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Sense of Co-accomplishment in Collaborative Work as Threshold in Establishing a Sense of Community in an Online Course

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Sense of Co-accomplishment in Collaborative Work as Threshold in

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Dedication

To my parents and parents-in-law

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Sense of Co-accomplishment in Collaborative Work as Threshold in Establishing a Sense of Community in an Online Course

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This study explored students' sense of community in an online collaborative learning environment, focusing on the factors influencing students' sense of community, the relationships among the factors, and the influences of a sense of community. The setting of this study was a graduate-level online course on Computer Supported Collaborative Learning in which all course activities were conducted collaboratively through online communications. Data were collected from multiple sources including participants' electronic messages posted in public areas of the computer conferencing system, transcripts of online chats, interviews with the participants, participants' written reflections on their learning process, and an instrument measuring students' sense of community.

Data were analyzed using the coding procedures for developing grounded theory proposed by Strauss and Corbin (1998). Results of the data analysis indicated that students established their sense of community by experiencing a sense of co-accomplishment through collaboration. Results also indicated that the factors influencing

students' sense of community related to three dimensions: group interaction, course context, and individual differences. Students' sense of community was influenced primarily by the outcomes of interactions with group members, such as group members' behaviors showing consideration for others, responding to their contributions, and contributing to the group collaboration. Factors related to the course context, such as the collaborative nature of the course, the technology used for the course, and the instructor's role, influenced students' sense of community by either facilitating or interfering with the group interactions. In addition, some factors resulting from individual differences in backgrounds and characteristics, such as personalities and attitudes toward collaborative learning, were critical for students to develop a sense of community. Once a sense of community was established, students developed a sense of camaraderie with their group members, felt more comfortable in working together, developed a greater sense of responsibility, and developed trust in their group members. The consequences of a sense of community, in turn, influenced the factors that promoted a sense of community when the students engaged in the next collaborative task.

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Chapter I. Introduction

STATEMENT OF PROBLEM

The Internet has attracted the attention of educators and has become a popular medium for the delivery of instruction (Berge, 1999; Crossman, 1997; Khan, 1997; Sloane, 1997). During the 1997-98 academic year, two-year and four-year postsecondary education institutions offered an estimated 54,470 different distance education courses, and approximately 11 million students were enrolled at institutions that offered distance education courses. In addition, 78 percent of public four-year and 62 percent of public two-year postsecondary institutions offered online courses (National Center for Education Statistics, 1999).

Online courses are delivered through the World Wide Web (WWW or Web) and computer-mediated communication (CMC) (Hiltz, Coppola, Rotter, & Turoff, 2000). The WWW not only provides a wide range of information for students in various forms, such as text, graphic, sound, and video (Flake, 1996; Hackbarth, 1997; Maddux, 1996; Rakes, 1996), but also allows students to find original materials and collect primary information themselves (Hackbarth, 1997). The WWW also permits individuals, such as instructors and learners, to share with the world by publishing their own work on Web pages (Flake, 1996; Maddux, 1996).

Computer-mediated communication (CMC) refers to "any form of organized interaction between people, utilizing computers or computer networks as the medium of communication" (Romiszowski, 1997, pp. 32-33). CMC includes asynchronous communication such as e-mail, listservers, newsgroups, etc. and synchronous communication such as text-based chat and audio/video conferencing (Khan, 1997). Asynchronous CMC gives students more time to read messages posted by others, reflect

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on them, and compose thoughtful responses (Cifuentes, Murphy, Segur, & Kodali, 1997; Griffin & Lewis, 1998; Murphy, Drabier, & Epps, 1998; Poole, 2000; Weedman, 1999). Text-based communication within CMC also enables learners to be more attentive to the content of a message than to the sender and offers greater freedom to express their views by separating the sender's physical presence and verbal delivery style from the message (Bordia, 1997; Henri & Rigault, 1996; Mantovani, 1994; Mikulecky, 1998; Ruberg, Moore, & Taylor, 1996; Smith, Ferguson, & Caris, 2001).

Although the nature of the WWW and CMC seems to provide online courses with opportunities to enhance students' learning (Agarwal & Day, 1998; Allen & Thompson, 1995; Althaus, 1997; Follansbee, Hughes, Pisha, & Stahl, 1997; Hiltz et al., 2000), several studies indicate that using the WWW and CMC does not always guarantee effective online learning (Dillenbourg & Schneider, 1995; Holzen, 1996; Smith, 1994; Wegner, Holloway, & Garton, 1999). To enhance students' learning through the use of the WWW and CMC, online courses have gradually adopted collaborative learning as an instructional strategy because the WWW and CMC can facilitate collaborative learning by promoting interactions among students and the instructor (Aviv & Golan, 1998; Dillenbourg & Schneider, 1995; Henri & Rigault, 1996; Verdejo, 1996).

Collaborative learning refers to instructional methods in which learners work together to accomplish academic goals (Hiltz et al., 2000; Reeves and Reeves, 1997). Harasim, Hiltz, Teles, and Turoff (1995) defined collaborative learning as "any learning activity that is carried out using peer interaction, evaluation, and/or cooperation, with at least some structuring and monitoring by the instructor" (p. 30). In collaborative learning, knowledge is viewed as a social construct, and learning is "the development of shared meaning among group members" (Brandon & Hollingshead, 1999, p. 111). Therefore, the social creation of knowledge is emphasized as a basis of learning. Students learn by

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actively participating in the process of knowledge creation and interpretation as a member of a group (Brandon & Hollingshead, 1999; Verdejo, 1996).

Research on collaborative learning in face-to-face classroom environments has demonstrated that this approach can have a positive impact on students' achievement and performance (Johnson, Maruyama, Johnson, & Nelson, 1981; Lou, Abrami, Spence, Poulsen, Chambers, & d'Apollonia, 1996; Qin, Johnson, & Johnson, 1995), attitudes toward the subject matter being studied (Brush, 1997; Lou et al, 1996; Singhanayok & Hooper, 1998) and other non-cognitive outcomes, such as self-concept and anxiety (Roswal, Mims, Evans, Smith, Young, Burch, Croce, Horvat, & Block, 1995).

Similar to face-to-face classroom settings, collaborative learning also can be a more effective approach than individualistic learning in online learning environments (Harasim, 1990; Hiltz, 1994; Hiltz, 1998; Hiltz et al., 2000; Kanuka & Anderson, 1998; Stacey, 1999). In a research study on the effectiveness of CMC and collaborative learning, Hiltz et al. (2000) found that students working together online reported learning more, wrote longer reports, and reported higher levels of motivation than those working alone online. Barab, Thomas, and Merrill (2001) also observed the existence of deep and meaningful learning and a sense of community in a collaborative online learning environment. A warm and open learning environment was created by the instructor and students, in which students continued to share their varying perspectives and experiences to co-construct meanings about the course content.

As shown by Barab et al. (2001), creating a warm and open learning environment is crucial for effective collaborative learning (Hiltz, 1998; Kitchen & McDougall, 1999; Murphy et al., 1998; Schwier, 1999; Wegerif, 1998). Some students in online learning environments may hesitate to participate in online discussions because of the absence of verbal cues within CMC environments and the formality and permanence of written

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dialogue (Lally & Barrett, 1999). In addition, students initially may not be familiar or comfortable with working together with other students (Harasim et al., 1995). Without an open learning environment, or sense of community, students are "likely to be anxious, defensive, and unwilling to take the risks involved in learning" (Wegerif, 1998, p.48).

Sense of community refers to "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (McMillan & Chavis, 1986, p. 9). McMillan and Chavis (1986) identified four components of this sense of community: membership, influence, integration and fulfillment of needs, and shared emotional connection. Membership refers to a feeling of belonging. Influence describes each member's influence over what the group does and a group's ability to influence individual members. The third element, integration and fulfillment of needs, are the reinforcements that bind people together into a close community. The members must get their needs met through cooperative behavior within the community. Integration refers to the extent to which individual values are shared among community members, which organizes and prioritizes need-fulfillment activities. The last element, shared emotional connection, is facilitated by the interactions of members in shared events and the specific attributes of the events. Facilitation of these four elements may enhance the formation of a sense of community (Bateman, 1998; McMillan & Chavis, 1986).

Students' sense of community in face-to-face learning environments is positively related to students' motivation, attitudes, and academic achievement. However, it is more strongly related to attitudinal and motivational outcomes than to academic achievement (Battistich, Solomon, Kim, Watson, Schaps, 1995; Goodenow, 1993a; Goodenow, 1993b; Solomon, Watson, Battistich, Schaps, Delucchi, 1992). Studies of online learning environments show that a sense of community may help students to participate fully in

their learning process by having them perceive the environments as safe, and by fostering their sense of obligation or responsibility to meet the needs of the group (Moller, Harvey, Downs, & Godshalk, 2000).

For students in an online course to feel a sense of community, the class must first become a community in which they feel safe and comfortable. Several studies on virtual communities identified members' specific behaviors indicative of the presence of a community in online environments (Bragg III, 1999; Haythornthwaite et al., 2000; Herrmann, 1998; Jarvenpaa, Knoll, & Leidner, 1998; Moller et al., 2000; Poole, 2000). These behaviors include a) using others' names in referring to past comments, b) handling disagreements gently, c) informing others when they will be away and unable to participate, d) using polite and friendly language, e) group encouragement, f) rotating leadership role, g) giving substantial feedback, h) meeting commitments for the purpose of group success, and i) providing emotional support when necessary. The behaviors listed above are specific and concrete enough to be identified easily in members' actual exchanges of messages. The instructor of an online course can monitor when a community has formed in the class by looking for the presence or absence of these behaviors.

Although many of the behaviors indicative of the presence of a community are observed in an online course, it does not mean that all members of the community feel a sense of community. In the same group, some may feel a sense of community, but others may not, even though many of the group members describe the group as a cohesive community (Brown, 2001). Studies of virtual learning communities indicate that a number of factors influence students' sense of community. The factors can be categorized into a) features of the course design, b) features of the technology used, c) the role of the

instructor or facilitator, d) interaction within the group, and e) individual background and characteristics.

Some particular instructional design and strategies promote community-building interaction (Bragg III, 1999; Moller, 1998; Wegerif, 1998). Factors related to the course design include a) the way that the course is structured, such as the selection and order of course content and assignments (Barab et al., 2001; Haythornthwaite et al., 2000), b) the development of collaborative learner-centered instructional activities to establish a cooperative goal structure within the online learning environment (Bragg, 1999; Lally & Barrett, 1999), and c) the provision of sufficient time for a sense of group identity to emerge (Brown, 2001; Lally & Barrett, 1999).

Technology allows instructional designers to use specific strategies to facilitate the creation of communities (Moller, 1998). Gentle and non-intrusive facilitation of collaborative activities by the instructor (Barab et al., 2001) and desirable behaviors modeled by the instructor (Brown, 2001; Solomon et al., 1992) help communities to form more readily for students in online courses.

Interaction within the group is another important factor that influences students' sense of community and participation. Other members' acknowledgement and positive responses to the contributions help students with a passive participation profile to participate more actively in collaborative activities (Lally & Barrett, 1999; Wegerif, 1998), which fosters their stronger sense of community (Brown, 2001; Haythornthwaite et al., 2000; Moller et al., 2000).

While students' previous experiences with online courses and high expectations in the course promote more active participation and a stronger sense of community (Brown, 2001), technical problems, lack of time (Wegerif, 1998), different academic backgrounds,

and preference for oral communication (Brown, 2001) may prevent some students from actively participating in online course activities and feeling a sense of community.

As examined above, research on virtual learning communities has identified a number of factors that influence students' sense of community. However, the majority of this research suggests only if an individual factor influences students' sense of community positively or negatively, independent of other factors, rather than in the context of their relationships with other factors. In reality, all the factors seem to interact with each other dynamically to influence students' sense of community. For example, although a negative factor such as students' preference for oral communication may hinder the development of sense of community in online learning environments, it can be minimized or overcome by promoting other positive factors such as explicit acknowledgement and positive responses from other members. This example indicates that a factor does not always influence students' sense of community in the same way. Therefore, research is needed to investigate not only what factors influence students' sense of community in an online course, but also how the factors relate to one another.

PURPOSE OF THE STUDY

The main purpose of the study was to explore students' experience of gaining a sense of community in an online collaborative learning environment. To meet the purpose, this study: a) investigated factors that influenced students' sense of community in an online course, and the relationships among the factors; and b) examined the influences of a sense of community on students' participation in online communication and collaboration.

RESEARCH QUESTIONS

The questions that guided the research were as follows:

1. What are the factors that influence students' sense of community in an online course and how do the factors relate to one another?

2. How does a sense of community influence students' participation in online communication and collaboration?

Chapter II. Literature Review

In this chapter, literature on online learning and community is examined to provide a foundation related to the research questions of this study. The review of literature is divided into three sections. The first section addresses online learning, specifically the use of the Internet and collaborative learning strategies in online learning environments. The second section explores the concept of 'community' and 'sense of community' and its effects on learning. The third section provides a synthesis of the results of studies on the characteristics of virtual communities and the factors that influence students' sense of community in online learning environments.

ONLINE LEARNING

Use of the Internet for Online Learning

Online courses delivered through the Internet use the World Wide Web (WWW or Web) as a means of accessing learning resources, and use computer-mediated communication (CMC) to support instructor-learner and learner-learner communication (Hiltz et al., 2000). Therefore, the characteristics of online learning can be determined, in part, by the nature of the WWW and CMC.

The WWW as a means of accessing learning resources for online learning can provide a wide range of information for students in various forms (Flake, 1996; Hackbarth, 1997; Maddux, 1996; Rakes, 1996). Students, for example, can visit Web sites related to museums, meteorological statistics, history, scientific experiments, etc., and find the information that meets their needs. Furthermore, the information that is delivered through the WWW is available not only in text, but also multimedia, including

graphics, sound, and animation. The WWW allows students to find original materials and collect firsthand information themselves (Hackbarth, 1997). The WWW also creates the potential for every user to publish his or her own work on personal Web pages (Maddux, 1996). This attribute of the WWW permits the work of individuals such as instructors and learners to be shared with the world. Learners can get ideas by looking at other learners' reports, which then stimulates additional investigations by other learners, who can then share their results on the WWW (Flake, 1996).

Computer-mediated communication (CMC), another main means for online learning, can be distinguished from face-to-face communication by three key attributes: place independence, time independence, and text-based communication (Harasim, 1990). The obvious advantage of computer-mediated communication is that CMC avoids the need to assemble everyone in a single location for discussion (d' Souza, 1992; Ellsworth, 1995). Asynchronous discussion of CMC also gives students more time to read messages posted by others, reflect on them, and compose thoughtful responses (Cifuentes et al., 1997; Griffin & Lewis, 1998; Murphy et al., 1998; Poole, 2000; Weedman, 1999). The absence of time limitations in CMC is especially helpful to students who have difficulty articulating their thoughts verbally, who are shy or thoughtful, or whose native language is not English.

Compared with face-to-face interaction, CMC conveys a relatively limited stream of textual information. Lack of face-to-face contact with other students and the instructor may make students in online courses feel isolated (Gibbs, 1998), and the absence of non-verbal cues and the formality and permanence of written communication may inhibit the participation of some students (Lally & Barrett, 1999). Since, however, the meaning of a text-only message is divorced from the sender's physical presence and verbal delivery style, CMC enables learners to be more attentive to the content of a message than to the

sender and offers a greater freedom to express their views (Bordia, 1997; Henri &

Rigault, 1996; Mantovani, 1994; Mikulecky, 1998; Ruberg et al., 1996; Smith et al.,

2001).

The nature of the WWW and CMC seems to provide online courses with

opportunities to enhance students learning. Empirical studies show that learners in online

learning environments perform better than learners in traditional face-to-face classrooms

in written examinations and final grades (Agarwal & Day, 1998; Althaus, 1997), the

quality and length of writing (Allen & Thompson, 1995), the quality and length of the

report on solution for an ethical case (Hiltz et al., 2000), and project-based learning

(Follansbee et al., 1997).

However, the results of the effect of online learning environments on learners'

performance are not always consistent. A research study by Holzen (1996) on electronic

student journals showed that although students using electronic journals wrote

significantly longer entries than the students who wrote in traditional written journals, the

results on the average number of journal entries submitted by students were reverse.

Smith (1994) revealed that there was no significant difference in final exam results

between the traditional and online sections. The author maintained that the objective

examination might have failed to capture some of the distinctive learning that took place

online. Wegner, Holloway, and Garton (1999) also found no significant difference

between test scores on the course knowledge of the Internet-based test group and the

traditional classroom group.

These research studies indicate that simply using the WWW and CMC does not

always guarantee effective online learning (Coomey & Stephenson, 2001; Dillenbourg &

Schneider, 1995; McLoughlin & Oliver, 1999). Whether an online learning environment

is effective or not can be determined by other factors as well as the nature of the WWW

and CMC. After reviewing 100 research reports and journal articles on online learning, Coomey and Stephenson (2001) concluded that effective online learning environments must focus on "structuring the learning activity and designing the materials in order to promote dialogue, secure active involvement of the learner, provide personal or other support and feedback, and enable the learner to exercise the degree of control expected" (p. 38). Dillenbourg and Schneider (1995) also maintained that the success of online learning depends on the instructional strategies and activities the WWW and CMC support.

With regard to the instructional strategies, several studies have shown that collaborative learning can be an effective approach to enhancing online learning (Harasim, 1990; Hiltz, 1994; Hiltz, 1998; Hiltz et al., 2000; Kanuka & Anderson, 1998; Lally & Barrett, 1999; Stacey, 1999). With the ability of CMC technology facilitating interactions among students and instructor, collaborative learning is one of the pedagogical approaches that gradually have been adopted for online learning environments (Aviv & Golan, 1998; Dillenbourg & Schneider, 1995; Henri & Rigault, 1996; Verdejo, 1996).

