not required it was less likely that students would actually post. Still, it is not known if this finding would differ without mandatory minimum posting requirements.

Table 2 Number Posts to all Public Bulletin Boards by Participants by Week

	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	Total
1	16	9	1	6	0	4	1	6	1	0	4	48
2	21	7	1	13	1	5	0	4	0	1	3	56
3	3	5	4	4	0	6	0	3	0	1	6	32
4	4	4	3	6	0	3	0	2	0	0	4	26
5	11	1	4	4	0	3	1	0	0	0	0	24
6	2	2	2	3	0	3	0	4	0	0	6	22
7	6	3	1	8	0	0	3	1	2	1	3	28
8	0	2	2	2	0	0	1	4	0	0	2	13
9	1	2	0	0	0	0	0	0	0	0	0	3
10	1	6	0	3	0	4	0	3	0	0	4	21
11	0	9	3	5	0	3	0	3	0	1	3	27
12	3	5	3	9	0	4	0	4	0	0	8	36
13	0	0	0	3	0	2	0	0	0	0	0	5
14	2	0	5	6	1	2	1	0	0	4	0	21
15	5	0	0	4	0	3	0	3	0	0	3	18
16	0	1	0	3	0	3	0	3	0	0	4	14
Total	75	56	29	79	2	45	7	40	3	8	50	394

The Posting Threads

Eighty-three topics were introduced in the Public Bulletin Board. Seventy-seven (93%) were student initiated. Twenty-nine topics were generated prior to the Flame. Forty-seven were generated after the Flame. Each topic that was initiated created a potential threaded discussion. Participants could also initiate

new posts, which started a new topic thread. Topics were most commonly around assignments and group papers. These topics were typically named *Milk, Cookies, and managing* [sic] *People-Group 2*, and *Pens, Toilets, and Businesses that [sic] Do It Differently – Group 4.* Other topics included *Minorities in Executive Positions, Apparently Affirmative Action is Working*, and *Diversity Training.*

Despite the complexity of these issues presented by the topics, few received any responses and none were discussed in depth. WebCT tracked each posting within its threaded discussion. The more back and forth discussion that was generated, the higher the discussion thread levels. The more levels in the thread, the more complex the interaction. Of the 77 student generated topics, 25 (32%) received no response. Prior to Week Four only one (4%) of the 28 topics received no response at all. After Week Four, 24 (50%) of 48 posts received no response.

Twenty-one (27%) topics received only Level Two responses. The researcher defined a Level Two response as one that was generated directly from the original post. Posts generated between one and eight Level Two responses each. Five (24%) of the Level Two posts had only one response. Sixteen (76%) had multiple responses. These may be more accurately described as comments rather than true threads of discussion because the posts

were made as comments to the initiating post and failed to generate any further topic discussion. This may be important because a response to the original post does not necessarily indicate the participants were reading each other's posts before responding. One participant's comments may shed more light on this issue.

> One of the things the instructor has us do, is every time a paper is written...we're suppose to post comments on everybody's paper...and...To be honest, I would go in to read other's people's postings... but I really wouldn't read them. (Participant 2, Interview)

Fourteen (18%) topics generated a Level Three threaded response. Level Three is defined as those threads in which the initial post, generated at least one Level Two comment, which in turn generated at least one response back to Level Two. Level Three posts generated as many as 12 responses to the original posts. One hundred and twenty-six responses were attached to the Level Three postings. Sixty-three (50%) of the posts in this category were not acknowledged by other students in the class. Sixty-three (50%) generated additional responses.

Seventeen (22%) discussion threads had complex patterns of interaction, generating threads with levels above Level Three. Eight (10%) generated a Level Four thread. Five (6%) generated a Level Five thread. Three (4%) generated a Level Six thread. One (1%) generated a Level Seven

thread. The majority of complex interactions occurred earlier in the term. Twelve (43%) of the 28 topics posted prior to Week Four generated complex interactive patterns. Four (8%) of the 48 topic posts after Week Four generated complex interactive patterns, and none were higher than Level Four. Table 3 shows the number of posts for each level before and after the Flaming Incident.

Table 3 Thread Pattern Levels Before and After the Flame

Level	Number of Posts	Before Flame	After Flame
1	25	1	24
2	21	9	12
3	14	6	8
4*	8	4	4
5*	5	5	0
6*	3	3	0
7†	1	N/A	N/A

* Indicates complex interactive patterns
† Indicates the Flaming Incident interaction pattern level

Neutral and Active Posts

Both neutral and active posts are included in the data analysis because both are important to the understanding of building online learning communities. Each is likely to support different aspects of the learning community (Palloff & Pratt, 1999). Individual posts were analyzed to determine if the contents were neutral or active to learning. Neutral posts were primarily personal information, greetings, or those that did not add new ideas

or information to the course content. Of the 394 student-to-student posts, 151 (38%) were neutral; 243 (62%) were active. Neutral posts often contained comments of approval but added little insight into the student thinking process, "I like the paper because it talks about having multicultural activities between all kinds of people to bring us closer together" (Participant 14, Bulletin Board).

Active postings discussed content or added new ideas or information to the course content. They helped clarify ideas or provided more insight into what the student was thinking as revealed in the following:

> Very nice paper. The first thing I wanted to comment on was your mention of the importance of communication. I don't think anyone else really stressed this point in such a plain manner. Communication is the key to the whole AA, diversity issue. If we can't talk to one another and listen in turn all the training and laws will not make any difference. The other point that caught my attention was you mention of the white men in attendance feeling the need to defend themselves [sic]. This is the biggest problem I have with AA. It has gotten to the point where I feel guilty every time someone uses the term white man. "The white man took the Indians land." "The white man enslaved the negro [sic]." "The white man has all of the good jobs." Yes all of this was/is true at one time or another, and I still feel as if people hold all white men responsible for what has happened in the past. As your paper said though this is something that has to be gotten past so that white males as well as all minority groups can focus on the issue of human beings. (Participant 7, Bulletin Board)

Shorter posts that discussed content or added a thought to the discussion were counted as active. The following characterizes this type of post:

> I enjoyed reading your essay. I think the safeway [sic] "forced smile" policy is going to backfire if the employees aren't given a reason to smile. Most people can spot a fake a mile away, and resent such phony behavior. (Participant 16, Bulletin Board)

The average number of neutral posts per participant was nine. Five (31%) participants posted a higher than average number of neutral posts. Nine (56%) participants posted a lower than average number of neutral posts. The average number of active posts per participant was 15. Nine (56%) participants posted a higher than average number of active posts. Five (31%) participants posted a lower than average number of active posts.

The two most active participants, Participant 1 and Participant 2, generated 48 and 56 total posts respectively, for a combined total of 104 (26%) over the term. The two least active participants, Participant 9 and Participant 13, generated three and five posts respectively for a total of eight (2%) posts over the term. Participant 1 and Participant 2 generated 13 times more than Participant 9 and Participant 13. Participant 1 and Participant 2 posted the highest number of neutral comments, 53 (35%). They also generated the most active posts, 51 (20%). Fifty percent of the posts initiated by Participant 1 were neutral, 50% were active. Fifty-two percent of the posts initiated by Participant 2 were neutral, 48% were active. Participant 9 and Participant 13 generated a total of two (1%) neutral posts and six (2%) of the active posts. Participant 9 did not post after Week Two. Two-thirds of the posts generated

by Participant 9 were neutral; one-third was active. Participant 13 continued to post until through Week Eleven, but made no public posts until Week Four. Participant 13 posted no neutral comments during the term. He was the only participant who posted 100% active comments. Table 4 shows the total number of neutral and active posts for each participant, the percentage of posts each participant initiated, and the percentage of neutral and active posts for each participant.

Table 4 Total Posts by Participant

Participant	Total number	% of total Posts	Total Neutral	Total Active	% of Neutral	% of Active
1	48	12%	24	24	50%	50%
2	56	14%	29	27	52%	48%
3	32	8%	12	20	38%	63%
4	26	7%	8	18	31%	69%
5	24	6%	9	15	38%	63%
6	22	6%	7	15	32%	68%
7	28	7%	2	26	7%	93%
8	13	3%	8	5	62%	38%
9	3	1%	2	1	67%	33%
10	21	5%	4	17	19%	81%
11	27	7%	9	18	33%	67%
12	36	9%	18	18	50%	50%
13	5	1%	0	5	0%	100%
14	21	5%	13	8	62%	38%
15	18	5%	1	17	6%	94%
16	14	4%	5	9	36%	64%

The average number of student posts was 25. An average of two public posts was made per student per week. The standard deviation was 13.49. The highest number of neutral posts by one participant was 29 (19%); the lowest was zero. The highest number of active posts by one participant was 27 (11%); the lowest was one, less than 1%. These findings suggest that although posts are more evenly spread among participants as supported earlier, some voices may still "dominate" the discussion while other voices remain comparatively quiet. Participant 13, in one of his Public Bulletin Board posts, noted "I am sort of an independent learner, so I don't say too much." Based on comments made by this participant, the online environment did not change his interactive behavior. He didn't interact often with peers in either environment.

The first message posted by Participant 9 offered some explanation to the limited number of interactions by this participant. This comment conflicts with findings (Hiltz, 1986) that online interaction helps very shy students feel more comfortable.

> ive [sic] enjoy read most of the posting in the bulletin. I must admit that if we were in a classroom it should [sic] be very interested [sic]. Everyone would be expressing the thoughts and I [sic], as always, just keep to myself. I would not say a thing in class. And im [sic] doing the same here. To be honest i [sic] am very shy, reading all the ideas in here and not knowing what to reply. (Participant 9, Bulletin Board)

Participant 9 did not appear to be more comfortable communicating online despite the additional time for writing and posting comments. He admittedly remained shy and unsure of himself. This is a particularly important finding because this student was a non-native speaker and this is the only student who did not continue to post through the final week of the term.

Feelings of shyness and isolation were found to be problematic for some students (Hara & Kling, 1999; Hara & Kling, 2000; Thiagarajan, 1978; Thiagarajan, 1998). Some of the participants posted one or more comments expressing feelings of isolation. "It does create a sense of isolation in the fact that you really don't connect or communicate with your classmates as you would in the campus class environment" (Participant 15, Bulletin Board).

The Pattern of Public Interaction

During the first two weeks of the term, participants posted all of their interactions to the Public Bulletin Board. After Week Three, students used group forums, chat rooms, and email to interact within their small group, and the Public Bulletin Board to interact with the whole class. During Week Three, the number of interactions posted to the Public Bulletin Board dropped 51% from the Week Two level of interaction, as participants began working on their small group tasks in private group forums. During Week Four, the

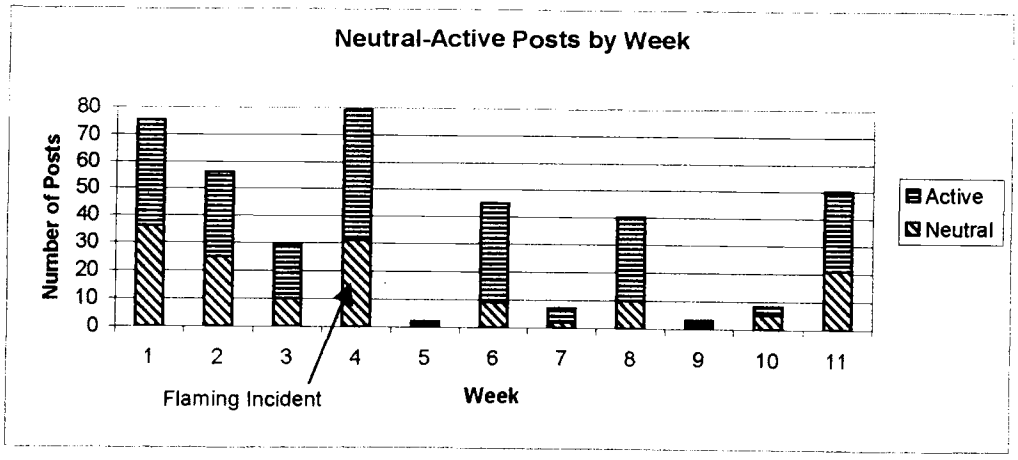
number of Public Bulletin Board interactions increased to its highest level, when groups posted their first assigned papers. Also, during Week Four a noteworthy incident occurred. This incident will be referred to as the Flaming Incident. The impact of the Flaming Incident was clearly felt throughout the remainder of the term. The course instructor had warned students in the orientation that there might be topics brought up in the public forum discussions that they would find offensive. One participant expressed the warning this way, "He gave fair warning in the very beginning that you are one mouse click away from something you might find offensive" (Participant 5, Interview). The flame may have occurred because of a depersonalizing affect within the online environment as concluded by Siegel et al. (1986).

The data shows a distinct change in the pattern of public interaction after the flame. For the remainder of the term, the number of public interactions was low during the weeks when participants worked in his or her study group, and heavier during the weeks when the group work was posted to the Public Bulletin Board. Groups were required to formulate group papers that reflected the groups' thoughts about assigned readings. Group papers were due at the beginning of Week Four, Week Six, Week Eight, and Week Eleven. Participants were required to read the papers posted by groups other

than their own and post a comment to the Public Bulletin Board within the week.

Figure 1 is a stacked bar chart that shows the pattern of neutral and active posts by week. During the first four weeks of the term, interaction on the Public Bulletin Board continued even after participants began working in their private group forums. After Week Four, public interaction during the weeks when assignments were due was clearly higher than weeks when no assignment was due. Week Four, where the critical incident (flame) occurred, is also noted in Figure 1. The highest number of public posts in one week was 79, which occurred in Week Four. The lowest number of posts was two, which occurred in Week Five. This particular finding is noteworthy because of the nature of the interactions that occurred during Week Four. This point has been labeled the Flaming Incident on Figure 1.

Figure 1 Active and Neutral Posts by Week



The number of actual postings dropped during Week Five, Week Seven, Week Nine, and Week Ten when no group assignments were due. Alternate weeks saw an increase in postings as participants commented on papers as required by the instructor. Participants decreased their posting activity after the Flaming Incident, particularly neutral posting; however, active posting was reduced as well. This suggests that participants backed off of their previous level of interaction, restricting themselves primarily to the course requirement. During the first three weeks of the term prior to the critical incident, nine (56%) participants posted an above average number of comments for two out of three weeks. Only two (1%) posted less than average for two of the three weeks. After the Flaming Incident, 15 (94%) posted a below average number of comments during weeks when no assignments were due.

The Flame

The Flaming Incident occurred over a 48-hour period in the middle of Week Four. It was the only Level Seven threaded discussion during the term, making it not only the longest thread, but the most complex as well. The strand where the Flaming Incident occurred was initiated by the posting of a Group 3 paper on diversity and affirmative action. Not all posts in the entire strand have been included in this discussion because several of the posts

attached to the original Post 787 formed separate threads that created parallel interactions. The posts in one parallel thread commented only on the group paper, clearly attempting to avoid the flame. Only, posts that were directly related to the Flaming Incident are included in the discussion. The Flaming Incident began with this comment to the Group 3 paper:

> One of your points I liked is that after years of implementing AA programs and some states and people believe are not necessary, there are [sic] still a disparity between the senior management positions held by different groups. My company is formed by 80% aprox. of minorities and a [sic] 90% aprox. of [sic] the managers are ALL WHITE MALES (None of them is fat, disabled, or speak with an accent). One of the female employees who had the fortune of become a manager, according to the senior management was not prepared, or had the enough authority to lead a crew. Based on what? We are not wrestlers!
>
> I believe we still are in a very primitive step of thinking, that may surprise to our descendants 200 or 300 years from now. I believe that the new generations and people with more education (family and school) have a better understanding of these issues. Some of us are not yet prepared for a change; but more and more people is [sic] becoming educated on these aspects. (Post 796, Participant 10, Bulletin Board)

Post 800 was threaded directly from Post 796, and is the initial flame that began the sequence of posts that followed.

> *Food for thought...* [Italics in original] America, the land of the free. Here you are free to do pretty much as you please. You can go from state to state without border checks. You can eat what you like, say what you like and drink what you like. Guess what? You can even go to school and get an education to move into management positions if you like! Sometimes it

> irritates me when minorities expect everything to be handed to them without lifting a finger to go get it themselves, just because they are a minority. Those of us who have to work hard for what they [sic] get and fight tooth and nail for every penny earned are the people who really deserve to get ahead in life. Is it really the corporations only hiring white males? Or may it be that white males are the majority of those actually going to school to get an education and move into those types of positions? let's [sic] see how much buzz this creates. ;-) (Post 800, Participant 2, Bulletin Board)

Post 803 was a direct response to Post 800:

> [name] while I understand your view, I think it is bullshit. I am a minority, and I had to join the Army to get an education, much like the rest of America. I don't expect anything to be handed to me, as a matter of fact I have to work harder than any white people I personally know in order to achieve even the smallest things. Has it ever occured [sic] to you that education may be very hard for some to achieve because they need to work, to live, to work? I personally work full time, go to school full time and have drill once a month in order to better myself as a person, an employee and ultimately a manager. One more point- I work for a bank, and there is most definitely an "old boys" network. Being a young hispanic [sic] female I will obviously never be a part of that. However, because of "enlightened" white managers like my boss, who realizes that the old boys won't be around forever...I am getting opportunities that wouldn't have been available to me even 10 years ago. How's that for a buzz?! (Post 803, Participant 4, Bulletin Board)

Participant 2 responded to Post 803 with an apology in Post 822. However, in the statements that follow, there is evidence that this participant fails to recognize the barriers of discrimination that minority workers face. Rather than seeking to understand why the initial post was offensive to Participant 4,

Participant 2 attempts to rationalize the behavior and does not acknowledge that the points raised by Participant 4 have any merit worth further discussion.

> I apologize if a struck a nerve with you [name]. I understand that there are still companies out there who are old school. I look at it this way. If the company you are working for treats you unfairly, there are plenty of companies out their today who believe in hiring individuals who are qualified for the position regardless of the color of their skin. Why waste your time with a company that discriminates? Unless you have aspirations to someday make it to the top where you can affect change. And if so...more power to you. While I disagree with your use of inappropriate language, I understand you were trying to portray your feelings with words. I also commend your hard work. Going to school full time and holding down a full time job is a tremendous work load [sic]. Your rewards will be that much sweeter when you recieve [sic] them because you had to work so hard to get them. When you are handed something instead of working hard to earn it, I believe that this lowers the value of that something. You are going to treasure it and appreciate it more if you work to earn it. Maybe you could help me understand why you think you have to "work harder than any white male you know?" As I stated earlier, if you are being treated unfairly, move on. The job market is tremendous, and there are plenty of companies who have "seen the light" and are hiring minorities for upper management positions. Again I apologize for striking a nerve with you. Actually, because you are getting an education and working hard for what you recieve [sic], I really wasn't speaking about you at all. (Post 822, Participant 2, Bulletin Board)

Post 823 responded to post 822.

> Obviously something about this subject has struck a nerve with you, [name]. To criticize how someone responds to a comment you have made when you stated your comment with the intent to see what kind of 'buzz' it would create is another withdrawal from one's emotional bank account. You said, "Sometimes it irritates me when minorities expect everything to be handed to

> them without lifting a finger to go get it themselves just because they are a minority." Since you stereotyped and blanketed a large group of people in that statement, I am a minority so I will address your comment. No one is expecting a hand out. Minorities simply want the same pay for the same job and the same opportunities as the white male. Affirmative action is not about handouts or filling quotas. All the minorities I know are hard working individuals. If you have had an experience with an individual who happened to be a minority is it correct to judge the entire group by one individual? When you said, "Those of us who have to work hard for what they get and fight tooth and nail for every penny earned are the people who really deserve to get ahead in life." I couldn't agree with you more [name] because you have described many minorities in that statement whom [sic] have worked hard and do deserve to get ahead in life. Since facts show the white male group is dominating the higher management positions when there are minorities with the same education and experience available in the employment market obviously the minorities are not being given the same rewards for their hard work, which is what brought about the need for Affirmative Action. (And, I personally do not have anything against white males...I happened to be married to one and love him dearly.) (Post 823, Participant 12, Bulletin Board)

Post 810 was a response directly to post 800. This post was made in a separate thread and began the next set of responses.

> I had this thought at one time. I do believe that there are more white males in the position to go for additional education that will place them in better standing for management positions. But that was yesterday! Now I do believe that there are many individuals who do work hard for what they want to get out of life. We will always have minorities that will jump on the band wagon [sic] yelling "the man put me down." Just because some minorities yell loud enough and make a big enough scene to be noticed in a negative way does not mean they are the voice for their entire culture. Each person speaks for themselves!!! We can't let one person's voice tell us what everyone is thinking or

> saying. Everyone deserves a fair chance IF, IF i [sic] say, they are willing to work for it and not expect it to be handed down because of their culture, skin color, or gender! (Post 810, Participant 1, Bulletin Board)

Post 846 was written as a response to post 810.

> I am so livid with some of the comments made here that I'm going to keep this short lest I start saying things I'll regret later. This last project dealt with affirmative action and diversity training yet everything I have read is using terms like minority, ethnicity, female, white male. Until this terminology is stopped being used will anyone ever get a fair chance? [name] you talk about working harder then any white person you know. Well meet me. I am a white male age 32, married with two kids. I work 40 hours a week at one job, I paint houses on the side for another job. In addition I went to school full time and am about to graduate Summa Cum Laude from [name the university]. That would be a 3.92 GPA! I have busted my hump to better myself, and the lives of my family. Never once have I received a scholarship because I'm white! My tuition has all been paid by me via student loans. So....now you know one white person who works as hard if not harder then you to try and get ahead. Get off the racial trip and just keep busting your hump and you will prevail! (Post 846, Participant 7, Bulletin Board)

Post 846 sparked two separate responses, Post 847 and Post 849:

> [Name], you have just demonstrated why diversity training is so important. I agree, "individuals" whom work to fulfill their own dreams should prevail. You're right the assignment dealt with Affirmative Action and Diversity Training. The definition of these programs deals with terminology of minorities, female, white male, etc. and [sic] that is the reason for using them. (It was not meant to offend anyone.) I agree with you though, it will be nice when the day comes that Affirmative Action is not needed anymore. I was watching two little preschoolers standing with an adult that was answering questions to fill out a form with another adult in an office yesterday. One little girl replied back to the lady, "she's not Hispanic she is Lily, my

> friend." I thought how perfect.... That [sic] is the way it should be. (Post 847, Participant 12, Bulletin Board)
>
> Actually, i [sic] think this is a good demonstration of how affirmative aciton [sic] can tear people apart instead of bridging the gap. (Post 849, Participant 3, Bulletin Board)

The instructor of the class intervened on day two of the Flaming Incident and sent personal emails to the students. He reprimanded Participant 4 for the use inappropriate language through private email and then publicly posted a message to other students that he had done so. Participant 4 wrote a message of apology, which was posted four days after the original flame. The instructor did not reprimand Participant 2 who posted the initial flame.

The interactions that occurred in the eight posts that together make up the Flaming Incident appear to have had a powerful impact on the learning community. While they made up only 2% of the total public posts, the impact of the Flaming Incident posts resulted in a change in the level, type, and patterns of interactions that occurred throughout the remainder of the term. Following the Flaming Incident, postings were made only when necessary to meet the minimum course requirements.

The impact of the Flaming Incident reduced the level of safety for some of the participants. Participant 5 thought it was "scary"(Interview) and Participant 14 commented "you never know when you might offend someone" (Interview). During two other interviews, participants mentioned that it was

important to think about what they wanted to say before they posted the message, since once their comment was posted, it was out there for everyone to see and there was no way to get it back. This led these participants to believe that, at times, it was better not to post anything.

The Flaming Incident appears to have had a noteworthy impact on the formation and sustainability of the online learning community. Five (83%) of the participants interviewed mentioned the Flaming Incident at the interview. Three of the five interview participants had posted responses, two had not. Following are the comments they made: "There was this one real big incident. It was such an obnoxious statement to make" (Participant 4, Interview). "The discussions got a little heated....So, if I'm in a group of people where's there's conflict I have a hard time getting past that" (Participant 1, Interview). "I'm going to step back from this one. As much as you can have a heated discussion online, it's like that is what it [was]" (Participant 5, Interview). "She used some language that I didn't think was appropriate.... If she was [sic] in a regular class, she wouldn't have said that. I mean not in the words she used" (Participant 2, Interview). "They [sic] get so...um...they can get defensive; they can get aggressive...you can hide behind the mantle of anonymity and you can do things you wouldn't ordinarily do" (Participant 8, Interview).

The result of the Flaming Incident appears to have created additional barriers making it less comfortable for participants to interact with others in the class on the level that occurred prior to the incident. Participants backed off from the more casual style they had been developing over the early weeks of the term and became more guarded in their remarks, regardless of whether they posted a response to the flame. During the interview the one participant that didn't explicitly mention the Flaming Incident commented about her level of participation after the flame. She said, "I don't know what to say. Sometimes they get so defensive" (Participant 14, Interview). Although she did not overtly discuss the Flaming Incident, this comment suggests that she was too was impacted by its intensity.

Participants continued to post comments on group papers as required in the syllabus; however, after the incident, comments were made directly to the group, creating a different pattern than had developed prior to the incident. To understand how the Flaming Incident may have impacted student-to-student interactions, the number of posts each student made before and after the incident occurred was analyzed. The posts that were made in direct response to the Flaming Incident were not counted.