Collaborative Learning in Online Learning Environments

The bulk of research on collaborative learning has occurred in face-to-face classroom settings. Therefore, in this section, research on collaborative learning in face-to-face environments is reviewed first, and then the effects of collaborative learning in online learning environments are examined.

A number of studies have reported on the effectiveness and benefits of collaborative learning in face-to-face classroom settings. Johnson, Maruyama, Johnson, and Nelson (1981) reviewed 122 studies and compared the relative effectiveness of

cooperative, competitive, and individualistic goal structures. In a cooperative goal structure, the individual's rewards are directly proportional to the quality of the group work. In a competitive goal structure, individuals are rewarded so that one receives a maximum reward, the others a minimum reward. In an individual goal structure, individuals are rewarded according to the quality of their own work, independent of the work of other participants. As a result of the meta-analysis, they found that the cooperative goal structure was more effective in promoting student achievement and performance than both competitive and individualistic goal structures. The results held for all subject areas, all age groups, and tasks involving concept attainment, verbal problem solving, categorizing, spatial problem solving, retention and memory, motor performance, and guessing-judging-predicting.

In another meta-analysis of 66 studies in which collaborative learning groups in face-to-face settings were compared with individualistic instruction (Lou et al., 1996), the researchers found that students learning in small groups achieved significantly better than students not learning in small groups. The results of the meta-analysis suggest that members of small groups appeared to learn more when there was outcome interdependence among the group members, that is, when each member contributed to the overall group goal and received the same group reward.

Qin, Johnson, and Johnson (1995) conducted a meta-analysis on the impacts of cooperative and competitive efforts on problem solving. Types of problem solving studied included linguistic, nonlinguistic, well-defined, and ill-defined problem solving. Members of cooperative teams outperformed individuals competing with each other on all four types of problem solving. The researchers concluded that the differences were due to the exchange of information and insights among students, the generation of a variety of strategies to solve the problems, increased ability to translate the problem

statement into equations, and the development of a shared cognitive representation of the problem.

In addition to the positive effects of collaborative learning on students' achievement and performance, research shows that collaborative learning can have a positive impact on student attitudes toward the subject matter being studied (Brush, 1997; Lou et al., 1996; Singhanayok & Hooper, 1998) and other non-cognitive outcomes such as self-concept and anxiety (Roswal et al., 1995).

The results of studies on effects of collaborative learning raise questions about why and how the effects occur in classroom settings and whether the same effects might be observed in online environments. Several theoretical mechanisms have been proposed to explain how interactions with others shape the participants' understanding and reasoning processes (Dillenbourg & Schneider, 1995; Webb & Palincsar, 1996). The key mechanisms include conflict or disagreement, internalization, and self-explanation. When disagreement or conflict occurs between peers during collaboration, social factors prevent students from ignoring the conflict and make them seek additional information and find a resolution. Learning is then facilitated through the verbal interactions generated during conflict resolution (Dillenbourg & Schneider, 1995). Internalization mechanisms explain how a student can learn through interactions with more able peers. The concepts conveyed through the interactions with more knowledgeable peers are integrated progressively into the student's knowledge structures. After the concepts are integrated, they can be used in his or her own reasoning (Dillenbourg & Schneider). Research on the self-explanation mechanism indicates that peers who are more advanced as well as less knowledgeable students can benefit from collaborative learning. Giving explanations helps the explainer to gain a more organized cognitive structure and elaboration for the content being explained (Bargh & Schul, 1980). The cognitive restructuring and

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elaboration "may help the explainer to understand the material better, develop new perspectives, and recognize and fill in gaps in his or her understanding" (Webb & Palincsar, 1996, p. 853). Receiving explanations provides not only the opportunity for help in filling gaps in the receivers' understanding, but also the opportunity to observe learning strategies used by their partners (Singhanayok & Hooper, 1998).

As examined above, research on collaborative learning has shown that collaborative learning in face-to-face environments promotes students' achievement and performance, motivation, and attitudes. Similar to face-to-face settings, collaborative learning also can be an effective approach to enhancing online learning (Harasim, 1990; Hiltz, 1994; Hiltz, 1998; Hiltz et al., 2000; Kanuka & Anderson, 1998; Stacey, 1999). By providing a basis for group communication, CMC makes it possible for students to learn in a collaborative manner online (Verdejo, 1996). Harasim et al. (1995) described CMC networks as an ideal environment for collaborative learning.

> With attention to instruction design and facilitation, these shared spaces can become the locus of rich and satisfying experiences in collaborative learning, an interactive group knowledge-building process in which the learners actively construct knowledge by formulating ideas into words that are shared with and built upon through the reactions and responses of others (p. 4).

In a research study on the effectiveness of CMC and collaborative learning, Hiltz et al. (2000) found that collaborative learning methods are more effective than individualistic methods in online learning environments. While solving ethical case scenarios in a Computer and Society course, participants in this study were assigned to one of four conditions: face-to-face individual condition, online individual condition, face-to-face collaborative learning condition, and online collaborative learning condition. The self-report survey conducted immediately after the experiment showed that students working in groups online perceived higher learning than those working alone online. In addition, reports written by groups online or face-to-face were significantly longer than

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individual reports. Regarding solution quality, the scores submitted by the judges showed that students working online (individually or in groups) submitted better reports than those working in face-to-face settings. Students working together in a classroom or online learning environment reported higher levels of motivation than those working alone online. The results of the study indicate that simply directing individual students online to interact with course materials may be less effective than traditional classroom group learning.

Barab, Thomas, and Merrill (2001) provided empirical evidence for the existence of deep and meaningful learning and a sense of community in an online course in which graduate students collaboratively investigated and shared their personal experiences related to adult development. They identified three emergent issues related to the course experience. First, the largely asynchronous delivery mode of the course and the instructor's efforts to create a warm and open learning environment provided flexibility to accommodate participants with varying backgrounds, experiences, and interests. Second, students continued to share their varying perspectives and experiences to co-construct meanings about course content. Third, students were willing to share intimate matters of self, and this sharing led to personal growth. The researchers concluded, "asynchronous, computer-mediated communication tools actually promote reflective and critical thinking, allowing for deep and meaningful learning to occur" (Barab et al., 2001, p. 135). However, they cautioned that this would not happen in all online courses. The researchers explained that the reason deep and meaningful learning occurred in the course studied was because the instructor was committed to fostering a sense of community, and chose texts and assignments that facilitated deep and personal sharing.

As shown in the study by Barab et al. (2001), learners' feeling of a sense of community is a critical element for effective collaborative learning (Hiltz, 1998; Kitchen

& McDougall, 1999; Murphy et al., 1998; Schwier, 1999; Wegerif, 1998). Because they were accustomed to working individually, students may not be familiar or comfortable with working together with other students at first (Harasim et al., 1995). Without a feeling of a part of the group, students were "likely to be anxious, defensive and unwilling to take the risks involved in learning" (Wegerif, 1998, p.48). Furthermore, some students in online learning environments may hesitate to participate in online discussions because of the absence of verbal cues within CMC environments and the formality and permanence of written dialogue (Lally & Barrett, 1999). Therefore, it is a necessary first step for effective online collaborative learning to form an open, safe community and have students feel a sense of community.

COMMUNITY AND LEARNING

Community and Sense of Community

The concept "community" has been defined and used in several different ways (Nelson, Ramsey, & Verner, 1960; Obst, Zinkiewicz, & Smith, 2002). In an early analysis of community over the last several decades, Hillery (1955) discovered 94 definitions explicitly used in various works. From the analysis, Hillery (1955) revealed that a majority of the definitions included three important elements of community: geographic area, common ties, and social interaction. All of the authors of the 94 definitions would allow these three elements to be included in a definition of the community. Among these elements, social interaction was emphasized as the most important element. Although some authors may not mention geographic area or common ties in their definitions, they do not exclude either from consideration (Hillery, 1955).

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Gusfield (1975) distinguished between two major uses of the term community: territorial and relational. In the territorial use of community, the concept appears in a context of location, physical territory, and geographical continuity, such as school, city, and neighborhood. The relational use of community points to the quality or character of human relationship, without reference to location. While the two uses of community are not exclusive and both dimensions can and do coexist, there can be a relational community that is created by common interests or common goals without having geographical proximity (Bateman, 1998).

In an attempt to develop a strong and inclusive definition of community, Shaffer and Anundsen (1993) tried to include a time factor and encompass both traditional forms and emerging newer components.

> Community is a dynamic whole that emerges when a group of people participate in common practices; depend upon one another; make decisions together; identify themselves as part of something larger than the sum of their individual relationships; and commit themselves for the long term to their own, one another's, and the group's well-being (Shaffer & Anundsen, 1993, p. 10).

Along with the efforts to define and understand the concept of community, there has been an attempt to define and quantify the community cohesion and integration that develops from membership in a community. This has resulted in the development of the construct of a psychological sense of community (Bateman, 1998). Sense of community refers to "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (McMillan & Chavis, 1986, p. 9).

McMillan and Chavis (1986) suggested four elements of sense of community: membership, influence, integration and fulfillment of needs, and shared emotional connection. Membership is a feeling that one has invested part of oneself to become a member and therefore has a right to belong. It is a feeling of belonging, and has

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boundaries, which provide members with the emotional safety necessary for needs and feelings to be exposed and for intimacy to develop. Influence is a bi-directional concept. In one direction, members are more attracted to a community in which they feel that they are influential. On the other hand, for a community to be cohesive, it must influence its members to conform. Influence of a member on the community and influence of the community on the member operate concurrently. The third element, integration and fulfillment of needs, can be translated into reinforcement. For any community to maintain a positive sense of togetherness, the members must have their needs met through cooperative behavior within the community. The extent to which individual values are shared among community members will determine the ability of a community to organize and prioritize its need-fulfillment activities. The last element, shared emotional connection, is an affective component of sense of community that develops by offering positive ways to interact, important events to share and ways to resolve them positively, opportunities to honor members, opportunities to invest in the community, and opportunities to experience a spiritual bond among members.

McMillan and Chavis' definition and theory of sense of community could be applied to both communities of interest and geographic communities (Chipuer & Pretty, 1999; Obst, Zinkiewicz, & Smith, 2002). The four elements, however, would be of varying importance depending on the particular community and its membership. A sense of community can develop, especially if appropriate technical assistance is provided to assist in organizing. Then, facilitation of the four elements of sense of community will further strengthen the formation of a sense of community (Bateman, 1998; McMillan & Chavis, 1986).

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Effects of Sense of Community on Learning

Several studies have demonstrated that a sense of community in neighborhood environments is significantly related to active participation in community life (Chavis & Wandersman, 1990), less loneliness (Chipuer, 2001; Pretty, Andrewes, & Collett, 1994; Pretty, Conroy, Dugay, Fowler, & Williams, 1996; Prezza, Amici, Roberti, & Tedeschi, 2001), and subjective well-being including happiness, worrying, and coping with personal problems (Davidson & Cotter, 1991; Pretty et al., 1996; Prezza et al., 2001).

Studies on a sense of school or classroom community have shown that students' sense of school or classroom community is positively related to students' motivation, attitudes, and academic achievement. However, it is more strongly related to attitudinal and motivational outcomes such as expectations for success in the academic subject, the interest, importance, and value of the academic work, liking for school, and self-esteem than it is to academic achievement such as class grade and standardized achievement test (Battistich et al., 1995; Goodenow, 1993a; Goodenow, 1993b; Solomon et al., 1992). In addition to academic motivation and achievement, students' sense of community is found to be associated with self-reported social attitudes and skills, including concern for others, conflict resolution skills, cooperation skills, etc. (Bateman, 1998; Battistich et al., 1995). The findings from these studies suggest that students' sense of community in their learning environment "may affect school behavior and academic achievement indirectly through its influence on motivation" (Goodenow, 1993a, p. 87).

The community also provides emotional support for risk-taking behaviors that are essential for intellectual growth. With the feeling of being more comfortable with other students and the instructor and the feeling of acceptance that the community provides, students begin to allow themselves to take educational risks and engage in substantive

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and rich conversations (Moller et al., 2000; Wehlage, Rutter, Smith, Lesko, & Fernandez, 1989).

VIRTUAL LEARNING COMMUNITIES IN ONLINE COURSES

Characteristics of Virtual Learning Communities

In spite of the absence of non-verbal, relational cues such as gestures, facial expressions, and eye contact, studies of online environments indicate that community and a strong sense of community can exist among those interacting within an online environment (Barab et al., 2001; Herrmann, 1998; McDonald & Gibson, 1998; McGinnis, 1996; Obst et al., 2002; Rheingold, 1993). Members of online communities exhibit behaviors that traditionally identify the presence of community in face-to-face environments, such as a shared history, a common meeting place, commitment to a common purpose, adoption of normative standards of behavior, and recognition of community boundaries (Haythornthwaite, Kazmer, Robins, & Shoemaker, 2000).

Rheingold (1993) defines virtual communities as "social aggregations which emerge from the Net when enough people carry on public discussion long enough, with sufficient human feeling, to form a web of personal relationships in cyberspace" (p. 5). In this definition, the Net refers to the interconnected computer networks and cyberspace refers to the conceptual space where words, human relationships, data, wealth, and power are manifested by people using computer-mediated communication (CMC) technology.

Emphasizing that virtual communities are a sociological phenomena, not just a series of CMC messages, Jones (1997) suggests a set of criteria for an online environment to be defined as a virtual community: interactivity, number of communicators, sustained membership, and a virtual common-public-space where a

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significant portion of interactive group-CMCs occur. The requirement for a minimum level of interactivity excludes many CMC groups from the category of virtual community. For example, an email list where subscribers receive new information but are not able to conduct interactive discussions with fellow subscribers would not be classified here as a virtual community. The requirement for the minimum number of communicators (more than two people) excludes most database queries and database interactions from being considered a virtual community. The requirement for a virtual common-public-space makes it possible to distinguish between a virtual community and such categories of CMC as private communication where postings go directly from one individual to another with no common virtual-place.

A community can be considered a learning community when its members engage purposefully and collectively in the acquisition, transformation or creation of knowledge (Schwier, 1999). Therefore, virtual learning communities can be defined as a group of people who are separated physically yet engage collectively in the transaction or transformation of knowledge through CMC technology (Kowch & Schwier, 1997; Schwier, 1999).

A virtual learning community provides an open and safe learning environment in which students can actively interact with one another and engage in their learning process (Palloff & Pratt, 1999). Palloff and Pratt (1999) summarize the desired outcomes of virtual learning communities as follows:

- Active interaction involving both course content and personal communication

- Collaborative learning evidenced by comments directed primarily student to student rather than student to instructor

- Socially constructed meaning evidenced by agreement or questioning with the intent to achieve agreement on issues of meaning

- Sharing of resources among students

- Expressions of support and encouragement exchanged between students as well as willingness to critically evaluate the work of others (p. 32)

Woodruff (1999) suggests four major elements that unite a community in an online learning context and make it possible to distinguish between a group of individuals and a cohesive community. These four elements include function, identity, discursive participation, and shared values. Function refers to the goal or purpose of the community. Function generally evolves around an ideal selected by a group either explicitly or implicitly and determines the nature of group interaction. Identity implies the validation of 'self' through membership, and is constructed through a series of patterned interrelations. Discursive participation helps to advance the function or goal of the community. Participation is also vital to the consolidation of identity and demonstrates a history of allegiance to norms, principles, and causes espoused by the community. Shared values are the global beliefs held by members, which unite them and help to promote an emerging discourse. The shared values of a community determine whether ideas will be valued, rights respected, and power distributed. These four elements for cohesive community are closely linked to one another. Changes in one element, therefore, will influence all other elements.

Although these elements help us to understand communities conceptually and provide some implications for designing online communities, they seem too abstract to help evaluate what actually happens in the community. Several studies on virtual learning communities have identified very specific behaviors that indicate the presence of a community through a close examination of online communication among members. These behaviors are as follows:

- Members use others' names in referring to past comments (Bragg III, 1999; Herrmann, 1998; Poole, 2000).

- Members handle disagreements gently. Although opinions may be in opposition, members are very respectful of each other, and make an effort to understand the alternative view (Herrmann, 1998; Jarvenpaa et al., 1998; Poole, 2000).

- Members inform others when they will be absent from the participation and apologize for technical or other difficulties that limit their participation (Jarvenpaa et al., 1998; Poole, 2000).

- Members use polite and friendly language and other approaches, such as emoticons, graphics, and color, to go beyond mere typing of information on a screen (Bragg III, 1999; Herrmann, 1998).

- There is group encouragement and at times a sincere camaraderie (Bragg III, 1999; Jarvenpaa et al., 1998).

- Members rotate leadership role. Each of the members demonstrates certain leadership traits during the collaboration (Jarvenpaa et al., 1998).

- Members give substantial feedback oriented toward improving the content of a fellow member's work (Jarvenpaa et al., 1998).

- Members meet their commitments for the purpose of group success (Jarvenpaa et al., 1998; Moller et al., 2000).

- Members provide emotional support when necessary (Bragg III, 1999; Haythornthwaite et al., 2000).

Although the behaviors listed above are not exhaustive, they are sufficiently specific and concrete to be easily identified in members' actual exchanges of messages. The instructor of an online course may monitor if and when a community is formed in the class by identifying the behaviors.

Sense of Community in Online Learning Environments

As discussed previously in this chapter, in face-to-face learning environments, students' sense of community not only influences students' motivation, attitudes, and academic achievement, but also allows students to take educational risks and engage in substantive and rich conversations. Developing a sense of community within a group of participants is even more crucial in online learning situations (Bragg III, 1999; Hiltz, 1998; Palloff & Pratt, 1999; Wegerif, 1998).

Students in online courses may feel isolated because they are at a distance and do not have regular face-to-face contact with other students and the instructor (Gibbs, 1998). Online students also are more likely to stop participating in the course activities when engaged in other responsibilities. Since classes do not meet at any specific time, but only when students log on, it is easy to postpone the participation (Hiltz & Wellman, 1997). In addition, the absence of non-verbal cues within an online environment and the formality and permanence of written communication may inhibit the participation of some students (Lally & Barrett, 1999). A sense of community may help students in online learning environments overcome these problems and fully participate in their learning process by having them perceive the environments as safe and by fostering their sense of obligation or responsibility to meet the needs of the group (Moller et al., 2000).

Studies of virtual learning communities have identified several factors that can influence students' sense of community. The factors can be categorized into a) features of the course design, b) features of the technology used, c) the role of the instructor or facilitator, d) interaction within the group, and e) individual background and characteristics.

Some particular instructional designs and strategies promote community-building interaction (Bragg III, 1999; Moller, 1998; Wegerif, 1998). One of the factors related to

the course design is the way that the course is structured, such as the selection and order of course content and assignments (Barab et al., 2001; Haythornthwaite et al., 2000). For example, socializing opportunities to create community may be more effective if structured within the context of the group project and related tasks rather than scheduled outside the formal context of the course (Berg, 1999). In addition, it is important to establish a cooperative goal structure within the online learning environment by using collaborative learner-centered instructional activities. The cooperative goal structure fosters interactions with other members and promotes interdependence among the group members (Bragg, 1999; Lally & Barrett, 1999). Another factor for forming a sense of community is the provision of sufficient time for a sense of group identity to emerge (Brown, 2001; Lally & Barrett, 1999).

The technology used for the course also plays an important role in promoting students' sense of community (Haythornthwaite et al., 2000; Moller, 1998). Although using technology does not guarantee development of communities, technological tools allow instructional designers to use specific strategies to facilitate creation of communities (Moller, 1998). Computer conferencing systems that organize the online environment graphically instead of showing simply a long list of messages, provide a sense of a shared space in which participants can work together (Wegerif, 1998).

The gentle and non-intrusive facilitation of collaborative activities by the instructor is conducive to the creation of an open and warm atmosphere (Barab et al., 2001). In addition, instructor modeling of expected behaviors and encouragement of collaboration by the instructor help communities to form more readily in online courses (Brown, 2001; Solomon et al., 1992).

Interaction within the group is another important factor that influences students' sense of community and participation. Students with a passive participation profile may

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feel more comfortable and confident in the community and become more active participants when their contributions to an online discussion or group work are explicitly acknowledged and they receive positive responses from other members (Lally & Barrett, 1999; Wegerif, 1998). With regard to the relationship between active participation and sense of community, the former seems to be considered a result of the latter. Conversely, active participation in collaborative activities can foster a stronger sense of community (Brown, 2001; Haythornthwaite et al., 2000; Moller et al., 2000). The size of an online learning group may also be a critical factor in developing a sense of community and securing full and active participation (Lally & Barrett, 1999).

The last category of factors that can influence students' sense of community, individual background and characteristics, consists of various factors, including technical problems, lack of time, differences in background and experience, interaction style, and personal need. Technical problems, such as having access only at work during office hours, and lack of time resulting from the pressure of work and family responsibilities, prevent some students from actively participating in course activities and feeling a part of the course (Wegerif, 1998). Experiences with online courses are also an important factor. Experienced students are able to become quickly engaged in the class. However, it takes some time for inexperienced students to gain confidence in online courses. Newer students also tend to favor a structured class structure and more frequent specific feedback from the instructor for checking whether they are proceeding appropriately (Brown, 2001). Students who have academic backgrounds quite different from the subject area of the course may feel that they know little about the subject area and have little of value to say, resulting in passive participation and a feeling of alienation from the course (Brown, 2001; Wegerif, 1998). In addition, students who enjoy or prefer oral communication may have more difficulty because they become frustrated with the

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amount of time needed to write messages and with the time delays necessary for responses (Brown, 2001). Students' expectations in the course are another key factor that influences development of a sense of community. Students having high expectations in the course place higher priority on the course, which leads to more active participation and a stronger sense of community (Brown, 2001).

As examined above, students' sense of community is affected by many factors related to features of the course design, technologies being used, instructor's role, interaction within the group, and students' background and characteristics. However, not all members in the same group perceive the same sense of community. Some group members may feel a sense of community while others in the same group do not, even though many members describe the group as being cohesive community (Brown, 2001). Many factors dynamically influence students' sense of community and their interaction with one another. Therefore, one of the purposes of this study was to investigate what factors influence a sense of community in an online course and how the factors relate to one another. In addition, this study examined how a sense of community influences students' participation in online communication and collaboration.

Chapter III. Methodology

The two main purposes of this study were to investigate factors that influence students' sense of community and the relationships among those factors in online learning environments, and the influences of a sense of community on students' participation in online communication and collaboration. This chapter discusses how the purpose of the study was achieved. The first section of the chapter provides an overview of the methodology for this study. The second section, "Site Selection," addresses the rationale for the selection of the setting of the study. The third section, "The Research Setting and the Participants," describes, in detail, the online course that was the setting of the study and the participants. The fourth section, "Data Collection," addresses data collection methods and sources for the study. The fifth section, "Data Analysis," describes the specific procedures for analyzing the data gathered. The final section, "Methods for Trustworthiness," describes several strategies that were used to establish the trustworthiness of the study.

OVERALL APPROACH AND RATIONALE

To explore how students' sense of community works in online learning environments, qualitative research methodology was used for several reasons. First, this study was, of necessity, exploratory in nature because the relationships among the variables related to students' sense of community in online courses were not well known although many variables had been identified separately. Qualitative methods allowed the researcher to study the phenomenon of interest in depth and get insights into the phenomenon without being constrained by predetermined categories or dimensions of analysis. A qualitative approach typically uses inductive logic, which begins with specific

observations and builds toward general patterns. The inductive analysis allows important dimensions to emerge from patterns found in the settings under study without presupposing in advance what the important dimensions will be (Patton, 1990).

Second, students' sense of community is significantly influenced by the setting in which it occurred. Therefore, the phenomenon of interest in this study needed to be studied as it naturally occurred. In addition, the online learning setting was complex and had its unique characteristics, and thus the data gathered in the setting were very dependent on the context. Researchers using qualitative methods attempt to understand a phenomenon as a whole because they assume that a phenomenon cannot be understood in isolation from the context. Therefore, the researcher gathered data on multiple aspects of the setting under study in order to assemble a comprehensive and complete picture of the phenomenon (Lincoln & Guba, 1985; Patton, 1990).

Among the qualitative research approaches, this study mainly used the techniques and procedures of the grounded theory approach originally developed by Glaser and Strauss (Strauss & Corbin, 1998). Grounded theory means "theory that was derived from data, systematically gathered and analyzed through the research process" (Strauss & Corbin, 1998, p. 12). Grounded theory research begins with an area of study and gathers data from a variety of sources, including interviews and observations. Data gathered are immediately analyzed using coding procedures. The results of the analysis become the guides for further data gathering. Data gathering continues until no new or relevant data emerge regarding all categories. When data gathering is completed, theories are integrated and refined through the coding procedures. More detailed descriptions of the procedures are given in the following sections.

The setting of this study was a university graduate-level online course in which all course activities were conducted collaboratively through online communications. The reasons for choosing this course as the setting of the study include a) the researcher's familiarity with the course structure, content, and technologies, b) the nature of the course manifests the phenomenon intensely, and c) the researcher's accessibility to a wide range of participants' activities.

The course had been offered originally in a traditional face-to-face classroom format for several years, and was transformed into an online course in 2000. At the time of data collection, the course had been offered completely online for two years. The researcher had an active role in transforming and revising the course from the traditional format to an online approach. The researcher also helped students who had technical problems during the course, observing almost all of the participants' activities. Therefore, the researcher was familiar with the components of the course, such as the course structure, the content, the course activities, and the technologies used for the course. The experiences in this course gave the researcher the sensitivity that enabled him to decide what concepts needed to be explored and where he might find indicators of them (Strauss & Corbin, 1998).

The second reason for choosing this course as the setting of the study was because the course was expected to manifest intensely the phenomenon of interest. Communities are not formed automatically in online learning environments, and occur in online courses only when strategies for building communities are specifically designed and implemented (Moller, 1998). One of the objectives of this course was to build a learning community among the participants throughout the course. In fact, the first module of the course was assigned entirely for community building activities. Other modules also used

collaborative learning strategies that could promote the process of community building. Although there were some minor changes in the course at the time of the study, the observations of the two previous courses indicated that learning communities had indeed been formed among the participants during the courses.

The third reason was the researcher's accessibility to the setting. The researcher was active in the role of supporting students who had technical problems during the course. Therefore, the participants felt comfortable with the presence of the researcher. This role in the course also helped the researcher to build trustful relationships with the participants in the study.

THE RESEARCH SETTING AND THE PARTICIPANTS

The goal of the course, called "Computer Supported Collaborative Learning (CSCL)," was to help students to understand, create, and reflect upon computer-supported collaborative learning environments. The course was organized into six modules that included two to six weeks of work. Each module included both individual and group assignments (See Appendix A for detailed descriptions on all the assignments). In the first module, students participated in the team-building process by sharing information about their interests, background, and expertise, and the activity of establishing norms or rules for effective online collaboration. Modules 2 and 3 provided opportunities to understand the basics of CSCL and the process of designing CSCL activities through reading and online discussion. In the next two modules, students worked collaboratively to write topic papers on CSCL using collaborative writing strategies and developed Web-based inquiry activities. The last module provided students with opportunities to integrate their knowledge, experience, and personal interests in planning, implementing, and evaluating an online collaborative learning project.

The course used the metaphor of a virtual Collaborative Technologies Institute (CTI) that was supposed to assist educators in designing online collaborative learning environments (Figure 3.1). The purpose of this metaphor was to provide an authentic context for the learning activities. Students participated as members of this institute when they learned about designing, implementing, and evaluating CSCL projects. Students were divided into different suite teams in CTI and each suite consisted of two offices. Almost all course activities were conducted with the office or suite team members throughout the course.
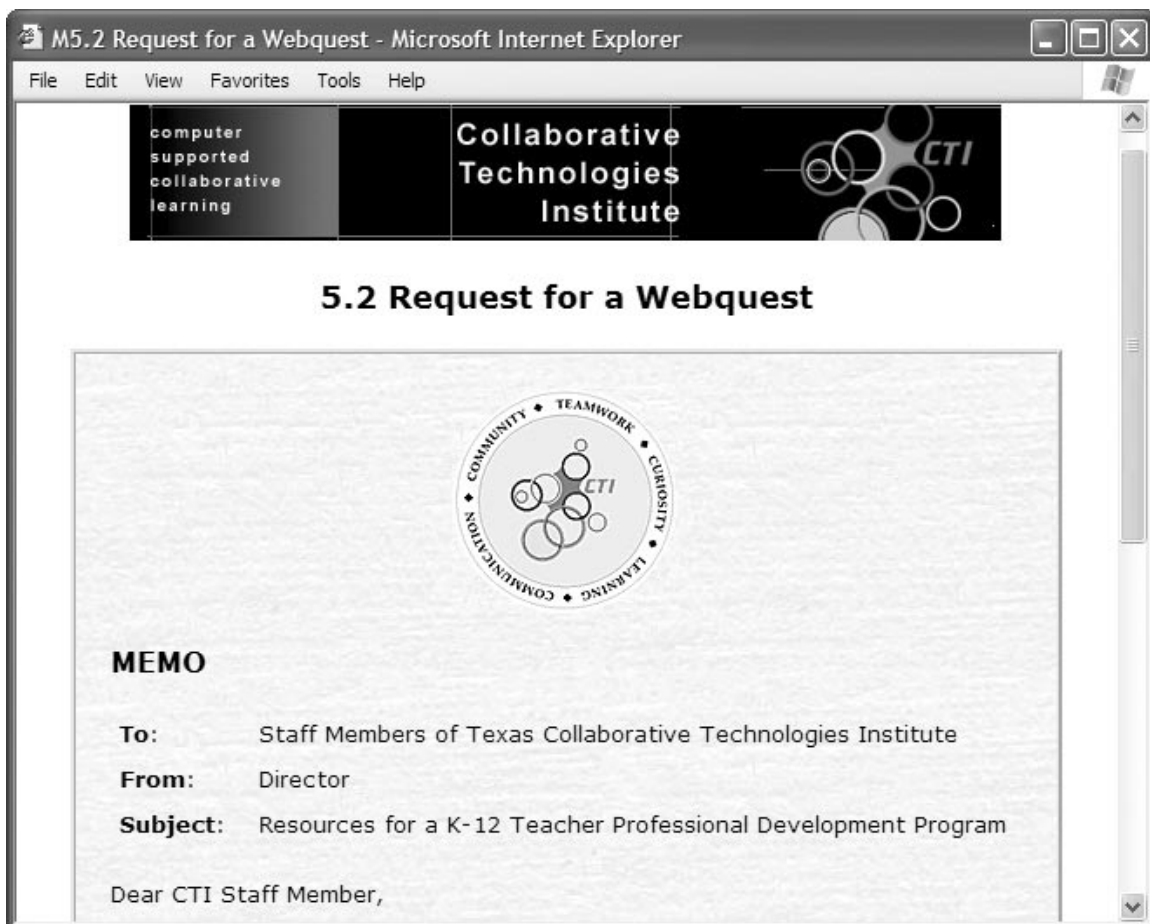
Figure 3.1 Example of Use of the CTI Metaphor

The course used two primary delivery systems: the course website and a computer conferencing system. The course website provided students with the course content and the instructions of the course assignments. The computer conferencing system provided a virtual workspace and communication tools by allowing the participants to send email and voice messages to each other, communicate in real time with online chats, set up special virtual spaces for team projects and activities, and edit the same document online. In addition, the course had six webcast (live video delivered through the Web) sessions with teleconferencing and online chat for instant interaction. In the webcast sessions, students worked together on their group projects and shared their experiences with the whole class.

The course also had a teaching assistant (TA). The TA monitored all the interactions among students in the communication system of the course and had a regular meeting with the instructor to talk about the progress of the course every week. She also provided promptly answers to the questions that she could handle. At the end of each module, she reported on whether or not each student and each group had completed all the assignments of the module on time to the instructor.

The participants of the study consisted of 21 graduate students (11 women and 10 men) who enrolled in the online course that was the setting of this study. Participants' ethnic background varied: 11 Caucasian, 7 Asian, 2 Hispanic, and 1 African-American. This course was offered simultaneously through a distance education institution as well as at a university. Therefore, the participants of the course enrolled through two different institutions. Of the 21 participants, 13 enrolled through the instructor's home campus and were called "on-campus" students. Eight participants were "off-campus" students enrolled through the distance education institution. Most off-campus students could not attend the webcast sessions because they lived far away from the home campus. They

participated in the webcast sessions through teleconferencing and online chat, watching live video delivered through the Web. While 8 of 21 participants had taken more than 3 online courses before, 10 had never taken an online course. Table 3.1 provides information on gender, institution enrolled, online learning experience, and ethnicity of each participant. Participants' actual names were replaced with pseudonyms.

Table 3.1 Participants' Background Information

Name	Gender	On/Off Campus	Number of Online Courses Taken Before	Ethnicity
Carlos	Male	On Campus	0	Hispanic
Caroline	Female	Off Campus	2	Caucasian
David	Male	Off Campus	More than 3	Asian
Eireen	Female	On Campus	0	Hispanic
Elliot	Male	Off Campus	More than 3	Caucasian
Erica	Female	On Campus	0	Caucasian
Ernest	Male	On Campus	0	African American
Grace	Female	On Campus	0	Asian
Isabella	Female	Off Campus	More than 3	Caucasian
Jongho	Male	On Campus	0	Asian
Kelly	Female	On Campus	1	Asian
Lewis	Male	Off Campus	0	Caucasian
Nancy	Female	Off Campus	More than 3	Caucasian
Noah	Male	On Campus	0	Asian
Olivia	Female	On Campus	1	Asian
Rachel	Female	On Campus	More than 3	Asian
Rebecca	Female	Off Campus	More than 3	Caucasian
Robert	Male	On Campus	More than 3	Caucasian
Sara	Female	On Campus	0	Caucasian
Tyler	Male	Off Campus	More than 3	Caucasian
William	Male	On Campus	0	Caucasian

Table 3.2 shows how comfortable participants felt using each of the computer technologies before taking this course. Participants reported that almost all of them had

had somewhat or extensive experiences in using the computer technologies except for authoring or multimedia and audio/video editing tools.