Six participants (38%) posted responses to the incident; ten (63%) did not. The average number of weekly postings decreased for 14 (87%) of the

participants after the incident. Before the Flaming Incident, three (19%) participants averaged less than one post per week. After the incident, six (37%) participants averaged less than one post per week. The average number of weekly posts increased slightly for two (13%) of the participants. Table 5 summarizes the findings:

Table 5 Average number of posts before and after the critical incident

Participant Number	Weeks 1-4	Ave. # posts per week	Weeks 5-11	Ave. # posts per week	± Ave. # posts per
1*	30	7.50	16	2.29	-5.21
2†	38	9.50	14	2.00	-7.50
3*	14	3.50	17	2.42	-1.08
4*	15	3.75	9	1.28	-2.47
5	20	5.00	4	0.57	-4.43
6	6	1.50	13	1.85	+0.35
7*	17	4.25	10	1.43	-2.82
8	6	1.50	8	1.14	-0.36
9	3	0.75	0	0	-0.75
10	10	2.50	11	1.57	-0.93
11	16	4.00	11	1.57	-2.43
12*	17	4.25	17	2.42	-1.83
13	3	0.75	2	0.29	-0.46
14	13	3.25	8	1.14	-2.11
15	9	2.25	9	1.28	-0.97
16	3	0.75	11	1.57	+0.82

* Indicates the participants that responded to the Flaming Incident
† Indicates the initiator of the Flaming Incident

The four most active participants prior to the Flaming Incident decreased their activity the greatest amount. Participant 5, who was the third most active before the incident, became the third least active after the incident. Participant 1 remained the most active before and after the incident. Participant 2, who was posting the second highest average before the critical incident, dropped to fourth. Participant 7, who pointed out that the comments were divisive, moved from the seventh most active, to tie for the first most active participant for the remainder of the term. This change is interesting because Palloff and Pratt (1999) determined that in building online learning community participants take on roles. One of the roles they defined was that of mediator. Throughout this incident, Participant 7 appears to have taken on that role. It may be that the mediating role she took on during the Flaming Incident continued to impact her student-to-student interactions after the incident was over.

The Flaming Incident brought out an important element that has been missing from early research about online learning communities. Several students indicated they did not feel that the environment was safe enough to continue to express their feelings after the incident. It appears from these data that participants seek support in places where they feel safer. In this case, that was outside of the learning community environment. Students talked to their

spouses, their co-workers, and their friends about the incident. They did not seek help from either the instructor or their classmates. "I showed it to my friend that I work with and.... also my husband" (Participant 4, Interview).

The Interview Questions

Student interviews revealed different perspectives of the online learning environment. During the face-to-face interviews, participants were told how many times they had posted to the Public Bulletin Board and asked if the number of posts was more, less or about what they thought they had posted. All of the participants thought the number sounded about right. One added, "but I think I should have done a lot more. I don't think I participated as much as I could have" (Participant 5, Interview).

When asked if they thought they interacted more, less, or about the same as they would in a face-to-face class, three (50%) responded thought they interacted more, two (33%) thought they interacted less, and one (17%) thought she interacted about the same. Interestingly the perception of whether they interacted more, less, or about the same did not necessarily reflect their level of interaction when compared to the group overall. The most active participant in the class felt that the level of interaction online was greater. But, the second most active overall thought the level of interaction was less online.

The participant who thought the level of interaction was about the same was the third least active overall.

The participants were asked to identify the types of interaction they thought they had used most often: asking questions, clarifying assignments, sharing ideas, or giving feedback. One (17%) said she asked questions most often because she had trouble posting and opening assignments and needed help with the technology. Two (33%) said they shared ideas with others in the class. Five (83%) said they gave feedback most often. One (17%) said that the most common interaction was trying to get her small group together do their group reflection papers. The number of responses is greater than the number of participants interviewed because some participants gave more than one answer to this question.

Participants were asked if peer interaction increased or had little effect on his or her understanding of the course materials. Three (50%) thought that the interactions increased their understanding of the course materials, and three (50%) thought the interactions had little impact on his or her understanding. It is interesting that the two participants who indicated that they had shared ideas with others, and the one participant who indicated asking questions was the most frequent interaction, all indicated that the peer interactions had little impact on their understanding. The three (50%) participants, who indicated

that the interactions increased their understanding of the course material, identified feedback was the type of interaction they used most often. These findings show mixed support for Hiltz' (1990) conclusions that the majority of students felt peer interaction was not particularly useful. One participant commented,

> It had little effect of my understanding. There was a lot of formal written work for this class, and I think that was more relevant in my having a better grasp of this material rather than communication between other members. (Participant 14, Interview).

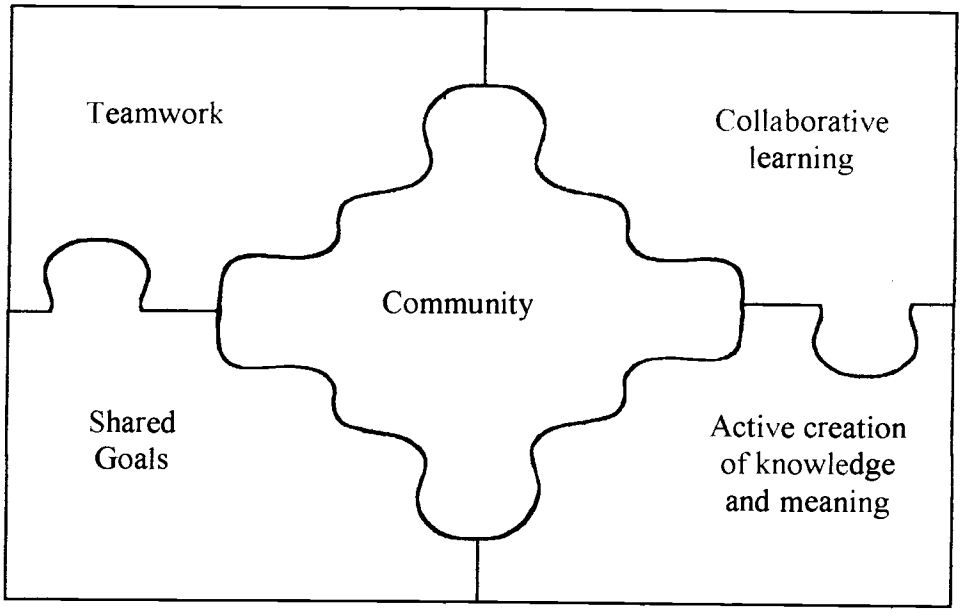
Framework of Distance Learning

Palloff and Pratt's (1999) *Framework of Distance Learning* was used to investigate how the student-to-student interactions supported or did not support an online learning community. The framework was selected because it provided a means of investigating online student-to-student interactions through elements of the environment that contribute to the formation of a learning community. The model was "designed to explore the use of electronic communication as a means of delivering distance learning programs" (Palloff & Pratt, 1999, p. vx). Because an online learning community forms through electronic communication, the model was appropriate. Their framework is depicted as a puzzle in which the four main elements interconnect with community at the center (Palloff & Pratt, 1999). If any of pieces are missing

or incomplete, the learning community will be incomplete. Each of these four key elements has several facets. Each facet was analyzed as it relates to the support of a learning community. To evaluate the learning community, data were examined for evidence that the four main elements were present:

1. Collaborative learning,
2. Teamwork,
3. Shared goals, and
4. Active creation of knowledge and meaning.

Figure 2 Framework for Distance Learning



Adapted from Palloff and Pratt, 1999
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The Learning Community

Building a learning community is an active process that requires an open, honest, and safe environment for participants, whether online or on campus. It appears that participants in the course were able to express themselves openly. Several participants commented that they felt their peers were open about expressing their opinions throughout the course. "They don't seem to have a problem voicing their opinions or their feelings about things" (Participant 2, Interview). "I felt that certainly, that the interaction was honest and open for the most part, as much as people stated their opinions very clearly" (Participant 8, Interview).

One of the ways to create an online learning community is through electronic interaction in a public forum. Public forums often provide a place for students to gather where they can socialize (Hiltz, 1994; Palloff & Pratt, 1999; Shaffer & Anundsen, 1993). An informal chat room for participants to congregate was provided; however, they chose to use the public forum instead. In the first few weeks of the course, participants revealed much about themselves in the posts they made to the public forum. Here are some examples of the posts they made:

> I was just thinking yesterday, "Do the passengers think negatively of me when I'm taking moments to look out the window?" Whenever I have a chance (especially early morning when passengers are sleeping) I stop and look out the window

> of the aircraft I'm working on and savor the beauty. I take as much of it in because I know that as time passes people tend to forget what drew them to a job in the first place. Especially when you are having a REALLY bad day, week, month....(Participant 3, Bulletin Board)

> I work full time as the [her title and the name of the organization], a non-profit organization providing acts of kindness and support groups world-wide to terminally ill patients (such as cancer) and the physically challenged. I am also a full time Mom and love both my jobs! I was launched into this career field after earning a Ph.D. in Surviving Brain Cancer. Upon receiving a possible death sentence of 8-9 months to live...priorities magically became very clear and I figured out what matters most in life. I am very excited to be apart of this class and have the opportunity to get know and work with you on line. (Participant 12, Bulletin Board)

Collaborative Learning

Working collaboratively can provide learners with a deeper understanding of the subject by allowing students to use dialogue to manage their learning process and evaluate their belief systems (Johnson, 1981). For some of the participants in this case, the interactions with their peers provided them with opportunities to evaluate their personal beliefs:

> I think it made me think more about how I could apply it to real life situations, um. other people's reactions and, um.. It gave me a different perspective in that there was one girl in there, she was.. It was a difficult class and she talked about, about some specific problems that she had and, um, it had, you know, it had some. And, I noticed from, from [sic] what she wrote. It was kind of like when you work with somebody irritating, and you know, you just want to be mean to them or whatever... but looking at it from her perspective made me think harder about

> how you treat other people, and where they might be coming from. (Participant 4, Interview)

In a collaborative learning community, every student must participate and listen. Lack of participation or failure to listen can cause frustrations on the part of others in the class. One student expressed her frustration with a team member who seemed to be unwilling to listen to the opinions of the remaining group members during the interview. The participant had this to say about her teammate,

> She changes the subject. It's like if we're in class she changes it to her personal subject. Doesn't want to hear anybody else's opinion... We all try to ignore her. She'd get the hint and go back to the subject, but then she'd drift off again. It makes things take longer a lot longer. (Participant 14, Interview)

Collaborative models include a team assessment component as well as an individual assessment piece. This can create additional stress for some team members, particularly when a team member whose grade is effected is unhappy with the final product. In this case, once the paper was publicly posted, it was out there for everyone to read and critique, regardless of its quality. During the interview, one frustrated team member commented:

> Post a group essay, which is really ... I'm really struggling with this right now... We just had this girl who is not a very good writer post one without going over it with us first, and it was really poorly written. And, I just think it wasn't a good representation of all of our opinions. 'Cause one person ends up being responsible for the, the group, and if you're not a good

> writer it reflects badly on the whole group. That's pretty irritating to me right now. (Participant 4, Interview)

Students who are highly motivated by grades may feel a great deal of frustration when members of their collaborative teams do not meet their personal expectations. Group collaboration and assessment is not a problem that is unique to the online environment. It does, however, appear to create an environment that may be less supportive for resolving the dilemma.

In the online environment, "the role of instructor becomes that of an educational facilitator" (Palloff & Pratt, 1999, p. 74). The "gentle guide" (Palloff & Pratt, 1999, p. 119) who allows learners to explore the course content while they become more skilled in the art of collaboration. One participant liked that the instructor stepped back:

> It's more feel like he outlines what our focus is, but it's up to YOU GUYS to figure it out, you know. And he just, like puts little carrots out there, and because of all interactions we have with each other as students, we come to realizations or we come to whatever and so I think that's how it... I think that's what works for me on that. (Participant 1, Interview)

Others felt that the absence of the instructor from the small group process was detrimental to their learning. One remarked,

> The instructor should be more, more present. The instructor should take a, a part. Maybe it would be good, if the instructor asked everybody to come to a chat room and participated with the group. Maybe it would have helped. I was really disappointed. (Participant 8, Interview)

During the interviews, participants talked openly about the experiences. Those who did not want hear alternative viewpoints avoided interaction altogether. Anonymity was used to avoid interaction.

> I don't have to worry about people that I can see. I don't have to worry about getting into a debate with people right next to me. You know it's easier to debate with them when you do actually have to be in their presence. It is for me. You don't have to deal with them. You can click...close if you want to. You know, you are person-to-person you can't do that...unless you get up and walk off, and you kind of just have to deal with it. When you're on the Internet... If I don't like what they're saying, I can click them off. (Participant 2, Interview)

Teamwork

The instructor divided the class into four study groups using WebCT tools to generate group assignments. Group assignments were posted via the public forum. Each group was required to collaboratively write papers that incorporated ideas, opinions, and thoughts from each member of the group. The instructor's expectation was that team assignments were permanent and could not be changed.

> Sometimes people in study groups wind up not getting along for one reason or another. However, I will have to be convinced that there are valid, persistent, extreme and irreconcilable differences between group members to make a change. (Instructor, Course Content)

Participants had mixed feelings about their teams. Some revealed that they would have liked to have an option to use when team members did not

contribute to the group projects. One student revealed how an instructor in another course helped students deal with members that were not meeting the expectations of their fellow group members.