Table 3.2 Participants' Familiarity with the Computer Technologies

Name	Word Processing	Spreadsheets/ Databases	Authoring/ Multimedia	Presenta- tion Tool	Audio/Video Editing
Carlos	Somewhat	Somewhat	Not at all	Somewhat	Not at all
Caroline	Very	Somewhat	Somewhat	Somewhat	Not at all
David	Very	Very	Very	Very	Very
Eireen	Very	Very	Not at all	Very	Not at all
Elliot	Very	Very	Very	Very	Very
Erica	Very	Somewhat	Somewhat	Very	Somewhat
Ernest	Very	Somewhat	Not at all	Very	Not at all
Grace	Very	Somewhat	Somewhat	Somewhat	Not at all
Isabella	Very	Somewhat	Unknown	Very	Not at all
Jongho	Very	Very	Not at all	Somewhat	Not at all
Kelly	Very	Somewhat	Somewhat	Somewhat	Not at all
Lewis	Very	Somewhat	Not at all	Very	Not at all
Nancy	Very	Very	Somewhat	Very	Not at all
Noah	Very	Very	Somewhat	Very	Very
Olivia	Very	Somewhat	Very	Very	Very
Rachel	Very	Very	Not at all	Very	Unknown
Rebecca	Very	Somewhat	Not at all	Very	Very
Robert	Very	Somewhat	Somewhat	Very	Somewhat
Sara	Very	Somewhat	Not at all	Somewhat	Not at all
Tyler	Very	Very	Somewhat	Very	Somewhat
William	Very	Not at all	Not at all	Very	Not at all

Table 3.2 Participants' Familiarity with the Computer Technologies (Continued)

Name	Graphic Dev.	Internet/ Online Service Access	Webpage Dev.	E-mail	Computer Conferencing Tool
Carlos	Not at all	Somewhat	Not at all	Somewhat	Not at all
Caroline	Not at all	Very	Not at all	Very	Not at all
David	Very	Very	Very	Very	Very
Eireen	Somewhat	Very	Very	Very	Not at all
Elliot	Very	Very	Very	Very	Very
Erica	Somewhat	Very	Somewhat	Very	Very
Ernest	Not at all	Very	Not at all	Very	Somewhat
Grace	Somewhat	Very	Very	Very	Somewhat
Isabella	Somewhat	Very	Somewhat	Very	Very
Jongho	Not at all	Very	Somewhat	Very	Somewhat
Kelly	Not at all	Very	Not at all	Very	Somewhat
Lewis	Somewhat	Very	Somewhat	Very	Very
Nancy	Somewhat	Very	Very	Very	Somewhat
Noah	Very	Very	Very	Very	Somewhat
Olivia	Very	Very	Very	Very	Very
Rachel	Very	Very	Very	Very	Very
Rebecca	Very	Very	Somewhat	Somewhat	Somewhat
Robert	Somewhat	Somewhat	Somewhat	Very	Very
Sara	Somewhat	Very	Somewhat	Somewhat	Very
Tyler	Very	Very	Very	Very	Very
William	Somewhat	Very	Somewhat	Very	Somewhat

DATA COLLECTION

The data sources for examining the research questions included a) participants' electronic messages posted in public areas of the computer conferencing system used for the course, b) transcripts of online chats, c) face-to-face or phone interviews with the participants, d) participants' written reflections on their learning process, e) background information on participants collected by the online questionnaire, and f) an instrument measuring students' sense of community.

The course used the FirstClass groupware for the virtual workspace and communications among the participants. Almost all course activities and communications took place in this computer conferencing system. This conferencing system allowed the instructor to create a virtual space for each group, in which the group members worked together and communicated with each other by posing their messages. The virtual space for each group was open to all of the course participants. That is, all participants of the course could not only read the messages posted in the other groups' virtual spaces, but also posted their own messages. The primary data of this study were all of the electronic messages posted by the participants in public areas of the computer conferencing system throughout the course.

In addition to the asynchronous communications, the participants communicated in real time with online chats. The observations of the course indicated that many groups used online chats regularly, for example, once a week or at the beginning of each module. The participants were encouraged to save the transcripts of their online chats and post them in the virtual space for those who could not attend the chat or for future reference. The transcripts of online chats posted by the participants were also included in the data of the study.

Combined with the observations of participants' asynchronous and synchronous communications, interviews allowed the researcher to understand the meanings that the participants held for their online activities (Marshall & Rossman, 1999). An interview with each participant was conducted shortly after the fifth out of six modules was completed (see Appendix B for the interview questions). The researcher conducted interviews face-to-face with 11 participants, by telephone with four participants, and through e-mail with one participant. All face-to-face and telephone interviews with participants were tape-recorded with participants' consent and then transcribed. After each interview, if necessary, additional follow-on questions were asked by e-mail.

Throughout the course, participants were asked to reflect upon their learning at the end of each module. Specific questions such as "What do I see as the most important factors to enable us to work together as a high performance online learning team? What have I learned? What problems have I encountered? How could they be overcome?" were given to participants for their reflections on the module. Participants were required to comment on at least one other members' reflection. Participants' reflections on their learning and group work were used as a data source of the study.

A questionnaire designed to gather information about the participants was posted online at the beginning of the course. This questionnaire solicited information on participants' educational background, work experience, computer skills, and experience and expectations related to online learning (see Appendix C). Because the information was used for dividing participants into groups and for the participants' increased familiarity with each other, the online questionnaire was embedded as a part of the course.

This study used an instrument to measure participants' sense of community. The survey using the instrument was implemented immediately before the interviews with

participants. The main purpose of the instrument was to obtain information on how strongly each participant felt a sense of community in the course. The result of the survey for a participant also provided the researcher with information useful for the interview with the participant.

To develop the instrument, the researcher adapted the short form of the Sense of Community Index (SCI) used by Perkins, Florin, Rich, Wandersman, and Chavis (1990). The SCI consists of four subscales suggested by McMillan and Chavis (1986): membership, influence, integration and fulfillment of needs, and shared emotional connection. Each subscale has three items. The researcher reworded all items of the SCI so that they were appropriate for the online learning environment. For example, the item "I think my block is a good place for me to live" was reworded to "I think my team is a good place for me to learn." The true/false response format was changed into a five-point Likert scale (1: "Strongly disagree" to 5: "Strongly agree"). The order of the items was randomly arranged (see Appendix D).

DATA ANALYSIS

For analyzing the data, the researcher used the coding procedures for developing grounded theory proposed by Strauss and Corbin (1998): open coding, axial coding, and selective coding. Data collection was followed immediately by analysis. As analysis proceeded, questions that arose by making comparisons among incidents became guides for further data gathering. The first procedure for analyzing gathered data was open coding. The aim of open coding is to discover, name, and categorize phenomena according to their properties (the general or specific characteristics or attributes of a category) and dimensions (the range along which general properties of a category vary). During open coding, data were broken down into "units of meaning" (Lally & Barrett,

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1999, p. 150), closely examined, and compared for similarities and differences. Events, happenings, objects, and participants' actions/interactions found to be conceptually similar in nature or related in meaning were grouped under categories. As a result of open coding, approximately 78 categories were developed from the data. These categories are listed in Appendix E.

Axial coding followed open coding. The purpose of axial coding is to begin the process of reassembling data that is fractured during open coding. In axial coding, categories are related to their subcategories to form more precise and complete explanations about phenomena. A category stands for a phenomenon such as a problem, issue, or event that were defined as being significant to participants. Although a subcategory also is a category, subcategories answer questions about the phenomenon such as when, where, why, who, how, and with what consequences, thus giving greater explanatory power.

The basic tasks that the researcher conducted during axial coding are as follows:

- Laying out the properties of a category and their dimensions
- Identifying the variety of conditions, actions/interactions, and consequences related to participants' sense of community
- Relating a category to its subcategories
- Looking for cues in the data that denote how major categories might relate to each other

As a result of axial coding, a paradigm with conditions, actions/interactions, and consequences related to participants' sense of community emerged. These reassembled categories are listed in Appendix F.

The last procedure in data analysis of the grounded theory approach is selective coding, which is the process of integrating and refining categories. The first step in

selective coding is to decide on a central category. The central category represents the main theme of the research and explains what the research is about (Strauss & Corbin, 1998).

To decide on the central category of this study, the researcher identified a category that would synthesize the other categories together to form an explanatory whole. After repeatedly reviewing the list resulting from axial coding and the original data, the researcher identified the category, "Experiencing a sense of co-accomplishment through online collaboration," the most dominant theme and most situated in the center of the relationships among all of the factors related to participants' sense of community. Once the central category was identified, other categories were organized around the central category and major categories were related to it through directional arrows in a diagram representing the theoretical model of the study.

The detailed descriptions of the theoretical model of the study and its components are provided in Chapter V. Once the theoretical scheme was outlined, the researcher refined the theory by trimming excess and filling in poorly developed categories, and then validated the theory by comparing it to raw data.

THE RESEARCHER AS HUMAN INSTRUMENT

In qualitative research, the researcher is the primary instrument in collecting, analyzing, and interpreting data. The researcher's presence or interactions with participants in the research setting may influence participants' interactions as well as their responses in the process of data collection. In addition, the researcher's personal values, assumptions, and biases derived from the background and experiences may influence the way of analyzing and interpreting the data. It is necessary, therefore, to reflect on my

experience and perspective related to the research topic as well as my role in the research setting during the study.

I had the first experience of online learning environments in an online course called "Teaching & Learning with the Internet" in which all the activities of the course were conducted collaboratively through online communications after four face-to-face sessions for the first month of the semester. Because I had come from Korea just a year before, I still had difficulty in understanding the conversations among classmates and the instructor, and thus could not participate fully in the classroom activities, which made me get depressed and lose self-confidence considerably. In the online course, however, I could read all the messages posted by classmates and contribute to the online discussions even if it took very long time. Furthermore, when the instructor and other classmates acknowledged my contributions, I felt strong ties with them and could regain the confidence in myself. The positive experience in the online course convinced me of the importance of collaborative learning strategies and positive relationships with classmates in online learning environments.

At the time of data collection, the course, which was the research setting of the study, had been offered online for two years. I had an active role in revising the course after each semester and helping students who had technical problems during the course. Through the observations of the two previous courses, I could notice that learning communities had indeed been formed among the participants during the courses. However, I also noticed that all members in the same group did not feel the same sense of community. Some group members felt a sense of community while others in the same group did not, even though many members described the group as being cohesive community. Students' sense of community seemed to have significant impacts on their participation in group collaboration and their satisfaction with the whole course. The

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observations of the two previous courses promoted my curiosity about what caused the differences in students' sense of community even in the same group.

The role of supporting students who had technical problems during the course may have influenced the process of data collection in both positive and negative ways. The role in the course, on the one hand, helped me to build trustful relationships with the participants in the study. On the other hand, the participants may have regarded the researcher as one of the staff members of the course who were responsible for management of the course and could influence their grade, which may have resulted in withholding additional information on negative aspects of the course during the interviews. To minimize the potential biases due to my previous experiences and role in the course, I used triangulation with various data sources and peer debriefing.

METHODS FOR TRUSTWORTHINESS OF THE STUDY

Lincoln and Guba (1985) proposed four trustworthiness criteria for naturalistic studies (credibility, transferability, dependability, and confirmability), and suggested a variety of strategies to establish trustworthiness. To assure the trustworthiness of the study, the research used the following strategies: a) prolonged engagement and persistent observation, b) triangulation, and c) peer debriefing.

Prolonged Engagement and Persistent Observation

Prolonged engagement requires that the investigator be involved with the setting sufficiently long to learn the culture, test for misinformation introduced by distortions either by the investigator or of the participants, and build trust. Therefore, the researcher actively participated in the course throughout the complete semester. In addition, persistent observation allowed the researcher to identify those characteristics and

elements in the situation that were most relevant to the problem or issue of interest and then focus on them in detail. For persistent observation, the researcher observed all of the participants' communications and behaviors that took place in the computer conferencing system of the course, followed by in-depth interviews with the participants. The prolonged engagement and persistent observation allowed the researcher to better understand the context where the phenomenon of study occurred and to capture the details of participants' interactions related to their sense of community in the online course.

Triangulation

There are four different modes of triangulation: the use of multiple and different sources, methods, investigators, and theories. Triangulation helps to eliminate biases that may result from relying exclusively on only one data source, collection method, investigator, or theory (Lincoln & Guba, 1985). To triangulate the data, this study used multiple sources (multiple copies of one type of source) such as interviews with 16 participants. In addition, data for this study were gathered from various data collection methods, including, a) participants' electronic messages posted in public areas of the computer conferencing system used for the course, b) transcripts of online chats, c) face-to-face or phone interviews with the participants, d) participants' written reflections on their learning process, e) background information on participants collected by the online questionnaire, and f) an instrument measuring students' sense of community.

Peer Debriefing

Peer debriefing is a process of exposing the investigator to a disinterested peer(s) in a manner paralleling an analytic session to explore aspects of the inquiry that might otherwise remain only implicit within the investigator's mind (Lincoln & Guba, 1985).

The researcher met periodically with two fellow doctoral students for peer review and debriefing during the data analysis process. These knowledgeable colleagues reviewed the open coding on data that were done by the researcher alone in order to verify that the coding accurately reflected the original data. They also helped the researcher to develop further categories and the relationships among them, and checked if category was labeled accurately reflecting the meaning of the incidents that were grouped in the category.

Chapter IV. Results

The purpose of the study was to examine factors that affect students' sense of community in an online collaborative learning environment and the influences of a sense of community on students' participation in online communication and collaboration. As the result of the data analysis, the theoretical model entitled, "Crossing the Threshold of Experiencing Co-accomplishment through Collaboration," emerged. Before discussing the theoretical model in detail, this chapter describes each of the categories that are the components of the theoretical model of this study with supporting evidence from the data.

This chapter begins with a discussion of data from the Sense of Community Index (SCI) of the participants. This instrument provided information on how strongly each participant felt a sense of community through the course. The participants' SCI discussion is followed by detailed descriptions of factors that influenced students' sense of community with quotations from the data. Factors were grouped into three major categories: group interaction, course context, and individual differences. Finally, this chapter describes what the consequences of feeling a sense of community were and how the consequences, in turn, influenced the factors that later promoted a sense of community.

SENSE OF COMMUNITY INDEX OF THE PARTICIPANTS

Immediately before the final module of the course, the researcher administered a survey instrument adapted from the short form of the Sense of Community Index (SCI) used by Perkins, Florin, Rich, Wandersman, and Chavis (1990) to measure participants' sense of community. The main purpose of the instrument was to solicit information on how strongly each participant felt a sense of community. The result of the survey is provided in Table 4.1.

Table 4.1 Sense of Community Index (SCI) of the Participants

Group	Name	SCI
Group A	Caroline	Unknown
	David	3.2
	Erica	4.0
	Isabella	Unknown
	Robert	4.3
	Sara	4.6
	Average	**4.0**
Group B	Carlos	4.2
	Ernest	3.8
	Lewis	4.3
	Olivia	3.3
	William	4.0
	Average	**3.9**
Group C	Grace	4.7
	Jongho	3.9
	Noah	3.8
	Rachel	Unknown
	Tyler	4.2
	Average	**4.1**
Group D	Eireen	3.3
	Elliot	2.5
	Kelly	3.3
	Nancy	3.6
	Rebecca	4.5
	Average	**3.4**
Average of the Class		**3.9**

The average SCI score of the complete class was 3.9. The response format of the survey was a five-point Likert scale. The possible highest score of SCI was 5 and the possible lowest score was 1. That is, the score, 5, means that the participant strongly agrees to the statements indicating the sense of community and 1 means that the participant strongly disagrees to the statements. The average scores of the participants in the course ranged from 2.5 to 4.7.

The results of the survey also show that there were variations among individuals even in the same group, which indicates that specific factors, interacting with one another, dynamically influenced students' sense of community. Detailed descriptions of these factors will help to understand variations in the SCI scores of the participants.

The following sections provide detailed descriptions of each of the factors related to the group interaction, the course context, and the individual differences with the quotations from the data, followed by the descriptions on the consequences of a sense of community on students' participation in online communication and collaboration.

FACTORS RELATED TO GROUP INTERACTION

Participants gained their sense of community through interactions with their group members. Therefore, factors related to the group interaction had the primary influence on participants' sense of community. This section describes how the factors related to group interaction, such as interactions with group members, characteristics of tasks that the group had to accomplish together, and group composition, influenced participants' sense of community.

Interactions with Group Members

Consideration for Others

Group members' consideration for others helped participants to feel a sense of belongingness to their group. Specific behaviors showing consideration for others include communicating in a friendly tone, seeking to understand the other team member's situation rather than asking for an explanation, helping each other by sending reminders or providing advice for technical or other problems, and showing concerns about others' feelings.

Most of the participants characterized their group as "friendly," "polite," "supportive," "encouraging," "humane," or/and "respectful," which helped their experiences in the group to be positive. When asked if he had ever felt a sense of distance in his group, Lewis said, "Not really," and added,

> When we come together online, it's very friendly. We joke with each other. We see each other well. We encourage each other. The concept that came up during the idea of establishing the norms was to encourage each other. That helped people to have positive attitude. So, there have never been any negative experiences aside from the normal struggles of working together to learn.

Olivia, who had a group member that did not participate actively in the group project, characterized her group as "humane," and explained the reason:

> Humane because although we had a bad member, he didn't contribute anything to the webquest, but we still politely invited him to work on the final project and we never spoke ill of him when he was not there. So, truly speaking from my heart I respect my group members a lot because I am thinking if it happens in other groups, probably we started gossiping, but we didn't. We never speak ill of him. So, that's why I use the word "humane."

There were participants who could not attend some of their group online chats because of technical problems or schedule conflicts. Other members' behaviors that demonstrated their understanding and concern for the team member rather than asking for an explanation helped the participants to develop a positive attitude toward the group,

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which, in turn, helped them to develop a sense of community. Lewis described how his group members treated the member that had missed several group chats due to his work schedule and technical problem as follows:

> That person has also missed a number of the online discussion sessions due to schedule conflicts. … But, there has never been a question like "Why couldn't you make it?" or "Where were you?" or "This is not good," those kind of thing. First of all, the other members of the group tried to help him just by seeking to understand the situation rather than asking questions like those I mentioned just before. Instead, first asking "Is everything okay?" or "Was there a technical problem?" I also missed the very first part of an online discussion because of traffic. And, everyone completely understood that.

William, who was a member of Lewis' group, also showed his sympathy in his message, saying "Glad to have you back! Hope your computer problems get solved soon. It sure is frustrating knowing that you are trying to do your work and the technology prohibits you from participating. I know the feeling." Carlos, who had missed several group chats in the same group, said of his group, "Luckily, I was with a very good team. I mean they are very understanding. It's a very diverse team. Our chemistry was very good. We all had input. We all had questions. They didn't turn anyone away. Very good group."

In addition to understanding others' situations, participants helped each other in several ways. Every group had one of its group members save the online chats, which helped those who did not attend the chats to catch up. Carlos, who missed several online group chats, said, "I went back and saw what they posted and read through the transcriptions for the chatting as well as the webcasts. That was very helpful." Some participants provided advice for those having technical problems, even using the phone.

> **Nancy**: Eireen - can you give me a call tomorrow while you're at work? Then, we can walk through some things to "test" your system and get this straightened out (or at least try).
> **Rebecca**: The nested means (I think) it had too many subfolders to go through.
> **Eireen**: I can call you from my cell phone. I have 2 meetings: one most of the

morning and then I leave the office @ 1:30 pm for Austin. So, I have time on the road.

Nancy: You'll need to be in front of your computer at work.

Nancy: We can shoot for Wednesday? Or early tomorrow morning?

Eireen: Okay. Let me see, I have to be there @ 7:30 am...how about during lunch at 12:00? Please, pleeeeze.

Eireen: Otherwise, if you can't squeeze me in, then it'll have to be on Wed.

Nancy: Will you be at work in front of your computer at that time?

Eireen: Yeah, I will definitely be there in my office next to the PC.

Nancy: OK - so tomorrow at 12:00pm?

Eireen: The meeting will more than likely go from 8 am to 11 am. So, I know I'll be there between 11-1:30 pm, ready to call you or e-mail you.

Nancy: I'll be at my desk. So, why don't you call whenever your meeting is done?

Eireen: Okay.

Reminders and follow-up emails were another way for participants to help each other. William said, "Having reminders from my colleagues has helped encourage me." Sara also said, "Erica and Caroline are very good about sending follow-up emails providing the important information from chats to each group member. That was incredibly helpful!"

Other members' responses showing their concerns about the feelings of their team members promoted a sense of belongingness to the group. Participants particularly cared about the feelings of those who were more likely to feel a sense of alienation because of technical problems, schedule conflicts, or different first-languages. Carlos, who did not actively participate in the group project because of technical problems and schedule conflicts, said,

And then I felt like a sense of belongingness once when we're dividing project among each other and "Carlos, how do you feel about doing this?" and they started seeing more on the sensitive side, the more personal side like, "Do you feel comfortable doing resources?"

The following conversation from an online group chat shows that group members were trying not to offend Olivia, who was an international student, with a saying that she could not understand.

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Lewis: So we're basically drawing up a proposal of how we see the project unfolding...enduring knowledge, etc. Right?
Olivia: Yes.
William: Right- backward design and what this thing will look like with the end in mind.
Ernest: Yes.
Lewis: Gotcha.
Ernest: We're good! :)
William: I think we're set.
Olivia: Great.
Lewis: As long as no one "rains" on our parade...this ought to work fine. Sorry, couldn't resist.
Ernest: :)
Olivia: Is it a slang?
Olivia: Never mind
William: A "saying."
Ernest: :)
Lewis: Sorry, Olivia. Poor humor...a PUN.
Olivia: Nooo.
Lewis: :-)
Olivia: Foreigner, you know:)
Lewis: No way...you're in the family now!
William: No, Olivia, I didn't laugh, either.
Olivia: :) Feel great.
Ernest: :)

Responses to the Contributions

The response of others to the contributions or ideas is another important factor that influences participants' sense of belongingness. Participants feel some distance when they do not receive replies to their messages or comments. When asked if she had ever felt a sense of distance from the group members, Rebecca said, "You email like the first thing in the morning, but you're not going to be able to get in touch with you immediately on that day." Carlos also said, "At first, I felt like I wasn't part of the group. When I would just make a comment on the chat, whatever, and I didn't get a response. That made me feel like not very valuable input."

On the contrary, participants feel a sense of belongingness when the group members acknowledge their contributions or when their opinions are accepted. Jongho, who was a newcomer from Asia, said,

> I was afraid that other members, especially native speakers, would look down on me. But, I felt relieved when seeing them make a mistake and then gradually began to care for them. I felt willing to help them when they missed the due dates several times. I also felt a sense of belongingness when I seemed to be recognized by the group members or when my opinion was regarded as a good one and accepted by others.

Getting to Know Each Other

Opportunities for getting to know one another, which were given both formally and informally, promoted a sense of intimacy among participants. The instructor of the course had participants take part in an introduction activity within the formal context of the course. In this activity, participants posted an introduction message including 1) goals or expectations for taking the course, 2) an educational experience that had a big impact on who they are today, 3) special interests and hobbies, and 4) interesting things about themselves that they wanted to share with other members. Participants were then asked to read all the introductions, and respond to at least three introductions of other members including, 1) three adjectives that describe their impression of the member and brief explanations on the adjectives, 2) what was particularly interesting to them in the introduction, 3) what they shared in common with the member, and 4) what more they wanted to know about the member. Robert explained how important the activity was as follows:

> I think the first thing is the bio that we do because we're able to tell about ourselves. I think that's very important. Sometimes people don't know how interesting they are until they talk about themselves. So, when you see a picture of somebody, when you see what their hobbies are and if they have kids, then you look for commonalities. Okay, that person and I, when I see them in class or talk to them online, we can talk about kids because we both have a little girl. This

person here likes to mountain bike. I do, too. You know we can talk about that. So, that's the first thing that helps to build relationships, the bios.

The course also provided information on each participant through a staff directory, which included the information on contact information, work experiences, educational background, experiences in computers and online courses, and pictures. All participants in the course were able to access others' information throughout the course. The staff directory helped participants to access others' background information easily if necessary. Tyler said,

> The directory helped me a little bit, too. You can get some other information about what other courses the other students have taken, pictures, and background information. We could look at the directory to get some other information on other team members. And, you get to know them better that way. You don't have to sit down and chat with them to get their background information.

Participants also get to know each other informally through conversations about their personal lives and through joking around while working together. Conversations about personal lives usually occurred while waiting for someone to join the chat and joking around occurred most often in the middle of the chat, both of which made group members feel closer to each other. Lewis described the kinds of social conversations that occurred during his group chats as follows:

> Once we've begun to know each other better, we began to inquire, "How's your class going?" and "Did you get that project finished for the other class?" "How're your kids?" One night when we're waiting on folks to get there, we engaged in discussion about kids and I found out my other suitemate's ages of their kids and where they are taught, that sort of thing. … Establishing commonalities among group members was helpful in establishing an even greater sense of community, I think.

Nancy said that getting to know each other on a personal level through personal conversations and jokes also helped to develop and reinforce trust among the group members.

One of the things I have enjoyed in this class so far is having some "non work-related" comments during the chats. And there have been several times that I have laughed out loud during the chat sessions. It's important to get to know classmates on a personal level and helps develop and reinforce trust.

In addition to conversations about personal lives and jokes, participants came to know each other better by working together to complete several projects. Observing what each of the group members did while completing group assignments helped participants to get to know each other's work style and way of thinking. Robert explained this as follows:

I guess my best experience is just watching projects being completed and seeing what kind of quality it is and who did what. And, when you look at an assignment and you remember this person did this and this person did this and, I just throw out the name, Tom did this on every single project. Tom thinks in a certain way. When just looking at all the work Tom's turned in for my group, Tom thinks in a certain way and I like that. I like knowing how people think. And, evaluating for myself and observing how people put together their portions of assignments helps me understand how they think.

Nancy emphasized the repetition of group members' working together for a group to work smoothly with rhythm.

I would say probably the biggest thing that I got out of working in the groups is a sense of rhythm for collaborative learning. It wasn't just doing it once. It was doing it over and over and over, learning the nuances and the variations, detecting people's moods, and detecting people's interests. I don't know, just overall attitudes through a chat session. I don't think you can get that just by having one chat session with the group of people. You acquire that over a series of time.

Establishing Norms

In addition to the opportunity for getting to know each other at the beginning, participants were involved in an activity to establish their own norms for effective online collaboration by sharing their ideas with each other through threaded discussions. As a result of the activity, participants reached a consensus on the norms as follows:

- Be willing to share skills, ideas, resources, and leadership skills with each other (coach/reach out).

- Respect differences of opinions and backgrounds of team members.

- Keep in close contact with all team members. Be mindful of not leaving members out of team communications.

- Keep in mind possible limitations for others (i.e. technology capabilities, resources, experiences, etc.) and display patience when dealing with these limitations.

- Be responsible/accountable to teammates and develop a clear understanding of roles and responsibilities.

- Be timely both in terms of communicating with team members and adhering to dates and requirements listed on the course syllabus.

- Communicate in a courteous tone.

- Be open-minded to others' ideas. Be willing to negotiate and collaborate closely with team members.

- Provide high quality work.

- Have responses that are brief, clear, and to the point.

- Limit use of acronyms.

- Stand up for his/her convictions (trusts in himself/herself) and that of the team (stands behind the team).

- Display integrity. Be forgiving of others' mistakes.

- Provide constructive feedback about teammates' work (both positive and negative).

Lewis thought this activity unnecessary at first because the norms on how to interact with each other for effective collaboration seemed to be obvious, especially for graduate students. However, he noticed that the activity to establish the norms for effective collaboration not only helped everyone to have the same expectation in terms of how to interact by sharing their own ideas with each other and reaching a consensus on the norms, but also reminded group members of the desirable behaviors when working together later. He said,

I remember thinking about establishing the norms of online collaboration. At first, I thought it was maybe redundant, maybe unnecessary to do some of things we did. Deciding how we should interact and deciding how to understand our own online personality and how to make that agreeable to other people seemed to be obvious, especially of graduate students. But, it wasn't very long after that that I realized the establishment of those norms was an important thing. Everybody is in agreement on how we should interact. So, we all knew the importance of meeting deadlines and the importance of pleasant demeanor online. … So, we used those norms that we learned and talked about that situation of going after or reaching out and asking and offering help to that individual. … The concept that came up during the idea of establishing the norms was to encourage each other. That helped people to have a positive attitude.

"To really establish a sense of community right up front," Rebecca also said, "have the class early talk about the norms along with the introduction; discuss what are important aspects for being able to communicate with each other, trying to establish an atmosphere that's safe for everybody." The process of establishing the norms at the beginning also allowed those who were new to online learning environments to anticipate what would happen in the online learning environment. Kelly said, "It's good to remind and start off the class, I think. It's actually good for me because I was the first time in collaborative online class. So, that gave me a little taste of what would come."

Group Decision-Making Process

When working together with group members, participants took part in several group decision-making activities in terms of the topics of group projects, the assignment of roles to group members, and the time scheduling for completion of group project tasks. Caroline and Kelly said that participating in the decision-making processes gave them a sense of belongingness and ownership of the group work by promoting their sense of involvement. In his reflection message posted on the computer conferencing system of the course, Jongho also explained the importance of participating in the planning stage as follows:

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One thing I want to share is the importance of participating in planning stage. If I have participated in planning or identifying our goal or tasks, I will more easily accept that they are my goal, my task, and my problem that I have to solve. Also I will be more aware of what will be going on, and participate in solving problem or achieving goal activities more positively. To make someone active participant, make him/her be in the planning meeting. This principle, I think, can be applied to learning experiences. Especially in the collaborative learning situation like this course, to plan, identify, and organize our learning experience with our collaborative learners can make our learning experience more dynamic and plentiful. I know we have several big tasks to perform during this semester. In the process of accomplishing those assignments, I hope to be an active participant from the planning stage and have huge and various learning experiences.

Tyler, who was a member of the same group as Jongho, responded to Jongho's reflection as follows:

Jongho,
This is an excellent point and we saw a similar message over and over last spring in the Instructional Technology Planning and Management course, which was, "Get buy-in from all of the stakeholders." You're absolutely right that when people are asked to participate from the very beginning of a project, then they will show more interest in its continuing progress. They have some ownership and they have formulated the work in a way that it achieves some of their own goals, so they will be eager to follow through with the project until its completion.

Tyler also provided evidence showing the importance of participating in the decision-making processes. When asked if he had ever felt distance from his team, he answered,

Well, a couple of times at the beginning I did because there were a couple of chats, Monday online forums, but I didn't see them in the syllabus and then I got online maybe on Tuesday or Wednesday, but they made some changes on the Monday chatting. That's kind of a loss, thinking when these decisions were made. They made them during the Monday forums.

In addition to absence from the group decision-making process, dominance by some group members made others feel less involved and distanced from the group. Eireen, who had difficulties in working together with her group members during the day because of technical problems in her work place and her rigid work schedule, felt that her

group was less understanding and less flexible because of the dominance by one member during the group decision-making process.

> The first team was more confrontational. We were all going to do what this one person wanted and that was it all the time. Whatever this person wanted, if we didn't get to that, we would have to sit there and chat forever and ever and ever until we got resolved and then we did what the person wanted. It wasn't just the technological system, but it was the interpersonal stuff that really made it harder. We're less understanding, less flexibility. "You're only available at this time, oh well, too bad for you." Okay, that's not the true spirit of collaboration and that was like this is what we think, this is what I think, and if other people are not here to get their opinion or their input, oh well, we're going to do this. To me, that's rude. That's not collaboration. Until you get everyone's okay and buy in, you don't just do that.

Eireen thought that the member dominated the group decision-making process because the dominant person "had more technological experience and more exposure to classes on web page or application design, and she was higher in the intellectual knowledge of the subject matter and everything, how to use this system, etc." The task-oriented personality of the dominant person also seems to have contributed to her dominance in the group decision-making process. She described herself as follows:

> For myself, I tend to be very task-focused. I mean I enjoy getting to know people. I enjoy chatting with people, but bottom line what we need to get done, when we need to get it done by... and so and so forth. And so, for me, I looked at this group as a function. It was function of getting some projects done in a certain amount of time. I don't know that I will continue a relationship with anybody in the group after the class. There's one person who I might continue a relationship with, but I don't know. That's not my main purpose or focus.

Her task-oriented personality sometimes made her regard efficiency as more important than including input from all members during the group decision-making processes. The personal note of the dominant member showed that she preferred a more efficient way for the group decision-making rather than including everyone's input.

> 10/28 - Working on Webquest: The novelty has worn off. I am starting to dread these chat sessions because they are becoming long, drawn out, and extremely tedious. Tired of always making sure entire team has "consensus" and is

participating, etc. People need to be responsible for their own initiative and actions.

In addition to the level of knowledge or experience in the topic and the personality, those who have more specific ideas on what to do by reading the instructions for the project in advance are more likely to dominate the process of deciding a topic for the project. Jongho described the process of deciding the topic for one of his group's projects as follows:

> As you know, it is usually difficult to reach a consensus among several people. For our group, however, when someone suggested an idea during an online chat and there's no crucial flaw in the idea, we made it our topic without any argument even though some of other members thought the idea unsatisfactory because they didn't prepare anything for the project before the chat. For the webquest project, only Rachel read the instruction for the project and thought about what to do before joining the first chat for the project. Others just came to the chat with no idea on the project. So, the direction for the webquest project was determined mainly as Rachel suggested.

To promote group members' sense of community and accomplish successful group work, group members need to listen to and appreciate what others think and be willing to negotiate with each other to reach a consensus during the group decision-making process. When asked about the barriers that interfere with getting a sense of community, Robert said,

> Well, one of them is not listening or caring what other people think. I mean not appreciating other people, thinking you're always right and that nobody else had an answer. I think anything that causes you to alienate yourself and not leaving yourself to be open in communication. … basically just turning people off. I think that could break up community.

In her reflection message posted on the computer conferencing system of the course, Olivia said, "Based on my own experience and on my observations, the willingness to negotiate with each other was the key to success for team work." Carlos, who was a member of the same group as Olivia, also responded to Olivia's reflection as follows:

Olivia,
I agree with you on all accounts. I believe everybody was willing to help or negotiate with one another. Consensus took a lot time because everybody had great ideas and we had to give everybody a chance to state their case. I ditto every thing you wrote.

Group Members' Contributions to the Group Collaboration

Participants did not feel a sense of team with every group member even though they may have felt a sense of community with the group. The strength of ties between a participant and another group member depended primarily on the degree of the member's participation in the group projects and activities. That is, participants did not feel a sense of team much with those who did not participate fully in all the group projects and activities. Erica said that she felt a sense of team with her group, "but not much with two members who were not active in participating." Similarly, when asked if she felt a sense of team with her team members, Sara said,

To some team members, yes, I feel a sense of belonging. I am now working with some of these individuals for the final project. Other group members did not participate fully in all the assignments and activities. I did not feel a sense of team with those individuals.

A member's active and constant participation in the group projects and activities enhanced other group members' trust in him or her. Group members trusted a member because he or she always submitted good quality work on time and showed up when they needed to meet online. Olivia explained how she developed trust with some of her group members as follows:

I trust some of my team members based on some experience. In the first project I don't know any of them. But, after two projects, now I know some of them. So, I can trust some of them because they submitted good quality work and they submitted their work on time and then we need to show up at some time, they always did that.

William emphasized regular and constant participation in the group communication to trust each other and form a community.

Researcher: Can you tell me any barriers or problems that interfered with getting a sense of community?