> We have a form we have to fill out and we have to send it to the instructor and explains why we want to fire our team member and she kind of goes through like a due process of saying you know your teams members feel like you're not contributing, you haven't been showing up for group chats, you haven't bee posting to the bulletin board, you haven't been contributing anything. And I don't know what happens afterward... if they're assigned to another group or if they're allowed to work on their own but we can kick someone off of our team. I really like having that option. (Participant 5, Interview)

Forming teams can provide students with the "extra push" (Palloff & Pratt, 1999, p. 115) they need to work collaboratively. Teams can provide students with opportunities to probe topics in more depth. Teamwork can add depth to discussions by providing a rich learning opportunity. One student felt that team collaboration added depth to her learning.

> I was kind of surprised because I feel like my team members went a lot deeper in the topic than I did that, that was quite a few times....We'd go into a chat, you know, about something that we had read, and I would be there, you know, there and looking at the chapter, and they'd be saying --well I saw this as a way of building employee self esteem. And I'd be like OH I didn't even think about it like that. I just thought it was a great story, you know....There was definitely, there was depth - some depth there. (Participant 5, Interview)

Sometimes "a group may get off to a slow start...or [be] unwilling to listen to each other or to share ideas" (Bosworth, 1994, p. 26). Palloff and Pratt (1999) found that forming teams online could be problematic.

> Team formation can be difficult in the asynchronous online environment because potential team members are logging on at their convenience and may not receive or respond to a request to join a team immediately. (Palloff & Pratt, 1999, p. 115)

One participant mentioned the slow start her group experienced, "it like three days into it and no one from my group had posted anything" (Participant 5, Interview). However, once the group got started, this participant noted that those who logged in seemed willing to share their experiences. Others in the class felt that face-to-face interactions would have made it easier for them to understand or expand the interaction.

> I also felt that perhaps if, that we had been sitting across from each other, you know, because you can't read from one's tone of voice or reaction when they type, that maybe we could have gotten some other stuff more clearly. (Participant 8, Interview)

Untimely responses caused frustration for students. The perception of delayed response may be just as frustrating as actual delays in responses. An examination of these data revealed that 86% of the posts that were responded to received those responses with 48 hours of the initial posting. However, this problem may prove challenging for the teams to resolve. One participant commented:

> I get ticked off when I'm in an online class and there are people who were asking other people questions about the assignments for Week Two when it was Week Seven. You know, those people obviously didn't belong there. (Participant 8, Interview)

Her comment of delayed postings by others in this does not appear to be supported by the data in this case. No comments were generated more than six days after an initial post. This finding suggests that the participants in this case were conscientious about their responsibility to respond to others in the class.

The data revealed that group work allowed some students the opportunity to not participate. Team members were left wondering what has happened to the absent team member. One participant remarked, "We know she's out there and we know she's still in the class that's... that's what makes it even more frustrating" (Participant 5, Interview). Another commented, "because, like one guy, I don't know if he didn't have anything to say or um ... if he felt inhibited...or if what but he didn't really participate" (Participant 4, Interview). The lack of interaction by some team members created a dilemma for the remaining team members. A participant thought that group work allowed some students to erect barriers for themselves,

> I'm wondering if that was kinda [sic] of a 'scape [sic] goat for this one lady who hard a time involving herself because she thought well somebody else is writing the paper this week... And. I wondering if the group idea is real good idea because

> like this lady didn't really do much with the group. (Participant 2, Interview)

When team interaction does not meet the expectations of its members, it can cause a negative learning experience for participants that would go unnoticed without in-depth feedback from group members through an interview process. Negative experiences can cause feelings of anger.

> I'm really angry because, you know, two times now, I've had a discussion with this one other guy, who really seems to be a dim bulb. And, you know, there's nothing substantial coming out of the discussion between him and me. And, you know, somebody's going to have to write a paper on this, and it's depressing. (Participant 8, Interview)

When team members do not show up for group sessions, it left teammates wondering where the absentee was and why he or she was not contributing to the team project.

> One person wasn't able to make it because she had to work and actually doing some work in one other online line class. We have one person who hasn't shown up for a single assignment. That's the only thing that bothers me. Because, um, there's no way...these people aren't posting any comments. I'm wondering if they are even reading what we've done. I don't know how much this person is interacting, yet they're getting credit for all the work that the rest of us are putting into it. (Participant 5, Interview)

The problem of how to handle participants who did not contribute to the group assignments created tension in the group. Whenever students work on a team,

there may be issues about the level of participation demonstrated by the members. One participant commented,

> I was so disappointed to find that the instructor had posted somewhere, something that said, if the person doesn't participate in the group work, the group can choose to give the... to put that person on the paper anyway so that they get credit. I mean that's just the most idiotic thing I've ever heard. (Participant 8, Interview)

Others felt it was acceptable for group members to selectively participate in team projects.

> It really didn't bother me very much because you know it didn't really effect me, you know. But there was this one lady in our group that it apparently bothered a lot you know because she said she was going to complain about it, you know. And, I wrote her back and I said, something to the effect of, you know, it doesn't really effect you anyways [sic]. (Participant 2, Interview)

Working in teams can create uncomfortable environments for students when others on the team consistently cause disruption.

> I enjoyed communicating to some people in my group, however their [sic] was a certain individual that I didn't get along with as much as I expected, because of her wise remark attitude. She was such a hole most of the time. She made me very uncomfortable... Every time in the chat room, she'd pick a certain person to pick at... She's verbally abusive to everyone. She takes turns on us. kinda [sic] goes around the group. (Participant 14, Interview)

Despite the barriers group processes can create, there was evidence that team collaboration helped some of the participants: "It feels like I have more

instructors or more people, you know, that have...you know, there's just a lot more viewpoints" (Participant 1, Interview). "I was able to learn how others view and approach situations" (Participant 15, Bulletin Board). "I think I benefit from the other "real life" scenarios and experiences the other students share" (Participant 16, Bulletin Board).

Forming teams does not necessarily mean that participants liked working in a group or valued the experiences they gained working with peers. One participant noted, "I don't like having to work with a group" (Participant 4, Interview). Others expressed doubts that the online environment was appropriate for learning in teams. "I don't think this is productive for team based education, I do think it has a great future for individual learning" (Participant 13, Bulletin Board).

Faculty guidance promotes teamwork in the asynchronous environment by establishing guidelines that clarify expectations. Communication guidelines established by the instructor were clear and concise. Realizing that boundaries might be crossed the instructor posted this warning, "Keep in mind that on the Internet, you might be one mouse click away from material you find offensive" (Instructor, Procedures, p. 2). Students were expected to learn from each other as well as from the assigned activities. The instructor wrote, "I expect everyone to contribute to this learning environment because your participation

enriches us all" (Instructor Procedures, p. 2). Each of the participants who were interviewed believed that the guidelines were essential to the learning environment. However, several students wanted more instructor presence and guidance throughout the class. This finding supports Robinson (1992) who concluded students wanted more guidance from instructors. This was especially true of the online chats, despite the fact that no chats were required.

One participant suggested that the instructor should have required the use of chats. The participant felt that the instructor should be present in each chat to keep the discussions on task.

> I think the instructor would need to be involved in each one of them. He'd have to probably schedule that. I'd get more out of it if there was some discussion on the subject, you know, a mediated discussion of it. I posted a few things from the text, and there was [sic] a few comments... but not really anything, just their ideas - not discussion -not about what was written. Hasn't been any in depth conversation on anything. Maybe a question. Maybe would generate more probably get more to interact. (Participant 2, Interview)

The participant recognized that requiring team chats with the instructor present would be problematic to schedule, and that it would limit the "anytime" feature of online learning. However, he felt that the value of having the instructor moderate group discussions outweighed the time barrier. This finding was surprising because one of the most touted benefits of online instruction is the 'anytime, anywhere' feature. This suggests that designers and instructors may

need to rethink about the 'anytime' feature in particular. This finding also suggests that the benefit of 'anytime, anywhere' may be over-emphasized in the literature.

Mutually negotiated guidelines are defined as those norms and values that are the foundation of community, whether it is face-to-face or virtual (Palloff & Pratt, 1999). It was clear from the posts and responses that took place in the public forum that participants in this case were not always cautious about the words they chose to express their thoughts. This lack of caution resulted in the breaking of established norms. Breaking the established norms (in this case the flame), created additional barriers to the learning community. The following comment was posted by one of the students near the end of the incident. She recognized that breaking the established norms created barriers, "Actually, i [sic] think this is a good demonstration of how affirmative aciton [sic] can tear people apart instead of bridging the gap" (Participant 3, Bulletin Board).

Shared Goals

As teammates work together, they learn to develop a process that establishes a shared goal. These shared goals allow the team to accomplish the outcomes of the task. Part of sharing goals is empowering students to immerse themselves in the content through discussion and feedback that builds synergy

by allowing students to share responsibility for their learning. As team members share goals they take on roles within the group (Palloff & Pratt, 1999). Roles may be rotated so that each participant becomes the leader. Some of the groups in this case rotated their role as leader of the group. Sharing goals requires that participants place some level of importance in coming together to accomplish the task. "We did three or four papers so one was responsible for each, um, team member so you were in charge if it was your paper" (Participant 5, Interview). Sharing responsibility for accomplishing the task was more difficult for some groups.

> They put absolutely no effort into it...I was so disappointed to find that the instructor had posted somewhere, something that said, if the person doesn't participate in the group work. The group can choose to give the...to put that person on the paper anyway so that they get credit. I mean that's just the most idiotic thing I've ever heard. (Participant 8, Interview)

In this case, when the group member do not put any effort into completing the task, it caused strong negative feelings.

Active Creation of Knowledge and Meaning

Knowledge "emerges from active dialogue" (Hiltz, 1990, p. 138). Students felt that the discussions on the bulletin board and in the chats rooms helped them share ideas with the peers.

> Sharing our ideas was most certainly the best. I would think about something in one way and then somebody in the group would throw out an idea and wow it was like I never thought of

> that in that way. So that was very good. Some of the ideas were good. (Participant 1, Interview)

For some, sharing ideas online appeared to be just as difficult online as it is in a face-to-face class. One participant noted her shyness made it difficult in both regular and online classes, "In a regular class if someone asks me I'll talk. Otherwise I won't. Online, I'll write stuff I have to because it's what we have to do. But it's hard" (Participant 14, Interview). Another participant commented:

> There was one lady in our group who had a difficult time including herself in several of the papers that as a group we were supposed to write. That, the lady, the one lady in our group didn't really include herself. She wasn't, I mean she was pretty scarce as far as offering ideas her own ideas and stuff like that. (Participant 4, interview)

Active creation of knowledge and meaning allows learners to construct knowledge based on past personal experiences out of self-motivation to learn and understand the content (Palloff & Pratt, 1999). However, David Kember (1991) suggests that there is evidence to suggest that the active creation of knowledge and meaning may be elusive. He argues that students of all ages "manage to construct individual meanings around their existing naïve framework, out of new information, rather than adopt a new conceptual model" (Kember, 1991, p. 293). Their naïve framework prevents students from creating new constructs (Kember, 1991). The following excerpt from one of

the student group papers suggests that participants in this case constructed personal meaning about trust, but it is not clear whether they came away from the discussion with any new conceptual model for the concept of trust.

> As our group shared our ideas of what was important to us individually, we found that there was one goal that we all shared. We found trust to be the all-important ingredient to a successful implementation of any idea. Trust is very delicate and can be jeopardized by implementing the wrong choices. (Team 1, Bulletin Board)

Team 3 was a diverse group that had unique experiences that impacted their personal views. Sharing experiences helped them develop a better understanding and respect for the each other.

> Our team had a really interesting discussion regarding affirmative action and diversity training. Being a diverse group in itself, each member brought their own unique views to the table. We have all experienced prejudice in one way or another, either inflicted on one of us or by one of us. Fortunately, we have all learned to respect each other and this provided for a very insightful conversation. It allowed us to be open to ideas we hadn't initially thought of on our own. Despite our differences, we all have very similar views on affirmative action and diversity training in the work environment. (Team 3, Bulletin Board)

One group mentioned how they came to discover what was valuable in the course content through the interactions they had within their small group. They began one of their group papers with this comment,

> With the collective work history of this group we have covered everything from military to domestic; housewife to executive. With this broad range we still managed to come to the same

> conclusions on what is valuable in context of this lesson. Considering these assessments were made independently, I suppose that means we have all of the answers. Okay, perhaps that is an overstated conclusion, but I find the fact interesting nonetheless. (Group 2, Bulletin Board)

Palloff and Pratt (1999) found that, "students tend to give feedback that does not promote collaboration or enhanced learning" (p. 123). In this case, some of the participants felt that the peer feedback was given to them only because it was required. It was something participants had to do to pass the course. Despite a clear expectation by the instructor that students would provide substantial feedback to peers, it appears that this was particularly difficult to accomplish in this case using the online environment. This may mean that requiring students to post comments may give an observer the impression that students are receiving meaningful feedback. In this case, participants' comments suggest this is not a valid assumption. "The comments are rarely very thoughtful... One would wish that, that there was a little more depth to it, and there just isn't" (Participant 8, Interview). And,

> It seemed a lot of people were postings comments to do something the instructor told them to do it didn't seem like you know they were really in depthly [sic] sharing their ideas" (Participant 2, Interview).