William: Once everyone had the proper technology and then our less active member got... We helped him so that he wouldn't drop the class. And then we had some help from the professor. That was a kind of the biggest barriers. And then, also not just getting used to the number of time to meet. That also would've been a barrier. I mean getting used to the routines, getting online and checking the syllabus and organizing the team to meet a couple times a week.

Researcher: How did those routines interfere with a sense of community?

William: Because of the difference from a regular class. In that case, you only meet once a week. And in this case, you have to go online every other day or more, everyday. And so, if people aren't doing that, then it's hard to rely on them and to form community. So, it's a barrier if people don't follow the routines.

William also said that he was not sure about his less active member, but after seeing the less active member do some work for his part, he could become more confident in the member.

Characteristics of Tasks

The characteristics of the task that a group had to accomplish together had a significant impact upon both the nature of interaction among the group members during group collaboration and the members' feeling after completing the task. Many participants said that they felt a sense of community during or at the end of the webquest project. Tyler said he first felt a sense of community in the middle of the semester and "it wasn't until later in the semester that we started working with the whole suite together. During the webquest project, five of us were working together on that." Noah described the webquest project as follows:

This is a wonderful project our team has gone through. The successful aspect of our project is collaboration. Each team member shares his or her original ideas, which finally contribute to the whole project. Some argumentation is worthwhile because it made us understand the good points and the points to be improved in our argumentation.

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Lewis felt a sense of community established in his group after completing the

webquest project.

> …The reason why I think that is because of my reluctance to step outside my own
> suite group to work on the other project because I didn't know anybody outside of
> my suite. We had established a sense of community there and I was reluctant to
> leave. I think that happened fairly quickly at first. Probably about two to three
> weeks after working together as a suite group; and then it was probably firmly in
> place after we finished the webquest project. I think after that, everybody felt like
> we've done something pretty good together.

Participants' reflections on the experiences of the webquest project showed that

the collaborative and challenging nature of the webquest project made many participants

feel a sense of community during or at the end of the project. A webquest is an inquiry-

oriented activity in which some or all of the information that learners interact with comes

from resources on the Internet (Dodge, 1997). In a webquest, learners are presented with

a problem, question, scenario, or task and asked to analyze and synthesize the

information and come up with their own creative solutions to a specific problem,

question, or issue.

For the webquest project of the course, each group of five or six members was

asked to design a webquest and create a webpage for their webquest within eight days. To

complete the webquest project, group members had to go through the process of deciding

a topic for their webquest, brainstorming ideas, assigning the portions among group

members, completing each own portion, compiling the portions into a webpage, and

revising the webpage. Therefore, the task for developing a webquest was collaborative

enough to have group members be involved from the planning stage and it encouraged

mutual engagement in the coordinated effort to accomplish the task. Eireen described the

most successful aspect of the webquest project in her reflection message as follows:

> The team had many more individuals involved to parcel out tasks and handle
> simultaneously. This was successful because we each had something to contribute
> or develop on our own. That helped and allowed us all to feel like we were

contributing even though it may have seemed to be in very minute ways. We each had "roles" to do which harnessed the best capabilities of each individual in the production of the webquest.

In his reflection message, Jongho also described how his group had worked together to accomplish the task as follows:

I think our division of labor is very efficient and effective. Three of us are usually on campus during daytime, and the others are not. So, the campus members mainly discussed the task procedure, role description, and other sections because the sections cannot be divided and created individually. The other off-campus members took charge in making web pages, improving the clearness of tasks, and sentence fluency. Of course in the beginning stage, we have shared enough brainstorming. Based on the consensus on our main topic, we could go to the next step. The successful division of labor, I think, made our webquest more refined.

The task for the webquest project was also challenging and complex enough to be done only with contributions from all of the group members. Kelly said of her first impression on the webquest project, "I thought 'Oh, no! This would be a tough task!' before we had started the project. However, the operation went smoother than I anticipated." Rachel also described how big the task for the webquest project was as follows:

The most successful aspect of our team's collaboration was the high level of motivation and discipline on the part of every team member. We were able to in a very short time, pick a topic, brain storm ideas, assign portions, post drafts of the portions, compile these into a webpage, and edit them for understanding. Whew! That was a lot of work to do in the short time.

The more complex the task, the more the group members bonded together. Group members had to become intimately involved with each other and rely on each other because the knowledge and skills of all group members were required to complete the task. After the challenging and complex task was successfully completed with all the contributions from every group member, a sense of community was established among the group members by feeling a sense of co-accomplishment. Lewis said,

At the end of the webquest when we really got ready to turn in and we conceived the web site that we created, everybody had contributed and it looked nice. It seemed to have gone well and the evaluations that sort of thing. Everybody was very complimentary of each other and they felt that we had accomplished something that we couldn't have done by ourselves. I know I felt that way. I don't have the technical skills to be able to build web pages like what the other person had. I was able to do a whole a lot of text and sort of tie it all together as far as the theme of the webquest went. Then, other people contributed their part, too. So, that was the point when we felt like we had really created something more than we could have done by ourselves. For the topic paper, we each maybe could have done just about the same thing. But, the webquest was something that required all of our skills to be able to achieve. Then, the group was actually functioning well together and a sense of community was established.

While participants feel a stronger sense of co-accomplishment when they have done something that they had thought impossible, a task, beyond the ability of the group within the limited time, may interfere with true collaboration among the group members. To complete a task within the given time, participants may simply divide the work, do his or her own part alone, and come together to summarize. Jongho described the less successful aspect of his group's collaboration as follows:

Our group tried to get the tasks done too efficiently because all members were too busy and didn't have enough time for the course. To get the good quality work, group members had to brainstorm ideas and discuss each other's ideas for the projects together. But, our group tried to just divide the work and do his or her own part alone because we couldn't spend our time and efforts for brainstorming and discussion. It's not good. … We didn't exchange substantial feedback on each other's work. When a member posted his portion of the work, other members made conventional remarks like "Good job." or "Excellent." But, I don't think they were really satisfied with the work. They just did that because they thought there's not enough time to revise it.

Group Composition

Participants' sense of co-accomplishment occurred when the group completed a challenging, complex task successfully. Diversity in group members' knowledge, skills, and experiences was an important factor for the successful completion of the task. The

instructor of the course assigned participants to four groups, initially according to their first or second choice, and then considering diversity in terms of the level of technological skill, previous online learning experience, gender, and ethnicity. The diversity in group members' knowledge, skills, and experiences allowed each member to bring unique expertise and incorporate special knowledge or skills to make the group project successful, which then helped the group members to develop ownership of the task. Carlos said,

> I think the best experience is something from the start or the birth of a project to the end. I mean, we noticed some of us had better traits in certain areas. … We all have different facets that they are strong in. We all have major points and, of course, we also have weak points. We had a weak point and we found someone that's stronger in that area. That's what community does to come together and help one another. … During the webquest project, Olivia was very good at putting this all together as far as the computer, the technology part, and creating a web page. William and Lewis were very good with the language parts and compiling and moving this here and moving that there. We found out Ernest was very strong in the evaluation part. I took the resource part. Of course, where they needed help, we jumped in. Last night when we had the final project presentation, somebody needed to come up here and speak for the group. But, Olivia didn't feel strong in speaking. So, I volunteered and drove down here so we could present our project.

Grace also said that the diverse backgrounds and skills of her group members melded well to enable the group to complete the project successfully.

> It's a different experience. You're doing your assignments online and you're dividing the work. It's good that Noah, Jongho, and I are here and we see each other a lot. So, there're parts that we say, "Okay, we will do this part because we're here and we can divide those." … It was like every background fitted into what needed to be done like Rachel was good at making web pages and Tyler edits what we make and Jongho, Noah, and I just make summaries.

In addition to the specific knowledge and skills of each of the group members that contributed to the successful completion of the project, participants benefited from the various perspectives resulting from the diverse backgrounds and experiences of the group members. Rebecca said,

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I think I've been pretty fortunate with my team. We've been able to come to consensus pretty well in a timely manner. We have a little bit of diversity. We have one person living in Houston and we have some different ethnic backgrounds that give us a great perspective and different technical level which give us another perspective. So, each person has maybe a little bit better area than other areas. So, the whole mixes have provided us with different perspectives. … We had a really fun and educational time actually when deciding on our webquest because we wanted to do something that maybe had applications in our daily lives and we're all researching all the different aspects related to the topic. In coming to our final we passed around different ideas of what we might want to do and just hearing all the ideas everybody had from their different perspectives was really fun.

Although the group size needs to be large enough to provide the diversity in group members' knowledge, skills, and experiences necessary for accomplishing the task, a group with too many members may have difficulty in reaching consensus and making decisions. Nancy said,

It took a little more time to make decisions. Often, I would type in a restatement during the chat. And we spent more time summarizing or recapping ideas to ensure everybody was on the same page. The last part could be just because there were five of us instead of three of us. So, obviously if we had added more people, you have more opinions and thoughts and it takes a little longer to bring everybody together.

In addition, for those who are not used to online group discussions, it is necessary to start with a smaller group so that they can become comfortable with the interactions in online environments. For Rebecca, who was hesitant to join the online group discussions at the beginning of the course, starting with a smaller group with three group members helped her to get used to the online group discussions through the manageable interactions with the other two group members.

I like starting out with a smaller group first. I think that's a little bit more manageable. Other groups may come together right away. I guess it depends on personality. Having a building process of starting out with a smaller group and then moving into a bigger group so that you can get a little more comfortable on small group with your interactions before you move to a bigger group. Especially if you're almost hesitant in joining group chat and not used to it, then that helps.

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FACTORS RELATED TO THE COURSE CONTEXT

The factors related to the course context were related to the context in which

participants interacted with their group members. Therefore, the factors of the course

context showed how aspects of the course influenced participants' sense of community.

The factors related to the course context influenced participants' sense of community

mostly by facilitating or interfering with group interactions. This section describes how

course context factors, such as the collaborative nature of the course, technology used for

the course, and the instructor's role, influenced participants' group interactions and sense

of community.

Collaborative Nature of the Course

The instructional strategy that showed the most collaborative nature of the course

was to have participants work with various partners or group members from the very

beginning to the end of the course. Every activity and assignment of the course was

designed to be completed either with a partner or in a group of three to six members.

Lewis described the characteristic of the course as "the whole premise of collaborative

learning," in answering the question on the differences between this course and other

courses that he had taken.

> First of all, just being online and not having face-to-face contact is the major
> unique. It's also a unique challenge to develop a sense of community with other
> people whom you have never actually seen, maybe seeing them on a webcast. Just
> the whole premise of collaborative learning, not being maybe a single component
> or just a part of the class, but being the core of the class. There wasn't any other
> traditional kind of learning; there wasn't a multiple-choice test or anything like
> that. It was whole working either with your partner or with your suite from the
> very beginning. It is completely non-traditional from the first day of the class.

Working together on the course activities and assignments throughout the course required participants to get involved with other classmates and promoted both course-related and personal interactions among participants. Sara said,

> I feel that I have been much more involved with other classmates in this course than I am with classmates in other courses. In other courses, I usually rarely interact with other classmates, unless such interaction is required for the course. In the collaborative nature of this course, I have not only interacted much more with fellow students for the purposes of the course, but also on a personal level.

In addition to getting involved with other members, Rebecca said the activities of working together to accomplish tasks done caused her to be more involved in the activities themselves and to experience all the different types of formats to work with people.

> This course, more than any other course I have taken, really supports collaborative efforts, working with people to get things done, as not just we put up a question and then everybody just talks back and forth about that, you actually work synchronously and asynchronously using all different types of formats to work with people. Activities involved require everyone to really get involved and utilize all the different methods. So, I can experience all the different methods. I guess the way that the course is designed allows me to do that.

The developing complexity of the course activities helped participants to build relationships with each other. The course activities ranged from simple activities with a few members to complex activities with a large group. That is, course activities began with sharing ideas with one or two members after reading articles and synthesizing them as a team, followed by the activity of writing a topic paper collaboratively as a team with two or three members, and then the project of designing a webquest and developing a webpage for the webquest with five or six members. Robert explained how the gradual complexity of the course activities helped to build relationships with group members:

> So, that's the first thing that helps to build relationships, the bios. I think everything after that really and truly is just working on assignments and I think I mentioned earlier I think the bigger the task, the more involved you have to be to complete it. I think that automatically that allows you to observe and release

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yourself to be observed and work with people. I think as far as design goes, I think the bio and then the gradual build-up in the degree of assignments. Because it starts off small, people kind of feel each other out and then the assignment gets bigger boom, hit them with topic paper. "Hey, we got to work together now." But, by then, you kind of know what your strengths are and weaknesses in the group, then when you start doing something like webquest and CSCL and that kind of thing, you talk in big time. So, more people are, you know, you have to really reach others a little bit more. I think that part of the design of the course, the gradual build-up of assignments and tasks.

Rebecca said several small assignments between the major projects also helped to build a sense of community by forcing group members to communicate constantly.

Even though we had a lot of deadlines and a lot of activities, I think that's what helped build a sense of community. You don't just do three major projects. Even though the topic paper, webquest, and designing CSCL are in the course, between them we had a lot of little ones. Having all these deadlines in between forces everyone just to communicate. We had come up with ways to meet with each other and collaborate together and figure out how to work together. We worked together more than if there had not been as many in between assignments. If we just met to discuss our topic paper and we didn't have anything else to meet in between, I can see how that may have you get to the week before the topic paper's due and then like "Oh, has anybody thought of an idea for it?" So, just establishing many deadlines in between helps especially those who don't know always deadlines for themselves.

However, many participants felt that there were too many assignments and that additional time was needed for each of the major projects. Olivia said she did not have enough time to reflect on learning by working together because too many assignments made her feel stressed because of the deadlines, and the course kept giving participants step-by-step guidelines. Kelly also said, "A lot of small assignments gives us step-by-step guidance, but as a graduate student I felt that's not necessary. To take those steps should be the responsibility of the students."

Technology Being Used for the Course

The course used a network-based collaborative groupware called FirstClass for participants' communication and collaboration. The groupware enabled participants to send email and voice messages to each other, communicate in real time with private or group online chat, set up special virtual spaces for team projects and activities, publish webpages, have individual and team calendars, and edit the same document with other members online. Most participants liked the groupware because of the various ways for communication. Rebecca said,

> The benefit of FirstClass is that we have different areas that we can go to. So, there are multiple ways that we can get in touch with each other. We can email through FirstClass, schedule with chat, and share a document among team members through collaborative documents.

Some participants also liked the 'History' function and the 'Who's online' function of the groupware. The 'History' function allows participants to see who sent and when email messages posted on the system were read. With the 'Who's online' function, participants could see the list of those who were currently connected to the system and invite some of them to an online chat.

In addition, the graphical organization of messages and folders of the communication system not only made it easy to use and navigate the system, but also had participants feel that they had their own workspace within the system. Figure 4.2 shows the conference area for the whole class. Participants could go into any folder here by double-clicking on an the icon in order to post or read messages. Eireen said, "Another strength is that I could see all the folders all in one spot and then I could know where to go. I could understand that so much. In terms of graphical user interface, I did like that."
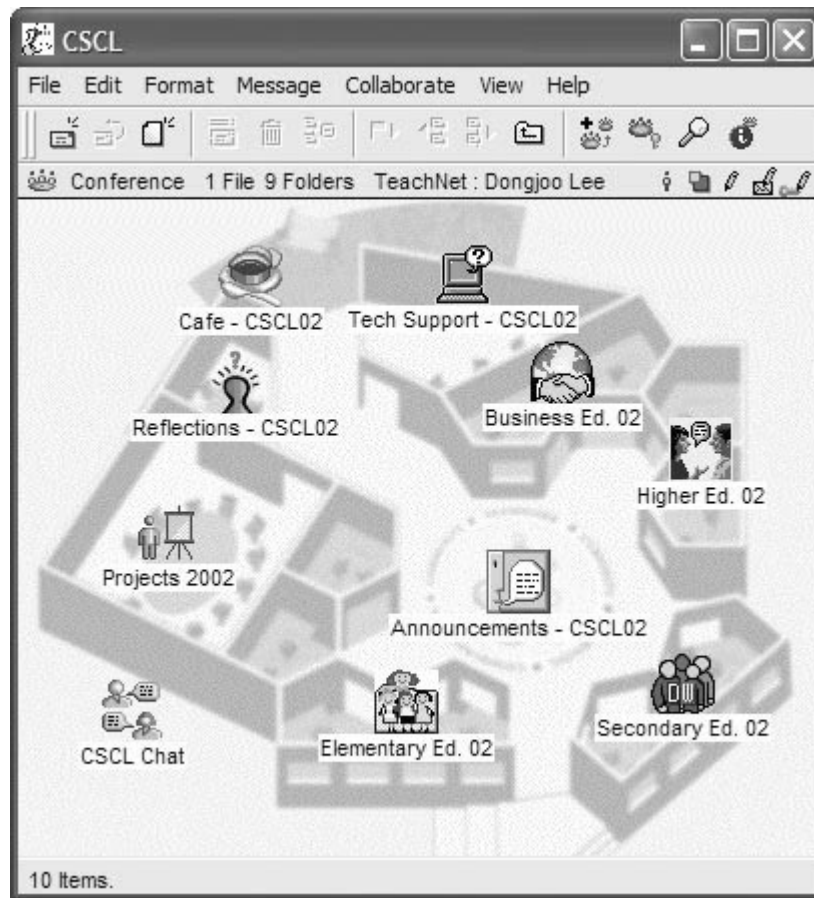
Figure 4.2 Conference Area for the Whole Class