Participants in the class did not uniformly conclude that the quality of discussion improved. Some of the participants did not find value in the

feedback they received from their peers. The primary reason cited was that the comments were too contrived, too positive, and not realistic.

> Somehow, nobody wants to be negative, you know. Nobody wants to say something that would challenge another group's position paper, and I., I really find it useless... Very rarely are they driven by additional interest or additional, you know, passion for the subject. (Participant 8, Interview)

Another participant commented, "We had to write comments on each others papers. I thought most of them were kinda [sic] lame. Just – 'I like this. I like that. You said that. I agree with you.' It was sort of stupid" (Participant 14, Interview).

While feedback to or from their peers was the most common type of communication mentioned by the interview participants, these data support conclusions made by other researchers who found that peer feedback was not frequent or particularly valuable (Hara & Kling, 1999; Hara & Kling, 2000; Kuehn, 1994). A student explained,

> We needed more positive criticism. Most of the comments were like, I agree. There wasn't much except of negative except the one time, which was just a bunch of people going off. It was not constructive or anything. I think it would have been cool if they could have said I disagree with your idea on such and such and this is why ... that would have helped me a lot more to think about things. But it didn't happen that way. Maybe they didn't even read the comments. They didn't help much. (Participant 14, Interview)

It was not uncommon for students to post short comments expressing agreement when offering feedback to their peers (Palloff & Pratt, 1999). In these data, 20% of the total comments posted by the participants during the term could be characterized as short comments of agreement. An analysis of these comments suggests that few of this type of comment added substance to the dialogue. " I agree that a multi-cultural organization has a lot more to offer than the organization represented by one ethnic group" (Participant 13, Bulletin Board). Longer posts did not necessarily change the characterization as an agreement comment. The following is an example that would be placed in the agreement category because it does not add new information or ideas to the learning process.

> I agree with the "bad habit" of the listener interrupting the speaker. When I am speaking nothing will get my blood heated faster than someone who interrupts me. Most of the time the speaker has to repeat what they just got done saying because of interruptions before the speaker is done. (Participant 6, Bulletin Board)

Students may not read the comments made by others in the course. Some participants admitted that they didn't read the comments made by their peers.

> To be quite honest, I really wouldn't read them. I would just skim them to see what other people had to say. So other peoples postings on other people papers. I can't really say that impacted the way I think about things because like I say, I just kind of skimmed through them. (Participant 2, Interview).

Others in the class read the postings, but consciously chose not to respond.

> Some of the papers, I didn't want to respond to them because I just didn't have anything nice to say. So it was just good to have some other people that I work with that I could say now how can I say this so that it just doesn't sound mean. (Participant 4, Interview)

Another participant commented,

> I would make sure I answered the things that I...that really interested me, the things really interested me. Those are the ones I would tend to acknowledge or input on and some the other ones I would read but I wouldn't say anything on those. (Participant 2, Interview).

Some participants felt that asking questions wasn't right for the online environment. "It's not that I couldn't ask the questions. I could, and I certainly, I'm sure I would get an answer too, but, it's just not...it doesn't seem to fit" (Participant 8, Interview). All of these issues limit the ability to provide meaningful feedback in the online learning environment.

During the interviews, some participants felt that the comments made by others helped them understand discussion topics in a new way. "It opened up more areas that I wouldn't have thought of before and it made me look at things differently" (Participant 4, Interview). There was some evidence in the interviews that participants believed that the group process stimulated more thoughtful communication, particularly within the small group. "[The team members] would bring up all these points I hadn't even thought of so I think it really helped me a lot" (Participant 5, Interview).

In the online environment, there are two types of interaction that take place: asynchronous and synchronous. Each has its benefits and its limitations. Synchronous collaboration can be achieved using chats to engage students in real time dialogue. Chats can help students feel connected, and provide them with an effective medium to engage in interesting discussions. Chats rooms were available (but not mandatory) for students. The instructor noted, "We have chat rooms of course. Sometimes, some of the groups use them. Other's don't. They're not required." Two groups used chat rooms to work on group projects. Seven students participated in the sessions. These chats generated 209 interactions. One hundred of the interactions were between two participants. Of these 62 (29%) were on topics. One hundred forty-seven (71%) were neutral interactions, most commonly asking about of other team members. No groups used public chats during the term. Overall participants, who used them, liked the chat rooms for communicating with his or her team members. One commented,

> It was really interesting having a real time chat with the other members of the group. I think I went in twice out of four times. The first time we were on for about an hour and a half. There was a lot of stuff to talk about. I thought it went real well. (Participant 1, Interview).

Another said,

> It was a lot of fun because it wasn't all business, you know. We'd talk about personal stuff and got to know each other, um,

> and I think it was almost like having a, you know, a telephone conversation. I think that, you know, some groups some groups said that they just posted to the bulletin boards and then followed up. And, I think the chats are a lot more interactive than that. I, I preferred the chat room. (Participant 5, Interview)

Chats can create a different set of challenges in the online learning community. One participant spoke about the barriers the group faced trying to meet in real time.

> Our group, we worked online through the chat room. We had a hard time because we all had different schedules, but we set it up to meet in the chat room every, every Tuesday and Sunday night in the evening. I tried to go but sometimes I can't because I work late. That's makes it hard too. Trying to find times when everybody can do it. I tried to send them an email with some of my stuff; you know my ideas and examples for the paper when I had to work late. (Participant 14, Interview)

Although some of the participants were new to the chat room, one student noted,

> Once, you know, we all got the hang of it, it was, we were able to keep each other going and going further and further on an idea. You know, sometimes, it's like there were two conversations going on at once. (Participant 5, Interview)

Others noted that understanding the meaning of posts was challenging.

> Sometimes I'll read something that's been posted two or three times just to try to understand it. Punctuation is big. You know, if they put a comma in a certain spot. You can kinda [sic] get a feeling for you know the way they wrote and try to read the way they were thinking. (Participant 2, Interview)

For some students, real time chats that were not productive posed a dilemma. The data in this case show that the biggest problem was getting all the group members to log into chat sessions. Being prepared for the chat discussion was also noteworthy challenge for some. When everyone in the group is prepared and ready to participant in online chats, it can be a valuable learning tool. However, when some of the group members are unprepared, it can be frustrating and can lead to genuine feelings of anger and hostility as revealed in this comment:

> I'm really angry. Because, you know, two times now I've had a discussion with this one other guy, who really seems to be a dim bulb. And you know there's nothing substantial coming out of the discussion between him and me; and, you know, somebody going to have to write a paper on this and it's depressing. It's depressing, you know, and I think maybe what we should do is have discussions that are moderated by the instructor. You know, maybe that would help people be a little more serious about it. To be more on time, to participate, and to, you know, making more qualitative comment. (Participant 8, Interview)

The online environment has been found to provide students with more time to formulate questions and answers, which allows them to gather their thoughts and create more thoughtful discourse (Boston, 1992; Collins, 1998; D'Souza, 1991; Hiltz, 1997; Palloff & Pratt, 1996; Palloff & Pratt, 1999). These data suggest that the asynchronous environment does appear to have provided some participants more time to think about their responses to their

peers. One participant noted, "You have time. And, a chance to kind of get your thoughts together before you say it. And I really like that" (Participant 5, Interview). Another participant remarked that the added time helped her gather her thoughts so that she would not let feelings get in the way of a more rational response.

> I think harder about what I have to say and I phrase it better. And, um, pick and choose more to what I want to respond to as opposed to just talking... I have liked being able to get online whenever I want and take a look at things... You don't have to respond if you're not in the mood and you can come back to it later and the question is still there. You can post an opinion about it. Um, you can gather other information before you have to respond to it. It isn't so much knee jerk reaction. (Participant 4, Interview)

For shy students, the additional time to prepare a response makes it easier for them to interact. "I 'm very shy and I have hard time communicating otherwise with people that I don't know...That's easier for me though because I have time to think to about what I want to say" (Participant 14, Interview). One participant noted that while asynchronous interaction gave her more time to think about what she wanted to say in her response, she realized that it was important to respond as soon as possible because asynchronous interaction made it easier to forget to write a response.

> It is a lot easier to forget to answer them online because you can think OK. I'll do that later and then get busy with everything and forget. So I think that's something, you know, for me to ...

> you know work on. Try not to forget to go back. But if it's too long then it doesn't make sense so...(Participant 5, Interview)

Another major advantage of asynchronous communication often cited in the literature (Alavi, 1994; Collins, 1998; Harasim, 1990; Hiltz, 1986; Moore & Kearsley, 1996; Palloff & Pratt, 1999; Rheingold, 1991) is that any student can join the communication from any place that is convenient for them. When working on team projects this can be advantageous. "We had one person who was out of town a lot because of her job. She could do the stuff through email though. So she'd send stuff from where ever she was which worked out great" (Participant 1, Interview).

Asynchronous communication is often done through email, which is slower and more cumbersome than real-time discussion. "The communication between people through email is slower than if you meet in a classroom" (Participant 10, Bulletin Board). If one member fails to do their part within an agreed upon time frame, it creates more work for the remaining members of the team. "We'd have to add her stuff later sometimes but it worked out... Did make it more work for us, though, because we'd have to add her ideas after the rest of us had finished" (Participant 1, Interview).

Other Issues

There were several additional noteworthy aspects of the online learning environment that emerged from these data. Palloff and Pratt included them in their discussion of the *Framework for Distance Education*, but did not incorporate them into the model. Despite this, the issues that surfaced impacted participants sufficiently that they should be included in these findings to present a more accurate description of the learning environment.

These data suggest that some online participants were not willing to allow members of the class more time to think topics particularly in chat sessions. One participant told about a member of her group who got angry with her during a chat session:

> It was kinda [sic] odd, one person actually got terse with me. She, she said if you wait a sec, I'll come up with an example for this and, um...so we didn't hear from her for a while and so I said 'hey so and so, what do you think, you know... you still there?' And she, she snapped back. I mean you could really read her snapping. I said 'have some patience I'll come up with an example.' I think, you know, those are things... you just have to overlook. (Participant 8, Interview)

As technology becomes more transparent, this may become even more troublesome for the online learning community. Participants may come to expect that others in the class will respond within seconds, much like what happens in instant messaging software. This expectation may have unintended consequences for online communications.

Online learning communities should encourage comments and questions about technology (Palloff & Pratt, 1999). It "promotes a feeling that everyone is in this thing together" (Palloff & Pratt, 1999, p. 138). It could be concluded that overall participants in this study were comfortable with the technology, which was been a concern in earlier studies (Hara & Kling, 2000; Hiltz, 1986; Palloff & Pratt, 1999; Rekkedal, 1999; Schrum & Lamb, 1996). This is most likely because technology has been introduced to a broader population than when the earlier studies were conducted. Researchers of early computer-based learning projects predicted that as the mainstream population became more comfortable with technology, it would become more transparent and the earlier technological barriers would cease to be an issue (Harasim, 1986; Hiltz, 1986; Moore & Kearsley, 1996; Palloff & Pratt, 1999). On a few occasions throughout the term, students expressed difficulty receiving, opening or downloading posts made by others in the class or on their team. These barriers appeared to be resolved by re-posts using alternative format options. Participants were able to express concerns about technology openly.

> I am concerned about using the computer to do my assignments. I am not computer literate as much as I would like to be. My husband is helping me a great deal, but it is very frustrating. I am worried about not keeping up. (Participant 16, Bulletin Board)

Another expressed her frustration,

> Sometimes I had a hard time opening stuff and posting stuff. I couldn't figure out how to send the papers sometimes. Then one time I couldn't see the chat so it was a pain. It was sort of hard at first but it got a little easier. A lot of my questions were how to do something. (Participant 14, Interview)

Participants who felt comfortable using technology offered help and encouragement.

> I have faith you will be able to do it. It does feel overwhelming at first...take some deep breaths (I do, it helps) hahaha. Sometimes when we are concerned about being able to accomplish a task...we forget to allow ourselves some deep relaxing breaths. This is my first time also in taking on-line classes (and I am taking four). Hang in there, we can do it! (Participant 12, Bulletin Board)

Another participant responded to a plea for help with, "I consider myself to be fairly computer savy [sic], among others in the class I'm sure. If you have any questions about anything, I'll be glad to help" (Participant 2, Bulletin Board). These data reveal that participants were able to overcome the challenges imposed by the technology.

However, communication barriers created by the environment appeared to remain a noteworthy challenge. Participants used the forum and group papers to talk about the communication challenges created by technology. In one of their group papers posted to the public forum, Team 4 wrote:

> Today we are participating in cyber space [sic] distant learning. This method of technology has intrinsic worth; [sic] convenience and a necessary tool to further higher education. However, it presents it's own barriers in communication. One

> has to change the dialogue from, "What I hear you saying is...is that what you're saying?" to "In message #804 [name] wrote...I understand this to mean...is that what you're meaning?" (Team 4, Bulletin Board)

Some studies have concluded that online classes should be supplemented with a designated number of face-to-face meetings so that the students begin developing relationships with others in the course (Rice-Lively, 1994). It is in these face-to-face sessions that the online community begins. "The spirit of this electronic community began to emerge at the first face-to-face session" (Rice-Lively, 1994, p. 27). One participant commented, "I would prefer face-to-face interaction because I think I could get more out of that" (Participant 5, Interview). Despite this, the group did not meet face-to-face because of the difficulty they had scheduling a time that was convenient for everyone. Not all participants believed meeting face-to-face was advantageous. One commented that face-to-face interaction might increase the time needed to complete the task because,

> I was suspecting that some of the people in the group knew each other beforehand. They had, you know, lead on to that, and I was thinking I don't want some kind of a reunion. I want to get the job done. I have very little time and just felt during what time I have I really don't want to spend it dragging other people along kicking and screaming. You know and reminding them of maybe they need to keep their reminiscences of past history together at a minimum." (Participant 8, Interview)

Whether communication increases, decreases, or remains unchanged in the online environment appears to be individualistic. Despite their frustrations, all six participants who were interviewed indicated they would take more classes online. At the same time, all six indicated that they preferred face-to-face classes. All of the participants said online classes allowed them to attend school. Work schedules made it difficult for those who attended campus-based classes to attend more often. For those who took only online classes, their work schedules fluctuated so frequently that attending regularly scheduled classes was impossible.

CHAPTER 5 – DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

> In problem-posing education, people develop their power to perceive critically *the way they exist* in the world *with which* and *in which* they find themselves; they come to see the world as not a static reality, but as a process, in transformation. (Freire, 1970, 1993, p. 83)

Discussion and Implications

The online environment impacts the way participants exist in a learning community, and it is likely that the experiences students have in online classes will impact how they perceive the world. In the debate about online learning, supporters have implied that active participation and peer collaboration sufficiently challenge learners to question their world views (Palloff and Pratt, 1999). Supporters of distance education argue that the interactive capabilities of cyberspace will provide the tools necessary to overcome the individualistic and isolating nature of past distance education models. In this case study, the online environment reinforced behaviors and coping mechanisms that undermined collaboration and teamwork.

The results of this study suggest that the online environment changes the way students resolve conflict, collaborate and interact with groups, and socialize with peers. These data suggest that online interaction may not sufficiently challenge learners to critically examine their belief systems.

Students' personal and intellectual growth is likely to be impacted as they interact with others they cannot see, do not know, and are unlikely to ever meet. The long-term effects of learning in an online environment may be students who are less willing or able to develop team skills that supporters claim is one the its most important benefits.

Based on the findings in this study, it is doubtful that a collaborative environment was created. The participants used an essentially individualistic and isolating model of learning. Despite the course requirements to work as a team on group projects, participants in this study delegated tasks by breaking larger projects into smaller units of work that were then completed independently. It was interesting that comments in the postings revealed that the participants perceived themselves to be team leaders even as they worked in isolation. It was also evident that participants felt that delegating tasks was an efficient way to work as a team. However, despite the fact that their methods accomplished the assigned task, the breaking down of projects into individual units does not develop team skills where members of the group work together to come a solution.

These data suggest that students in this case did not put forth ideas to build on each other's work as would be expected in a team environment. Each participant wrote out his or her thoughts and sent them via email to one team

member who was responsible for compiling all of the ideas. In a collaborative environment, a member checking system allows team members to review and correct ideas presented in the group papers or presentations so that the final product reflects the group consensus. In this study, a member checking system may have reduced some of the frustrations felt by some team members. However, in at least one case, the team member who compiled individual pieces of information submitted by the group did not even attempt to solicit feedback from other team members before posting the final product. This lack of interaction created tension among group members. This tension was neither acknowledged nor addressed in the class. This suggests that students may need to learn different kinds of teamwork skills for online projects than they use in other contexts, or learn to adapt skills already used in the face-to-face environment to the online learning environment.

In this case study, some participants did not appear to value peer interaction, teamwork or collaboration. Some participants thought the expectation of interaction, teamwork, and collaboration was unrealistic in an online environment. This was particularly true for the students who preferred to work independently. The interviews and posts suggest that some participants found working with others in the class both tedious and unnecessary. Based on comments made in the interviews and in the bulletin

board postings, some participants did not necessarily perceive the online environment as interactive and collaborative, even when they liked working on teams. Some of the participants in this case felt disconnected and missed the face-to-face interaction. However, for others, the online interaction made it possible to communicate around his or her busy schedule.

Learning Community

In an online learning community, students are challenged to examine their customs and belief systems by bringing together diverse viewpoints from people of different backgrounds, different ideologies, different abilities, and different geographic boundaries. Students are expected to share his or her personal views within the context of the learning experience and become more open to new ideas that challenge them to grow personally and intellectually. The learner becomes, "a different person with respect to possibilities" (Lave & Wenger, 1991, p. 53) as they develop within a social community of practice – a learning community. This implies that participants will develop standards of behavior, manage conflict, overcome barriers, and willingly interact with others in the learning community in ways that transform them as a person. The results of this study reveal that there are a number of challenges that an individual learner faces as he or she seeks to develop a "community of practice." In this study, learners did not develop such a community and

consequently did not appear to become "different" as Lave and Wenger (1991) propose in their definition of learning community.

Handling Conflict as a Growth Stage in Learning Community

In terms of communications and the forming of a learning community, the Flaming Incident was certainly a critical event. The Flaming Incident suggests that handling conflict online may require different strategies than conflict resolution in a face-to-face learning environment. In this case, the flame was allowed to continue for two days before the instructor intervened. There was no discussion and no outlet for participants to work through the event other than through the Public Bulletin Board. These data indicate that there was no strategy outlined for handling conflict. Further, there was no indication that the instructor realized the event had changed the patterns of interaction in the class, which is clearly what happened in this case.

Conflict is part of the process of building a learning community and any attempt to eliminate all conflict may cause members "to simply go through the motions, never really achieving intimacy" (Palloff & Pratt, 1999, p. 26). Without conflict, students may never learn the skills needed to integrate into a group. However, conflict that becomes abusive or develops into a personal attack distracts from the learning environment, endangers the formation of a learning community, and erects barriers as accepted standards of behavior are

breached. The implication of this type of conflict is depersonalization, polarization, and the breakdown of social graces to address this problem. These data reveal that the conflict did have a depersonalizing effect on the participants, and the flaming incident had a polarizing influence. This means that designers, instructors and administrators of online classes will have to search for new ways to build connectedness both to and among students when conflict happens in online learning communities..

Anonymity created an environment in which some students felt emboldened to make comments they might not have made in a face-to-face class. It is likely that the Flaming Incident was influenced by this anonymity. As revealed in the interviews, those involved in the flame knew that his or her comments would create conflict and break traditional social customs. Social customs of a face-to-face classroom were clearly broken:

> If she was [sic] in a regular classroom setting she wouldn't have said that. I mean not in the words that she used. She would probably have chose different words and I think just online you should maintain that professionalism not to use language like that. (Participant 14, Interview)

The Flaming Incident in this study illustrates Brod's (1984) point that, "when electronic communication becomes a substitute for speech, eye contact, and body language, it is a depersonalizing influence. Already, it is breaking down social customs and graces that were once considered a necessary part of

being civilized" (p. 81). The flame changed the frequency of personal communications between the participants and changed the pattern of interactions among peers. The pattern and tone of peer communications became less personal, less detailed, and less frequent after the flame. The flame appears to have created barriers that made participants uncomfortable and less open in their communications with others in the class. The escalation of anger that occurred during the flame is similar to the findings of Herrmann (1998) and Lea and Spears (1991). This finding brings up an interesting dichotomy. If students do not feel safe to make comments openly and freely because they cannot read each other's reactions or emotions in the classroom, it is possible that the online environment may be inadvertently restricting the very discussion it is purported to encourage.

As an observer of the Flaming Incident, this researcher found it surprising that participants revealed their ages, ethnicity, and gender in the course of their responses to the flame. These references appear to have been an attempt by participants to create a more personal environment in order to regain some of the safety they felt prior to the incident. However, their responses actually polarized the class around the issue. There was a clear delineation between those who were pro affirmative action and those who were opposed to it. Participants appeared to essentially dig in their heels, so to

speak, during and after the flame. The participant, who started the flame, purposefully overstepped customs and social norms. It was clear he knew that the posting would "stir things up" (Participant 2, Interview). During the interview, it was evident by his responses that he did not understand that the comments he posted made others feel unsafe in the class. There was no indication that this participant realized that the flame created a breakdown in peer interaction. He thought the interaction "went rather well" (Participant 2, Interview).

Barker, Wahlers, Cegala, and Kibler (1983) identified three benefits of group conflict within the learning environment: (1) improving the quality of discussion, (2) stimulating involvement and, (3) building group cohesion. Barker et al. (1983) argue that conflict is a natural stage of growth in the collaborative learning and community building processes that groups move through as they negotiate norms and standards of acceptable behavior. The discussion that follows will examine each of these as it relates to this study.

Improving the Quality of Discussion

Technology may be impacting the quality of ideas students presented in class discussions. Campbell (1998) asks the ominous question:

> Are we creating individuals who can create rational logical arguments to make decisions, or are we creating individuals who can make use of knowledge and facts in a non-sequential, random fashion, and have no concept of how to gather

> information, evaluate it, and use it to create coherent arguments? (p. 24).

These data suggest that the latter may be the case. It is difficult to conclude that the quality of discussion among participants improved in the online environment. Most comments were random opinions loosely connected to the course content with few facts that related to the topics of discussion. Few of the postings contained logical arguments of substance. In Postman's (1985) discussion of Plato, he wrote that the content of what people present in a discussion is greatly influenced by the "how we are obliged to conduct such conversations" (p 6). In a face-to-face classroom, it is the instructor's role to mediate discussion and thereby, teach students the skill of logical discourse. As noted in the earlier literature and elsewhere is this research, the role of the instructor changes to that of facilitator in an online class. This role change and the way students are obliged to interact through technology may have some disturbing unintended consequences.

Technology did not provide an avenue for the ambiguous meaning-making context that leads to deep-level processing mentioned by Marton and Säljö (1976). Jerome Bruner (1996) argues that the rules governing computerized environments "do not cover the messy, ambiguous, and context-sensitive processes of meaning making" (p. 5). In a rule-bound environment, the comments made by participants may become less spontaneous and more

contrived. One participant had this to say about the posts. They seemed "very contrived because they know that it's something they have to do" (Participant 8, Interview).

Education that transforms students into learners is not grounded in contrived messages that are created as a requirement to pass a class. Transformative education is about stepping outside one's belief system and challenging existing ways of thinking about the world. This is accomplished through free flowing, connected dialogue. The online environment created a disjointed conversation, which suggests that the environment may impede the mean-making or deep level processing indicative of critical reflection and transformative education. One student attempted to generate dialogue by introducing outside materials related to the topic via hyperlinks only once during the term. However, there is no evidence that others in the class looked at the links this participant referenced because no comments or acknowledgments to the links were noted. In this case, the lack of response to the outside materials introduced by the student indicates that planners and instructors may need to facilitate discussions about student-generated topics.

A healthy learning community is one in which divergent opinions are respected and encouraged (McCombs, 2000). It appears that the participants in the class did neither. One participant referred to a teammate as "dim bulb"

(Participant 8, Interview). Others felt that comments made by group members were "lame" (Participant 14, Interview) and "stupid" (Participant 4, Interview). These participants' remarks serve as poignant reminders that counting the number of posts in a class, or the number of words in a single post, does not necessarily mean that others respect peer comments. The remarks suggest troubling undercurrents bubbling beneath the surface of acceptance for diverse opinion. Online environments may provide students more time to form the response that they think the instructor wants to hear, rather than offering a critical reflection of the topics presented, and without critical reflection instructors may be unintentionally lowering expectations. The online environment may provide a medium in which students can avoid tackling tough issues like diversity in a meaningful way, by hiding behind the cloak of anonymity.

Healthy learning communities create an environment where different world views come together through spontaneous dialogue and form relationships that become a vehicle for change (McCombs, 2000). Participants' lack of influence on the opinions of others in the class suggests what Jenlink and Carr (1996) have dubbed the "incoherence of thinking." This incoherence of thinking results in "discourse where individuals are exchanging their viewpoints, deliberating the value of each while advocating and

protecting their own view" (Jenlink & Carr, 1996, p. 31). In this case, this incoherence led to conflict and disrespect. The result is that little opinion changed. It was evident from the posts that some participants were more interested in protecting his or her personal opinions than learning from others in the class. One student put it this way,

> I think it was an exchange of opinions. Um, no...and, and um, I don't think anybody got bent, um, in any other shape than they were before. Nobody got convinced of something they didn't believe in before. Did we discover new things that we didn't know before? Um, maybe. (Participant 8, Interview)

While it may be just as possible that discussions in face-to-face classrooms will be a volley of opinion in which participants feel compelled to cling to old belief systems, the instructor plays a critical role of pointing this out to students. In the online class, it may be more challenging to help participants understand that when they cling to old notions about the world, they are impeding their own education.