Figure 4.3 shows the conference area for the Secondary Ed. group. In this conference area, the group members could communicate asynchronously by posting messages and conduct online group chats by double-clicking on the chat icon. They also could create other folders for special purposes inside of the group conference area, for example, the 'Hurricanes' folder shown in Figure 4.3. Due to these features, Lewis described the FirstClass groupware as "a powerful collaborative tool that allows users to designate a 'place' as their own."
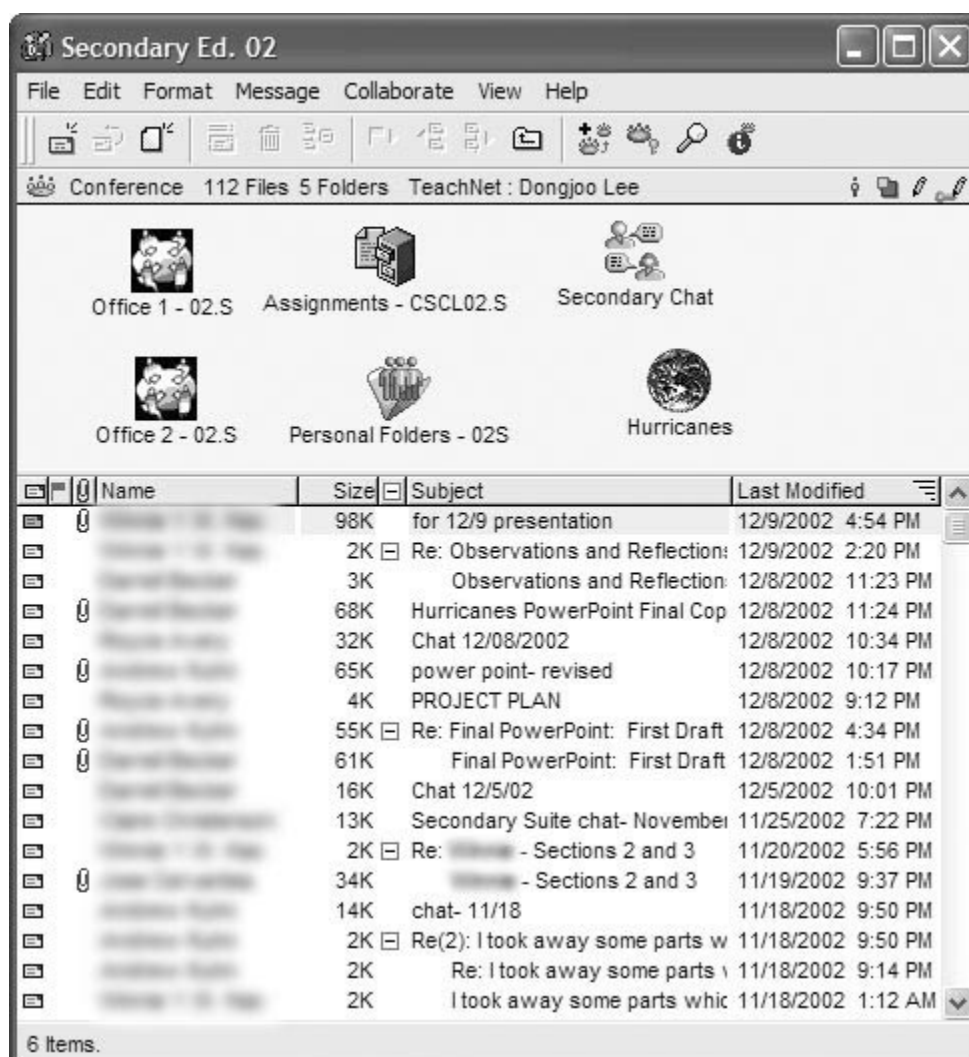
Figure 4.3 Conference Area for the Secondary Ed. Group

To utilize the functions of FirstClass fully, participants had to install the
FirstClass client software on their computers. However, some participants were not
allowed to install the FirstClass client software on the computers of their workplaces. If
the FirstClass client software was not installed on the computers, participants could log in
to the system with a Web browser and utilize some functions such as sending and
receiving email messages. However, the online chat did not work well with Web

browsers, which interfered with the group communications during the day. In her

reflection message, Eireen described her frustration due to problems with the Web

version of FirstClass as follows:

> I didn't really encounter any problems except for not being able to log into the
> chats regularly on time because I cannot get past this firewall at work. Thus, a lot
> of our work has to be pushed back until later into the evening to get to it, while at
> home. This drags on into the night and I am sure becomes annoying to the rest to
> the group, just to deal with me and INCLUDE me.

Instructor's Role

Most participants believed the instructor played two main roles for the course: the

course developer and the facilitator. As a course developer, the instructor selected and

organized the course contents and activities and then developed the course materials

before the course started. As a facilitator, the instructor had participants prepared for the

course in terms of technology and assigning groups, checked if everybody was making

satisfactory progress, and provided academic and technical help when needed during the

course. William said the instructor "allowed the students to dictate their learning after

setting up the course and initiating the learning." Lewis also said of the facilitator's role

of the instructor,

> The burden was on students to meet deadlines and to understand what's supposed
> to happen next and to get the assignments done. We had the syllabus that we had
> to follow and we had online webcast to keep us directed. But, aside from those
> things, there wasn't daily contact unless it was requested on our part from the
> instructor. So, their role is definitely to initiate the process, to facilitate the norms
> and make sure everybody had technology, make sure everybody has the group,
> and then simply to facilitate the process so they're prepared in advance.

Another important role of the instructor was to serve as a model of the desirable

behaviors for effective online collaboration. For example, Robert said the instructor's

behavior such as appreciating differences in people encouraged the participants to

appreciate other people's differences while working together in groups and promoted the creation of an open and warm atmosphere in the learning environment.

> There is not direct presentation, but I can tell you that there's a lot of modeling that goes on. Let me give an example. The instructor models, for example, when he took the different rubrics and he showed different people's products. What he was doing was modeling appreciating differences in people. Not everybody did it the same and then he emailed individuals as well to say these are some positives and, you know, these are some things that need work, but he exhibited appreciating diversity in thoughts when he did that whether he meant to do that or not. That's what happened. … I really think that the professor does a good job of facilitating and modeling that. … I think that when you don't have direct instruction, everybody's kind of at the same place. We are all way back here or somewhere, we are trying to find each other. If you don't appreciate other people's differences, then you are going to look bad. You're not going to be accepted well in your group. You're not going to get emails on the weekend. You're going to be left out a little bit. Nobody wants to be left out. You know, everybody wants to do well. I think that motivations are there and the professor does a good job modeling it.

FACTORS RELATED TO INDIVIDUAL DIFFERENCES

The dimension of individual differences includes factors resulting from individual differences in backgrounds and characteristics such as personalities, conflicts in schedule due to different work schedule among group members, experience in online learning, and attitudes toward collaborative learning. This section describes how participants' individual differences in backgrounds and characteristics influenced their interactions with group members in an online collaborative learning environment.

Personality

People display various types of personalities. Among the participants in this study, however, three personality types seemed to influence group interactions: the shy person, the task-oriented person, and the social relationship-oriented person. Of course,

these three categories do not represent all personality types of the participants. They are simply categories related to participants' tendencies in the group interactions.

When asked to talk about her experience and feeling at the beginning of the course, Rebecca stated,

> I was a little nervous. When I am doing online discussions, I think I have to make sure that I participated in and sometimes can be maybe on the shy side when it comes to groups. I know I have that little aspect of what I can be. I may be a little hesitant to participate or I cannot type quickly sometimes.

However, starting with a smaller group with three group members helped her to get used to online group discussions through manageable interactions with the other two group members, which made her then feel more comfortable working together in a bigger group. Thus, she became to feel a sense of community with her group in the latter half of the semester.

> I am more at ease now, too. The initial nervousness of jumping into conversations, now I have no problems with it. I feel more comfortable within the group as well. If I didn't feel connected to my group, I maybe a little bit more hesitant or less comfortable with participating in the chat.

In addition to starting with a smaller group, Rebecca also mentioned several other factors that helped her to feel a sense of community, such as group members' response, getting to know each other through various activities, establishing norms, step-by-step activities forcing constant communications among group members, and characteristics of tasks to be completed by the group.

> I think we can share information more since we're more comfortable and I feel part of this community. But, in the other group in another course, I don't feel connected at all. It's almost like I'm hesitant to ask questions because the answers that I've gotten are a horror. Sometimes I don't want to participate as much with that group.

> You just have more interaction with them and so do get to know them better, which helped. In terms of the course activities, introducing myself activity for getting to know each other and the directory that I can go back to.

To really establish a sense of community right at front, have the class early talk about the norms along with the introduction, discuss what're important aspects for being able to communicate with each other, trying to establish an atmosphere that's safe for everybody.

Even though we had a lot of deadlines and a lot of activities, I think that's what helped build a sense of community. You don't just have three major projects. Even though the topic paper, webquest, and designing CSCL are in the course, between them we had a lot of other little ones. Having all these deadlines in between forces us just to communicate. We had come up with ways to meet with each other and collaborate together and figure out how to work together. We worked together more than had there not been as many in between assignments.

In another class, we have discussions and I don't have a sense of community at all. I feel very isolated from that group only because the different types of people in the group just give some of their responses and back in the discussions. It's more like let me get in my line or two and that way I get my points and I'm done and I don't need to talk to you again.

The case of Rebecca showed that even a person who tends to hesitate to participate in group discussions can be actively involved in the group collaboration and feel a sense of community with positive influences from other factors.

Another type of tendency in group interactions was the task-oriented personality. Nancy, who described herself as a task-oriented person, looked at her group as a function of getting a project done in a certain amount of time.

For myself, I tend to be very task-focused. I mean I enjoy getting to know people. I enjoy chatting with people, but bottom line what we need to get done, when we need to get it done by... and so and so forth. And so, for me, I looked at this group as a function. It was function of getting some projects done in a certain amount of time. I don't know that I will continue a relationship on with anybody in the group after the class. There's one person who I might continue a relationship on with, but I don't know. That's not my main purpose or focus.

Her task-oriented personality sometimes made her dominate the group decision-making process, seeking the efficiency to get a task done in a certain amount of time rather than including everyone's input. Eireen, who had difficulties in working together with her group members during the day because of technical problems in her work place

and her rigid work schedule, felt that her group was less understanding and less flexible

because of the dominance by one of the members during the group decision-making

process.

> The first team was more confrontational. We were all going to do what this one
> person wanted and that was it all the time. Whatever this person wanted, if we
> didn't get to that, we would have to sit there and chat forever and ever and ever
> until we got resolved and then we did what the person wanted. It wasn't just the
> technological system, but it was the interpersonal stuff that really made it harder.
> We're less understanding, less flexibility. "You're only available at this time, oh
> well, too bad for you." Okay, that's not the true spirit of collaboration and that
> was like this is what we think, this is what I think, and if other people are not here
> to get their opinion or their input, oh well, we're going to do this. To me, that's
> rude. That's not collaboration. Until you get everyone's okay and buy in, you
> don't just do that.

A task-oriented person tends to have little regard for a sense of community

because he or she is interested more in getting the work done on time while working

together with group members rather than in the relationships with group members. When

asked if she felt a sense of community or ties with her group members, Nancy said,

> Sort of. I do in the sense that familiar to me and I know how they work and I
> know some of their thoughts and opinions on things. So, there's a sense of
> familiarity. I don't know that I necessarily feel tied to them or feel a connection
> with them. I would probably say "No." It's more familiarity. If you ask some
> other people in my group, they would say "Yes," because they strike me as being
> people first and task second whereas I am task first and people second. I think a
> few people in the group that are very aware of the relationship amongst the team
> members and are very concerned for the team members and very caring and feel a
> sense of community and feel a sense of relationship... maybe even feel a sense of
> responsibility for the care of the group. I do to a certain extent, but again it's not.

As Nancy mentioned above, there were social relationship-oriented people who

regarded the relationships with group members as important while working together and

were very careful of others' feelings. Jongho said he "was willing to treat his group

members generously somehow or other and have intimate relationships with them." In his

reflection message, he also emphasized the importance of the relationships between the

instructor and students or among students in educational settings.

> I think a teacher (or instructor) is a man who does deal with students (human beings), not instructional goals or objectives. So, in educational or learning settings, we have to consider the relationships between teacher and student or among students as the most important thing. In oriental views, students does not learn "some knowledge from teacher," but learn "the whole being of teacher him/herself" through authentic apprenticeship. To get some external behavioral change becomes less critical than to form a good internal relationship with others when we are based on such a view. Of course I don't attempt to devalue the importance of behavioral objectives. I just want to revaluate that of human relationship in learning settings, especially in the collaborative situation like ours. I hope that I (and you) can get a good relationship with my office, suite, and class mate and it makes my (and your) learning experience much richer.

Social relationship-oriented participants' behaviors showing their understanding

of the difficult situation and concerns about others' feelings helped group members with

problems to feel a sense of belongingness to the group. Carlos, who did not actively

participate in the group project because of technical problems and schedule conflicts,

said,

> And then I felt like a sense of belongingness once when we're dividing project among each other and "Carlos, how do you feel about doing this?" and they started seeing more on the sensitive side, the more personal side like "Do you feel comfortable doing resources?"

Conflicts in Schedule

Conflicts in participants' schedule occurred during arranging time for online

group chats. For an online group chat, group members had to get together online at the

same time. Although participants could communicate asynchronously with email

messages, all groups preferred online group chats to email messages, especially for the

group decision-making at the planning stage of each group project. Rebecca explained

the reason, saying, "Sometimes with the emails, you don't get as much sense of what's

going on. When we're actually all together chatting synchronously, you can clarify immediately what's going on."

Therefore, every group tried to have online group chats regularly but then faced difficulties in arranging the time for them due to different work schedules among group members. Noah described the problem that his group had during the course as follows:

> Sometimes I feel it is difficult to arrange the time for an online chat that every team member could attend. Some members are on campus full time students. Some are full time workers. Students prefer to do CSCL projects during the day but workers would like to take assignments after work. Time conflict frequently occurred.

The following transcript of an online group chat of Noah's group shows a typical example of the difficulties in arranging the time for an online group chat.

> **Rachel**: Jongho, we were just chatting about a good time to meet.
> **Rachel**: So, what time is a good time to meet for you?
> **Rachel**: I know that Noah and I both have a class MTW 4-7.
> **Jongho**: Me, too.
> **Rachel**: This meeting time would be to chat only online.
> **Rachel**: So, should we meet online late one evening a week? How about 8:30 pm?
> **Jongho**: I take ISD, CSCL, Dr. Sue's classes this semester.
> **Rachel**: Maybe Tuesday evening?
> **Jongho**: Okay.
> **Noah**: OK.
> **Rachel**: So, to confirm, Tuesday evenings online at 8:30 pm?
> **Jongho**: But...
> **Rachel**: But?
> **Jongho**: I think
> **Jongho**: At 8:30, I have some dinner. How about 9:00?
> **Rachel**: Okay, 9 pm.
> **Noah**: Where will you be online?
> **Jongho**: At home
> **Rachel**: I think that we will only meet for about an hour. Do you both have a computer where you live?
> **Jongho**: Yes.
> **Noah**: Wait a minute. I don't have computer at home. Please start our meeting earlier so that I don't need to wait in the cold lab.
> **Jongho**: um…
> **Rachel**: What about during the day? This is more difficult because I work

fulltime.

Rachel: What about meeting in person after Dr. Adams' ISD class?
Jongho: And, we can talk about it after ISD class.
Jongho: OK.
Noah: OK.
Rachel: So, our plan is to first meet tomorrow night @7pm.
Jongho: Right.
Rachel: Do you think that they will want to see the saved chats? If we meet in person only we will not have these. We might have to walk over to the lab and chat for our meetings.

Carlos felt some distance from his group when he missed several online group chats due to the conflict between the online group chat time and his work schedule. When asked if he had ever felt any distance from his team, Carlos said,

> At times I did. There were several times we had to meet constantly like on Sunday, maybe back on Monday, on Wednesdays and Fridays or Thursdays. That was very hard for me because as a high school principal, I am required to be at all the school activities throughout the whole week. The only time that I have will be like Saturday night and Sunday night. During the week it was hard for me to squeeze into, but a lot of time in there. And then, of course, on Monday and Tuesday I would come up here. So, it was even tougher to me, I think, to set up a meeting time.

Some participants, especially those who had problems with online chats from their work places, preferred asynchronous email messages to online chats for communication and collaboration.

> **Elliot**: We can communicate via email as much as we can.
> **Kelly**: I prefer e-mail, too
> **Eireen**: Email is good too!!!!!
> **Eireen**: I agree with Elliot. We need to do whatever to do the WORK. Forget about this "interface" which is so constrictive.
> **Eireen**: Okay. We talk back and forth via email at your work e-mail or your home email, Elliot. Kelly only has the one email right?

Eireen, who had difficulties in joining online group chats during the day due to technical problems in her work place and her tight work schedule in her first group, liked the decision of using email messages for communication and collaboration in her second group and felt the second group was more flexible.

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I had one team and then on the last project I moved into a different team. The first team was not good. The second team on this last project we made and everything has been really wonderful. The first team was really rigid. We said we would log in at this time and this time. It was like they were just going through the motion, having to utilize FirstClass, the way we have to do, the way we are told. The second team was more flexible. We didn't do that. It was like let's use the good part of FirstClass, let's use whatever works for us. That's not the attitude that we had with the first group. It was like "No, we have to do everything through chat, we have to do everything this way. It was not as productive.

Experience in Online Learning

About one-half of the participants had never taken online courses. Most participants who had no experience in taking online courses expected that this course would be similar to the traditional face-to-face courses or easier in terms of the amount of time required for the course and the number of times to meet. William said, "I thought it would be easier. I didn't expect to get online several times a week. I thought maybe it would be one time a week." Carlos said, "The other problem with FirstClass and Prometheus is that you almost got to check them on a daily basis. That's hard for me to get used to." William said that not getting used to the routines, such as getting online everyday, checking the course website often, and organizing the group to meet regularly, might be a barrier that interferes with forming a community.