Comments by class participants suggest that, overall; peer feedback was not well received. In this study, some thought the feedback was weak, with little substance. A few comments indicated that for some, the feedback was useful. To be valued, and effective feedback must have depth and substance (King, 1994). While there was some thoughtful feedback during the term, the majority of comments appeared to have been "rarely thoughtful"

(Participant 8, Interview). A few comments suggest that peer feedback helped some participants see a different point of view, but no one in the class appeared to be sufficiently influenced in a way that changed his or her own position on an issue because an interaction took place. Most of the feedback directed to peers was shallow and provided little substance for others to reflect on. This finding confirms earlier research that concluded that arguments presented by students are unlikely to be convincing. If students in a class do not perceive feedback by their peers as thoughtful or convincing, it is unlikely that those comments will lead to any changes in the way an individual learner perceives the world. If students do not change the way they see their world, then is it unlikely that they have "learned." This forces educators to examine what they mean by learning. Learning can be a "transaction" in which students are fed knowledge and asked to give back some predefined answer, or learning can be a "transformation" in which students fundamentally change the way they see the world. One would hope that educators seek the latter. Based on the comments of participants in this case, just knowing other people's perspectives does not necessarily lead one to embrace new ideas that challenge them intellectually. Using these parameters, it is doubtful that a healthy learning community formed in this class.

Stimulating Involvement

Interaction is said to be one of the greatest advantages of online instruction; however, this study suggests that non-participation appears to be the default mode of interaction online because participants had to do something purposeful to communicate with others. If one makes the assumption that logging into a course does not in, and of itself, constitute interaction, then it follows that students must actively change the defaulted mode of non-participation to one of communicative interaction. This implies that participants can engage in selective interaction or as noted earlier selective neglect (Burge, 1994). Selective interaction may create unintended consequences. It was evident that at least some of the participants "cut classes" by not attending group work sessions and not logging into group chat sessions. This happened often enough that others in their groups were frustrated by the delays it caused. This finding supports Hiltz (1986) who found that distance learning students frequently cut online classes. The ease with which participants can opt out of participating in learning activities is particularly troublesome. One participant commented:

> You know when you are person-to-person you can't do that...unless you get up and walk off and you kind of just have to deal with it. When you're on the Internet - If I don't like what they're saying I can click off. I don't want to deal with you, you're not going to learn anything from that you know so I

> think in that aspect it's probably a bad thing, that you can just turn people off. (Participant 2, Interview)

Research suggests that the kind of responses students post (or do not post) are likely to be affected by how important they feel communicating with peers is to their own learning process (Palloff & Pratt, 1999). In this study, 32% of the comments posted by students in the class received no comments. For the participants in this case, that sometimes meant they did not read the posts. Other times it meant that they did not respond because there was nothing in the post that warranted further comment. Either way, when posts receive no response they fail to initiate further interaction among students. Because participants could easily log into the course and selectively interact until the discussion got too uncomfortable, they did not have to listen to opinions or ideas that differed significantly from his or her own. This is particularly troublesome when one believes that a fundamental goal of higher education is to broaden a learner's perception of the world. If peer comments are not read, it is obvious that these comments cannot impact another learner's perspective of the content.

This case questions whether or not the online environment provides sufficient opportunity for individual voice to be heard by peers. One of the students wrote, "I do not hear any voice" (Participant 10, Bulletin Board). Another said, "How can I hear voice" (Participant 8, Bulletin Board)? Past

researchers have concluded that quieter students, including non-native speakers, interact more often when using asynchronous communication; however these data question that conclusion. Requiring students to participate may not necessarily give quieter students voice as has been concluded by others (Collins, 1998; D'Souza, 1991; King, 1994). It may provide only the illusion of voice. In this case, the open environment of online communications may have prevented some voices from being heard. These silenced voices may be entirely different from those voices that may not be heard in face-to-face classes. These data suggest that much like face-to-face classroom discussion certain students dominate discussion. Further, there may be less voice for some students because others in the class selectively do not read the responses posted. The participants in this study perceived the lack of responses to their postings as a failure to have his or her voice heard by others in the class. This perception that there is a lack of voice may impede the building of group cohesion.

Building Group Cohesion

Barker et al. (1983) define group cohesion as a trust building process that allows members of a group to disagree without personally attacking each other, or taking comments that they may find offensive personally. It is evident that the flame happened, at least in part, because of some participants'

unwillingness or inability to hear others' points of view. It is also clear that the flame impacted group cohesiveness because persons in the group felt personally attacked. It is clear that a trust had been broken. Participants in this study appeared to be more willing to share personal experiences before the flame. After the flame, patterns changed and participants were notably more cautious and less open about the comments they posted. Postings became shorter and more inclined toward comments of agreement. Participants were more selective about the feedback they posted. Participants responded by posting only what was required or what they found personally interesting. One participant commented, "I answered all of...the things that I...that really interested me" (Participant 5, Interview).

Group cohesiveness depends on the willingness of all members of the group to agree on rules of behavior and to contribute to the success of the group through interaction. When rules of behavior are broken, group cohesiveness becomes more difficult. In this case, the flame impacted the group's ability to become a cohesive unit and participation decreased. This lack of cohesion created more frustration, polarization, and tension in the group. Without building group cohesion, and consequently trust, students are unlikely to overcome the "incoherence of thinking" because they may not feel safe.

Intent vs. Interpreted Meaning

Some participants in the class felt that others misinterpreted his or her postings. This was especially true during the flame. Participant 2 felt that had he been in a face-to-face environment, the peer responses would have been different. "If she were able to see the non verbal communication she might not have reacted quite as angrily" (Participant 2, Interview). Researchers have noted that participants in online classes may be less cautious about what they say and how they say it because they think others in the class "know" them (Palloff & Pratt, 1999). Others like Hiltz (1994) found that some students may use the opportunity and anonymity of the online environment to create incidents of conflict. This certainly appears likely in this study. In this case, it is evident that the perpetrator of the flame understood that the comments he posted would create a conflict because the post shows clear intent to create conflict in the class. This was further supported by the comments he made during the interview.

Connectedness vs. Social Isolation

These data revealed that some participants took the online course to avoid social interaction. This may have created additional tension between students who registered for online classes because they believed interaction would be greater and those who took online classes to avoid interaction

altogether. Two groups sent out messages to their team members asking if they could meet in person to work on their group projects. Face-to-face meetings would have provided them with the feedback they needed to be more successful. Others felt that meeting face-to-face would be more like a "reunion" (Participant 8, Interview) for old friends that would get in the way of accomplishing the assigned task.

In this study, the online environment did not appear to provide a platform for the level of informal, social information sharing that provides depth and context described by Brown and Duguid (2000). These data indicate that there was little informal or in-depth sharing in the interactions that took place. Placing students in study groups to collaboratively complete projects or papers did not necessarily create an environment that supported the connectedness or socialization needed to support this kind of interaction.

Without some level of face-to-face interaction, virtual interaction may be an insufficient environment for creating strong connections to people that lead to "knowing" and social connectedness. Bulletin Board, whiteboard, and email features do not appear to create a sense of connectedness for some students. Despite improvements in communication technology there "are currently few tools" (Harasim, 1990, p. 56) to help students connects with others. This is a "major limitation for online education" (Harasim, 1990, p.

56). Hiltz (1994) and others have suggested creating social spaces for students to interact to simulate campus socialization. Although chat rooms were available, these data show that participants used them sparingly to complete assignments and did not use them at all for socializing. It is unclear whether cyber socializing can create the kinds of formal and informal social networks that Tinto (1993) believes are so important for academic success and student retention.

The Nanosecond Culture Versus More Time for Reflection

Computers have introduced a new time orientation that seriously threatens cultural stability. As users become more accustomed with the "rapid-fire dialogue between screen and fingertips" (Brod, 1984, p. 129), they become less patient with others. They develop an expectation of immediacy. Jeremy Rifkin (1987) calls this expectation of immediacy the nanosecond culture – where participants are increasingly deprived of time and where they have little time for each other. This heightened speed has no relationship to natural rhythm, and society is becoming less and less willing to interact with the imperfect human.

As the world becomes more entrenched in the nanosecond culture, students may perceive human interaction as slow and cumbersome, leading to increased incidents of frustration and impatience with others. It is likely that

the speed of electronic communication alters our sense of time (Brod, 1984). It was evident from the interviews that participants in this study expected faster response times. Despite the fact that the data in this shows that participants in the class actually responded to nearly 86% of the posts within 48 hours, some participants perceived the response time as slow. This impatience was also noted in comments about the chat rooms. Some of the participants complained that the length of time it took to receive responses was "annoying" (Participant 8, Interview). This suggests that, although, asynchronous communication may offer quieter students the opportunity to respond by allowing them more time to formulate their comments, it may be alienating them from others who have less patience if they actually take the additional time the environment provides. Paradoxically, this phenomenon is in direct opposition to claims that online classes allow participants more time to respond.

Many believe that computerization has created an expectation of immediacy making it less likely that learners will be patient with those who wish to take time to reflect on his or her learning. The faster technology moves, the more students' expectations may change about the speed of response and how long it should take to complete assignments. The faster speed led to frustration and impatience, as participants demanded faster and faster response time. Brod (1984) found that workers in the nanosecond

culture had high levels of stress related to speed and the expectation of immediacy on their job. Computerization has made it increasingly difficult for workers to get along with each other as employers demand faster and faster output. Yet, industry demands that its workers can get along with others and work collaboratively. At the same, industry pushes for more computerization - the very technology that makes workers less able to deal with the pace of the human thought process. The push to use more technology in the learning environment may be creating the same tension.

Technology may create an educational environment based on an expectation of immediacy rather than providing participants with more time for reflection and interaction. If this is allowed to happen, the educational environment that has built its foundations on the notion that thoughtful reflection takes time and nurturing may succumb to the nanosecond culture where time is regarded as a natural enemy. The consequence of this expectation of immediacy threatens the existence of learning communities, which takes time to develop and grow into communities of practice.

The WebCT Environment

The WebCT environment appears to be more transactional than transformational. Transactional education is about knowledge management as described by Brown and Duguid (2000). Transformational education changes

the learner. Palloff and Pratt (1999) maintain that the unfamiliarity of the online environment will push learners out of his or her comfort zone. In doing so, the environment fosters transformation and encourages students "to engage in the self-reflective process" (Palloff & Pratt, 1999, p 134). "The medium allows this process to occur" (Palloff & Pratt, 1999, p. 135). This is hard to believe. In this study, the online environment appears to be doing just the opposite. Participants were in their own homes – the place where most people feel the safest. They went to class in their "Pajamas" (Participant 5, Interview). Students may not able be to step outside their comfort zone easily when they are in their most comforting place they can be – their home. By their own admission, participants in this study logged into class when they wanted too, logged out when it got uncomfortable, and responded only when they felt like it. There was little indication that students engaged in a self-reflection while using the technology to interact with others in the class. There was little indication that students felt compelled to challenge their own belief systems. And, more importantly, there was little indication that participants were changed by the experience.

Online learning communities are characterized as living systems; yet, they are built with computer systems that are fixed structures. The WebCT environment does not allow participants to retract postings once they have put

it out for the class to read. This limitation of the software may actually impede a student's ability to interact openly for fear that their posts are permanently recorded and may come back to them later in unintended and unwanted ways. This was an unexpected, yet, important finding. Computers process information; they manipulate symbols, based on certain rules. The symbols are distinct elements fed into a computer from outside. During information processing there is no change in structure of the machine; the physical structure remains fixed, determined by its design and construction. This virtual environment is made up of thousands of individual separate items, packets of information that move and are processed independently of each other. The current interest in the virtual organization "downplays the uses of formal organization and structure, while self organization abandons itself almost entirely" (Brown & Duguid, 2000, p.114). The emphasis on information underestimates the challenges the online environment imposes on the learning community and it may have the unintended consequence of isolating learners from the very communities that provide the support they need (Brown & Duguid, 2000). The environment may be too process-orientated, too controlled by the tools of the interface, and too restrictive for free flowing dialogue.

Humans understand and make meaning within the context of language because it is "embedded in a web of social and cultural conventions" (Capra,

1996, p. 274). They understand the context through shared understanding and common sense. No computer program contains this context and, therefore, cannot share in the creating of meaning. Capra (1996) suggested that a computer can be programmed to understand words and can "recognize and manipulate simple linguistic structures" (p. 276), but cannot support complex meaning making which is necessary for a deep learning environment. Advocates for online instruction insist that the environment is learner-centered (Harasim, Hiltz, Teles, & Turnoff, 1995; Hiltz, 1997; Palloff & Pratt, 1999), but to date there is little compelling evidence to support this claim. In this study, the instructor designed team projects were intended to be learner-centered. The learner-centeredness however, did not stem from the environment. Rather it was an instructor driven design, which is a very different strategy than is portrayed in the literature. In this study, the level of peer dialogue and interaction however, did not suggest that the environment was strongly supportive of leaner-centered activities.

Recommendations for Further Study

- Group conflict in online classes appears to impact peer interaction and community building. Finding strategies to mediate conflicts and re-build group interaction would be useful.

- Investigate the quality of dialogue in peer interactions among participants in online classes to determine if students are engaging in surface level or deep level processing and critical thinking.

- Investigate how technology and the phenomena of selective neglect influence the strategies students use to deal with challenging interactions.

- Investigate what factors foster and impede participant's ability to be heard in online interaction such as public or group forums and chat rooms.

- Investigate whether the senses of connectedness and social isolation are predictors of persistence in online classes.

- Investigate the impact of the increasing speed of technology and the nanosecond culture on a student's expectations of time and immediacy.

Summary

This study investigated the student-to-student interactions in an online class. Findings from this investigation suggest that forming an online learning community is complex and requires strategies that support student learning, encourage social development, provide for effective conflict resolution, and

engage learners in meaningful dialogue, while at the same time developing strategies to support student safety and trust.

Practically, for community colleges, the results of this study strongly suggest that the environment impacts peer interactions and the formation of a learning community. The nature of the environment appears to impact how students handle conflict, interpret meaning, and perceive time. The quality of peer interaction appears to impact student involvement during discussions and influences individual perceptions of being heard by others in the class. There is no denying that online classes have been created to meet demand. However, that demand should not include sacrificing substantive learning, critical thinking, or the social well-being of participants.

Expanding a student's definitions of the world and enabling them to step outside of their narrow perspective of the world is what sets educational institutions apart from other types of learning environments. Students practice and work through complex problems and issues by developing strategies that help them understand each other so that they can draw on each other's unique talents and come to a stronger, more unified resolution to the complex problems facing today's world. Learning becomes larger than the sum of it parts. R. B. Reich (1987) wrote:

> Individual skills are integrated into a group; this collective capacity to innovate becomes something greater than the sum of

> its parts. Over time, group members work through problems and approaches as they learn about each other's abilities. They learn how they can help one another perform better, what each can contribute to a particular project, how they can best take advantage of one another's experience (p. 81).

In the online learning environment, peer support appears to have been marginalized with the emphasis on information, and this marginalization,

> inevitably pushes aside all the fuzzy stuff that lies around the edges-context, background, history, common knowledge, social resources. But this stuff around the edges is not as irrelevant as it seems. It provides valuable balance and perspective. (Brown & Duguid, 2000, p. 1)

The rapid expansion of distance education makes it imperative that educators better understand how online learning environments challenge the community college to meet needs of the students, and how the online environment is changing the way learning communities interact.

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APPENDICES

Appendix A - Student Informed Consent Form

School of Education
Oregon State University
Title: Case study of the student-to-student interactions that take place in an online course offered by a community college and how the interactions impact learning

Investigators:
Dr. Sam Stern
Marlene Cvetko, EdD Candidate
School of Education
Oregon State University
Purpose: The purpose of this study is to gain a deeper understanding of how peer interactions that occur in an online course impact the formation of learning communities and student learning. Data collection in the online course will include public information extracted from student-to-student email, forum chats, white board discussions, and bulletin board postings. No private email or interactions between student and instructor will be included in the study. Data included in the investigation may be included as samples in the study findings.

Foreseeable Risks: There are no known risks to students for involvement in this study.

Benefits of the Study: Data collected during this study will help inform the field about online course interactions between and among students. It is the researcher's belief that the subjects will benefit from participating in the study by helping educators understand more about how peer interactions in an online course impact the formation of learning communities and student learning.

Confidentiality: The researcher will maintain subjects' anonymity and confidentiality as necessary for the ethical instructional and research practice. Any information obtained will be kept confidential. A pseudo-name will be used to identify all results and other information you have provided. The only person who will have access to this information will be the investigator and no names will be used in any data summaries or publications.

Voluntary Participation Statement
Participation in this study will be voluntary and refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. Additionally, lack of participation in this study will not effect your grade in this course. You may discontinue participation in this study at any time without penalty or loss of benefits to which you are otherwise entitled.
Additional Information: Six students will be selected for one-on-one interviews during the term. Students will be asked to describe their experiences online. The

selected students will be provided with a copy of the interview questions and asked to complete an interview consent form at the time of selection before the interview takes place.

If You Have Questions
Additional questions about this research or your rights may be directed to:
Marlene Cvetko, EdD Candidate
Portland Community College
CA FB 210
mcvetko@pcc.edu
(503) 978-5452
or
Dr. Sam Stern
School of Education
Oregon State University
Education Hall
Corvallis, OR 97331-3502
sterns@orst.edu
541 737-6392

If you have any questions about your rights as a human subject, please contact the IRB Coordinator, OSU Research Office, (541) 737-3437
You have my permission to use student-to-student public email, forum chats, white board discussions, and bulletin board postings. Yes No
You may give the signed form to your instructor, send it intra-campus mail to Marlene Cvetko CA FB 210, or mail it to Marlene Cvetko, Portland Community College, CA FB 210, 739 N. Killingsworth, Portland, OR 97217. You will be provided a copy of the signed consent form.

Name _____ ...Please Print
E-Mail Address _____ ...Please print
Date _____ ...Please Print

Signature _____

Appendix B - Instructor Informed Consent Form

School of Education
Oregon State University
Title: Case study of the student-to-student interactions that take place in an online course offered by a community college and how the interactions impact learning

Investigators:
Dr. Sam Stern
Marlene Cvetko, EdD Candidate
School of Education
Oregon State University

Purpose: The purpose of this study is to gain a deeper understanding of how peer interactions that occur in an online course impact the formation of learning communities and student learning. Data collection in the online course will include public information extracted from student-to-student email, forum chats, white board discussions, and bulletin board postings. No private email or interactions between student and instructor will be included in the study. Data included in the investigation may be included as samples in the study findings.

Foreseeable Risks: There are no known risks to students or the instructor for involvement in this study.

Benefits of the Study: Data collected during this study will help inform the field about online course interactions between and among students. It is the researcher's belief that the subjects will benefit from participating in the study by helping educators understand more about how peer interactions in an online course impact the formation of learning communities and student learning.

Confidentiality: The researcher will maintain subjects' anonymity and confidentiality as necessary for the ethical instructional and research practice. Any information obtained will be kept confidential. A pseudo-name will be used to identify all results and other information students provide. The only person who will have access to this information will be the investigator and no names will be used in any data summaries or publications.

Voluntary Participation Statement: Participation in this study will be voluntary and refusal to participate will involve no penalty or loss of benefits to students. Additionally, lack of participation in this study will not effect student grades. Students may discontinue participation in this study at any time without penalty or loss of benefits to which they are entitled.

Additional Information: Six students will be selected for one-on-one interviews during the term. Students will be asked to describe their experiences online. The selected students will be provided with a copy of the interview questions and asked to complete an interview consent form at the time of selection before the interview takes place.

If You Have Questions: Additional questions about this research or your rights may be directed to:
Marlene Cvetko, EdD Candidate
Portland Community College
CA FB 210
mcvetko@pcc.edu
(503) 978-5452
or
Dr. Sam Stern
School of Education
Oregon State University
Education Hall
Corvallis, OR 97331-3502
sterns@orst.edu
541 737-6392

If you have any questions about your rights as a human subject, please contact the IRB Coordinator, OSU Research Office, (541) 737-3437
You have my permission to use student-to-student public email, forum chats, white board discussions, and bulletin board postings. Yes ☐ No ☐
Please send this intra-campus mail to Marlene Cvetko CA FB 210, or mail it to Marlene Cvetko, Portland Community College, CA FB 210, 739 N. Killingsworth, Portland, OR 97217. You will be provided a copy of the signed consent form.

Name _____ ...Please Print
E-Mail Address _____ ...Please print
Date _____ ...Please Print

Signature _____

Appendix C - Interview Informed Consent Form

School of Education
Oregon State University
Title: Case study of the student-to-student interactions that take place in an online course offered by a community college and how the interactions impact learning

Investigators:
Dr. Sam Stern
Marlene Cvetko, EdD Candidate
School of Education
Oregon State University

Purpose: The purpose of the interview portion of this study is to gain a deeper understanding of how peer interactions that occur in an online course impact the formation of learning communities and student learning One-on one interviews will be held either in person or by phone. The selected students will be provided with a copy of the interview questions and asked to complete an interview consent form at the time of selection before the interview takes place. The interview will be scheduled during the Fall 200 term, at a time convenient for you. It will last about 15 minutes. A short follow-up session will be held in person or over the phone after the interview has been transcribed. This will allow the researcher to verify and clarify the data.

Foreseeable Risks: There are no known risks to students or the instructor for involvement in this interview.

Benefits of the Study: Data collected during this study will help inform the field about online course interactions between and among students. It is the researcher's belief that the subjects will benefit from participating in the study by helping educators understand more about how peer interactions in an online course impact the formation of learning communities and student learning.

Confidentiality: The researcher will maintain subjects' anonymity and confidentiality as necessary for the ethical instructional and research practice. Any information obtained will be kept confidential. A pseudo-name will be used to identify all results and other information you have provided. The only person who will have access to this information will be the investigator and no names will be used in any data summaries or publications.
Your responses will be recorded to aid the data analysis. The interview will be transcribed, analyzed, and synthesized along with the responses of other interviewees.

Voluntary Participation Statement: Participation in this interview will be voluntary and you may discontinue the interview at any time. You may request that certain

comments be withheld from the study data collected. You may refuse to answer any question asked during the interview.
Additional Information: After the interview has been transcribed and analyzed, you will be asked to review the data analysis for clarity and accuracy. You will have the opportunity to make corrections and request that data be withheld during this process.

If You Have Questions
Additional questions about this research or your rights may be directed to:
Marlene Cvetko, EdD Candidate
Portland Community College
CA FB 210
mcvetko@pcc.edu
(503) 978-5452
or
Dr. Sam Stern
School of Education
Oregon State University
Education Hall
Corvallis, OR 97331-3502
sterns@orst.edu
541 737-6392
If you have any questions about your rights as a human subject, please contact the IRB Coordinator, OSU Research Office, (541) 737-3437
You have my permission to use data collected in this one-on-one interview.
Yes ☐ No ☐
Please send this intra-campus mail to Marlene Cvetko CA FB 210, or mail it to Marlene Cvetko, Portland Community College, CA FB 210, 739 N. Killingsworth, Portland, OR 97217. You will be provided a copy of the signed consent form.

Name _____ ...Please Print
E-Mail Address _____ ...Please print
Date _____ ...Please Print
Signature _____

Appendix D - Interview Script for Students

Hi, I'm Marlene Cvetko. I am a doctoral candidate at Oregon State University, and I am investigating how online interactions impact learning community.

As you know I have been observing your class, MSD 115 this term. I have noticed that during the term you posted _____ times . Is that more or less than you thought you sent, or is it about what you thought?

1. Online classes have been shown to increase the amount of communicating some students do in class but has shown to decrease the amount of communicating other students do in class. Do you think that you communicated more, less or about the same as you would do in a face-to-face class?

2. Online communications have been used by students to ask questions, clarify assignments, share ideas, and give feedback to each other. In your postings, what kind of communications did you use most often in your interactions with your peers?

3. Some studies about online interactions have shown that communication among students increases their understanding of the ideas being presented in the course materials. Other studies have concluded that the interactions have little impact on a student's understanding. Did the interactions with other students increase or have little effect on your understanding of the ideas presented in the course materials?

4. How did your online interactions affect your learning?"

5. Is there something more that you could tell me about the learning community?

6. I want to thank you very much for agreeing to participate in this study.

Appendix E - Interview Script for Instructor

Hi, I'm Marlene Cvetko. I have been observing your class this term. First I would like to thank you for allowing me to observe your class this term.

The total public post was 426. Is that more or less than you thought you sent, or is it about what you would expect for the class?

1. Online classes have been shown to increase the amount of communicating some students do in class but has shown to decrease the amount of communicating other students do in class. Do you think that the students communicated more, less or about the same as they typically do?

2. Online communications have been used by students to ask questions, clarify assignments, share ideas, and give feedback to each other. Were the postings typically what you get in your classes?

3. Some studies about online interactions have shown that communication among students increases their understanding of the ideas being presented in the course materials. Other studies have concluded that the interactions have little impact on a student's understanding. Did the interactions with other students increase or have little effect on your understanding of the ideas presented in the course materials?

4. How did your online interactions affect your teaching?

5. Is there something more that you could tell me about the learning community?

6. I want to thank you again very much for agreeing to participate in this study.

Appendix F - WebCT Interface

MSD 115,Improving Work Relations, Spring, 2000

Welcome to MSD 115, Improving Work Relations

To get started, please click on the Course Content icon. Please e-mail me to get your password. If you have any questions or problems, e-mail me at: mswett@involved.com

Have Fun!

Course Content

Bulletin Board

Private Mail

Calendar of Course Events

Course Tools and Other Useful Links

General Tools and Other Links

View Your Progress Tracking Information

View Your Marks and Course Record

PCC WebCT Tech Support

Chat