And then also not just getting used to the number of times to meet. That also would've been a barrier. I mean getting used to the routines, getting online and checking the syllabus and organizing the team to meet a couple times a week. … In a regular class, you only meet once a week. And in this case, you have to go online every other day or more, everyday. And so, if people aren't doing that, then it's hard to rely on them and to form community. So, it's a barrier if people don't follow the routines.

Some participants were embarrassed by the fact that they had to interact with each other without any face-to-face contact at the beginning of the course. Erica said, "I didn't

know what's going on and was intimidated by no face-to-face contact." Grace described

her experience at the very beginning of the course as follows:

> It was a little bit weird when you gave us the offices, there's someone who was not here. It was just weird because you don't see the office mates. I like talking too. I like looking for their eyes because I can read what they're thinking or something through their eyes. So, that was weird. I didn't know if what I was saying was okay or should I say more or should I put some humor in it? I tried to put things or jokes, but they didn't understand. Nobody wants me to joke online, but it was okay.

However, participants' experience in online learning did not seem to have a

critical impact on their sense of community because almost all participants, except those

who had some technical problems and schedule conflicts, became accustomed to the

online learning environment through a couple of assignments with group members. Sara

said, "I felt slightly overwhelmed in the very beginning of the course. Shortly after

'diving into' the course assignments, I became much more comfortable." In his reflection

message, William also stated,

> I had a little bit of trouble getting started in this course because I lacked consistency. But I'm getting the hang of things and I'm beginning to enjoy my suite mates (though I don't know if they would say the same thing about me... I'm the only one who seems to want to 'stir the pot' and make a little controversy). Having reminders from my colleagues has helped encourage me! The solution to overcoming my early troubles is simple: Get on line everyday.

Attitude toward Collaborative Learning

Participants' attitude toward collaborative learning can be a critical factor for

having a sense of community, especially if it is extremely negative. Most of the

participants had positive attitudes toward collaborative learning although initially they

did not have a broad knowledge base about collaborative learning or wide experience in

collaborative learning environments. For example, Robert said of his previous knowledge

and attitude toward collaborative learning,

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What I was familiar with was more generalized context. We're all familiar with collaborative learning as an educator somehow because of the evolution of teaching going from direct teaching to collaborative instruction, to group work, to that kind of thing. I was not familiar with the detail in this course, but the general concepts for the most part. … I think it's most important why to teach, absolutely. I think that two minds are better than one. That's how I feel. No doubt.

Grace, who understood collaborative learning just with the definition of the word 'collaborative,' and had not previously been exposed to collaborative learning environments, reflected on her experience after completing the first module of the course:

I think what's great about collaborative learning is that with working with other people you get so many ideas like things you never really thought of. Though you may not agree to all of these things but just reading all the thoughts that my suitemates make is fascinating. I'm learning so much and my mind is constantly stimulated.

Two participants had negative attitudes toward collaborative learning. Elliot, who worked in the training department for technicians of a computer manufacturing company, showed an extremely negative attitude toward collaborative learning throughout the course. His response to Rebecca's reflection on the first module of the course shows this negative attitude toward collaborative learning.

Module Two Reflections
From: Rebecca
Subject: Assignment 2.5b
To: Reflections – CSCL
Students will be involved with an online learning community to enhance their learning experience. CSCL can be an important aspect of professional development courses. Working collaboratively with others in the same profession can make for a richer experience than traditional online courses.

Module Two Reflections
From: Elliot
Subject: Re: Assignment 2.5b
To: Reflections – CSCL
As someone whose primary learning style is individualistic, I would respectfully disagree. Being tied to others is a uniquely stressful, intimidating, and frustrating environment. Imagine having to get five or so people to agree what to eat for every meal. Everybody agrees or goes hungry. Miss a meal or two and sacrificing

becomes inevitable. That's what "collaborative learning" is like. You end up with gruel every meal because it is the only thing that everybody can agree upon.

The following two quotations from his reflections indicate that his negative attitude toward collaborative learning was generally related to his worldview and work experiences:

> I mentioned before that I find group-responsibility to be morally incompatible with democratic traditions. Mao may have executed a suspected traitor's family as a way of encouraging loyalty, but allowing for no individual achievement in education discourages learners from excellence. The approach is symptomatic of the way our society is deteriorating. It gives individuals no reason to excel and a ready-made scapegoat for failure.

> Is peer pressure alone enough to overcome the reticence of students who care nothing for social relationship or find no enjoyment in group activities? … If I seem obsessed with this question it is because most of my students decided to work with technology because of a perception that social skills would not be needed in that field. Luckily, they are also highly competitive, so I have been able to achieve better results by fostering competition in the classroom rather than cooperation.

His negative attitude toward collaborative learning seems to have interfered with his learning in this course. In his final reflection, he answered the question, "Reviewing your earlier reflections, how have your ideas of collaborative and/or online learning changed or evolved from the beginning of the course?" as follows.

> My views on collaborative learning have not changed significantly. While I agree that relationships were formed during this class, I have always thought that the goal of education was education. This class focused on two things: 1) Using FirstClass, 2) Working as a Team. I see no benefit in the first and already understood the second. Collaborative learning helps achieve a more balanced result. It sands down the peaks and uses the dust to fill in the valleys.

However, other participants' evaluation for the course were quite different from Elliot's. Tyler wrote in his final reflection, "Overall, I would give this course a much better evaluation than Elliot." Caroline said that she learned a lot from working together

with group members and the various experiences from the very diverse group of students allowed for a well-rounded learning environment in her reflection.

> I believe that the most difficult and yet rewarding aspect in the course is the collaborative group work. It is hard to get a large group of busy people to work together. However, this challenge allowed for a great deal of learning to take place. For that I am thankful. I also learned how truly important organization is. This class forced me to be very on top of everything I do. What I liked best in this class was the very diverse group of students that were in the class. Not only did their geographic locations vary, but also their experiences were vastly different. I felt that this allowed for a well-rounded learning environment. I had the most difficulty creating a web site. I do not have a lot of experience in this area. I would change the way students are grouped. Instead of grouping by grade level, I would mix the grade level in each group.

> Robert responded to Caroline's reflection as follows:

> I totally agree that there is a great deal of satisfaction in learning from your peers. I do not believe it is good learning or bad, but just different in perspectives and understanding. I truly admire this setting and this type of learning. This -- in your words allows for a better environment -- and a well-rounded one for learning.

> Another participant with a negative attitude toward collaborative learning was

Rachel who had experience only in a very traditional, competitive learning environment. She had difficulty in feeling comfortable with collaborative learning because it was a new experience for her when others depended on her to complete assignments and she could not move forward without input from others. She also doubted that a personal bond with her group members would make the environment conducive to group work.

Participants with a negative attitude toward collaborative learning would not accept that students could learn from each other by working together. Therefore, they had little interest in having a sense of community through developing the relationships with group members.

CONSEQUENCES OF A SENSE OF COMMUNITY

After experiencing a sense of co-accomplishment in completing large and complex tasks through group collaboration, participants indicated that they had established a sense of community in their group. This then helped them to develop friendships or strong ties with their group members, feel more comfortable in working together, develop a greater sense of responsibility, develop confidence in their group's ability, and finally build trust in group members for help.

Consequences of a sense of community, in turn, influenced the factors that facilitated participants' sense of community. Consequences of a sense of community not only promoted group interactions, but also changed the ways in which the factors related to individual differences influenced participants' interactions with other group members. This section describes the consequences of feeling a sense of community and how the consequences, in turn, influenced the factors that promoted a sense of community when the participants engaged in the next collaborative task.

Sense of Camaraderie

Beyond merely feeling a part of the group, many participants described friendship or strong ties with group members after experiencing a sense of co-accomplishment in completing these complex tasks together through group collaboration. Kelly said, "At first I wasn't so sure, but when the webquest project was getting close, I felt very comfortable and really felt like a team member of a team with other four people, even though I never met them." Sara also said, "For me, I guess a strong team feeling really didn't come about until the webquest. I felt like we were a team before that, but the idea of teammates and 'friends' wasn't until the webquest." In addition, Sara wrote that

making friends in an online learning environment was one of the surprising aspects of the course in her final reflection.

> One of the reasons I wanted to come back to school for my Master's was to meet new people...as making new friends in the 'real world' is much harder than I thought it would be! I find it very surprising that I would make friends that I interact with socially in this sort of learning environment!!

Eireen said that after a sense of community was established among her group members, they were comfortable in sharing what they really thought and what they really wanted from each other as they did to their friends, which made the group collaboration more efficient.

> Before, you don't know how people are perceiving things, or whatever. You just kind of see words or typing or whatever. You don't know the true feelings about stuff. … It was more, you know, once we got past that barrier together, right away it was like you could see just by little types of messages that people would email each other. The content of the messages, it was more like familiar, it was more easy-going. People would tell you what they really thought. It was like you could tell the sincere solidarity. This is what we believe, this is what we understand and then interpret it to be. That's all this way and everybody agreed. So, that was less work for us because we saw right away. People really told you. That's really when you are asking me, "How do I know afterward?" People told you what they really thought and what they really wanted. It was almost like say you are talking to them and they are your friends. We were all like... We were a group. This is collaboration. This is what I wanted from the whole time at the beginning.

Some participants expected that the relationships with their group members would be maintained even after the course was over. Robert stated, "I can see us probably being friends or advising or counseling each other on certain things and our jobs for a while even after the course." Lewis also said,

> I think that people can have a sense of relationship, kind of bonding almost. Even my suitemates, we have a sense of camaraderie. I don't know if we will continue to communicate online or not after the class is over, but I wouldn't be surprised if I were to email one of my partners and say "Can you help me with something?" I think I may be willing to do that just because we've established relationships even though we've never seen each other face-to-face.

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Feeling Comfortable with Working Together

Participants experiencing a sense of community also feel more comfortable working together because they not only become intimate with each other, but also get to know each other's work style and way of thinking while working together intensively for group projects. Rebecca, who hesitated to participate in group discussions at the beginning of the course, could jump into conversations without hesitation after beginning to feel comfortable.

> I am more at ease now, too. The initial nervousness of jumping into conversations, now I have no problems with it. I feel more comfortable within the group as well. If I didn't feel connected to my group, I maybe a little bit more hesitant or less comfortable with participating in the chat. So, by participating, I am gaining knowledge from my peers because I can ask them questions and clarify points for me and they can ask me things that maybe they didn't realize or know about. I think we can share information more since we feel more comfortable and I feel part of this community. But, in the other group in another course, I don't feel connected to it at all. It's almost like I'm hesitant to ask questions because the answers that I've gotten are a horror. Sometimes I don't want to participate as much with that group.

Rebecca also described how the flow of her group's online discussion changed after a sense of community was established in her group:

> One of our team members was going to be out and only could make a part of chat. He led early in the chat so that he could feel like he was a part of it. We occasionally take turns like leading discussions. So, we are much more aware of each other now when we're in our discussion. Our discussions take their own flow now. It's now always one leader for one project. Why I feel a sense of community is because we are able to have a chat flow and I am comfortable with taking over and I am comfortable with when someone else comes in with something and letting them taking over and leading.

Several participants noticed that their group started enjoying each other's sense of humor while working together. In her final reflection message, Erica described how the chat tone of her group changed over the semester.

> Initially it was more straightforward and geared toward the project at hand. Towards the end, we still had the project focus, but more personality was able to

come through. For our last chats, I found myself rolling from laughing so hard. I was skeptical that our personalities would be able to "shine through" at the onset of this class and loved that they did!

After having a sense of community, Lewis' group members also were able to enjoy each other's sense of humor and their online discussions became much more personal.

> We've been working hard and had a number of online discussion sessions on successive nights and so, we were all kind of tired in a way and started to get silly online one night and we're throwing jokes around and we're making silly puns and playing on words. The point of it is we were able to not only get work done, but we're able to enjoy each other's sense of humor a little bit as well. Before we had a sense of community, when we gathered online, we greeted each other pleasantly and cheerfully. But, after we began to kind of gel as a group and, I guess, develop a sense of community that we talked about, our online discussions became much more personal. We began to learn more about who each other were and some those things that might be going on. We had a feel for the sense of humor that an individual might have.

Lewis showed how comfortable he felt in working together with his group members in his final reflection message, saying, "I was reluctant to step outside my suite group to work with anyone as a participant in their design projects because I was so comfortable with my group."

Greater Sense of Responsibility

Most participants had a sense of responsibility to some extent even at the beginning of the group collaboration. After experiencing a sense of community, however, they expressed a greater sense of responsibility. Rebecca said, "I thought I was responsible to the group before, but now I have a greater sense of responsibility." She also added, "If any of my group members has a question that only I can help, I will be more than willing to help them anyway."

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In addition to willingness to help each other, a greater sense of responsibility stimulated participants to care more about the quality of the group product, which led to a more active participation in the group collaboration. Erica described her group members' behaviors indicating their caring about the quality of the group project:

> When a product that was proposed for turn-in did not reflect the work of each of the team members and wasn't presented in an organized and thorough fashion, other members rushed to email me, which indicates they were caring about the quality of the group product.

In her reflection after the webquest project, Olivia wrote that her group members cared more about the quality of their group work after experiencing the community and more actively involved in the group collaboration. She concluded that a sense of community is a key component for online learning.

> Now I realize why the literature keeps emphasizing the importance of forming the community for online learners. Since we started experiencing the community among us, it seemed we cared more about the quality of our group work and the collaboration thing happened all the time. The community is a key component for online learning.

Trust in Group Members

Participants' sense of community was established by experiencing a sense of co-accomplishment when they produced something that an individual could not have produced on his or her own and felt proud of the product and the process by which they had worked together for the project. Therefore, when participants felt a sense of community, they had confidence in their group's ability to do something together. William said, "Everybody did their parts and so it's like we really could work together to solve any major problem, because before that I wasn't sure about our less active member. But, he did some work and so, I was more confident." Tyler also became more confident

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in his group after completing a major task in a short amount of time with group members who were far away.

> When we got to do it within just two or three days, have a little bit sympathy for each other, but you get online and meet each other and sometimes that takes a long chat and then get it done, and then when you meet the deadlines that come up in a very short time like that, you feel like almost anything is possible. Working with somebody so many miles away, something pretty big done in just a short amount of time, you feel like you can do a lot of different things.

In addition to confidence in the group's ability, a sense of community made participants trust in their group members to get help when necessary. Sara said, "After the sense of community, I felt that I could rely on my group members to help me if I had questions or concerns." Rebecca and Lewis also showed their willingness to help their group members even after the course was over.

SUMMARY

As the result of the data analysis, this study identified factors that influenced students' sense of community in an online course and the influences of a sense of community on students' participation in online communications and collaboration. Students' sense of community was influenced primarily by the outcomes of interactions with group members, such as group members' behaviors showing consideration for others, responding to their contributions, and contributing to the group collaboration. Additional activities including opportunities for getting to know each other and establishing group interaction norms, and actively participating in the group decision-making process while working together to accomplish the group projects were also critical for development of community. The characteristics of the tasks that a group had to accomplish influenced the nature of the interactions among group members and the group members' feelings after completing the tasks. Factors related to the course context,

such as the collaborative nature of the course, technology being used for the course, and the instructor's role, influenced students' sense of community by either facilitating or interfering with group interactions. In addition, some factors resulting from individual differences in backgrounds and characteristics, such as personalities and attitudes toward collaborative learning, were critical for students to develop a sense of community. Once a sense of community was established, students developed a sense of camaraderie with their group members, felt more comfortable in working together, developed a greater sense of responsibility, and developed trust in their group members. The consequences of a sense of community, in turn, influenced the factors that promoted a sense of community when the students engaged in the next collaborative task.

Chapter V. Discussion

The main purpose of this study was to explore students' experiences of gaining a sense of community in an online collaborative learning environment. Throughout the analysis of data, the study focused on identifying factors that influenced students' sense of community in an online course, the relationships among the factors, and the influences of a sense of community on students' participation in online communication and collaboration.

After identifying the factors that influenced students' sense of community and the consequences of those factors, the researcher identified a central theme of the study that helps to explain the significance of the study. To decide on the central theme, the researcher attempted to determine the overarching theme that could unite the other categories together to form an explanatory whole. After repeatedly reviewing the categories representing the factors and the consequences of a sense of community derived from the original data, the researcher determined that "Experiencing a sense of co-accomplishment through online collaboration" was the most dominant theme and was situated in the center of the relationships among all of the factors related to participants' sense of community and the consequences of those factors. Once the central theme of the study was chosen, other categories were organized around the central theme, and the theoretical model of the study, "Sense of Co-accomplishment as Threshold in Establishing a Sense of Community in an Online Course," emerged.

This chapter describes the theoretical model in detail, referring to findings from the current study as well as those from previous research. Limitations of the study are described, and implications for future research and educational practice and conclusions are presented.

DISCUSSION OF THE FINDINGS

This section explains the theoretical model of the study, "Sense of Co-accomplishment as Threshold in Establishing a Sense of Community in an Online Course," which evolved from the data analysis and findings from the previous research. The theoretical model includes not only the factors that influence students' sense of community and the consequences of a sense of community, but also the relationships among the factors and the consequences (Figure 5.1). The central theme of the study was students' experiencing a sense of co-accomplishment through online collaboration. The model consists of two components, the factors that influence students' sense of community, and the consequences of a sense of community. The factors are categorized into three dimensions: group interaction, course context, and individual differences.
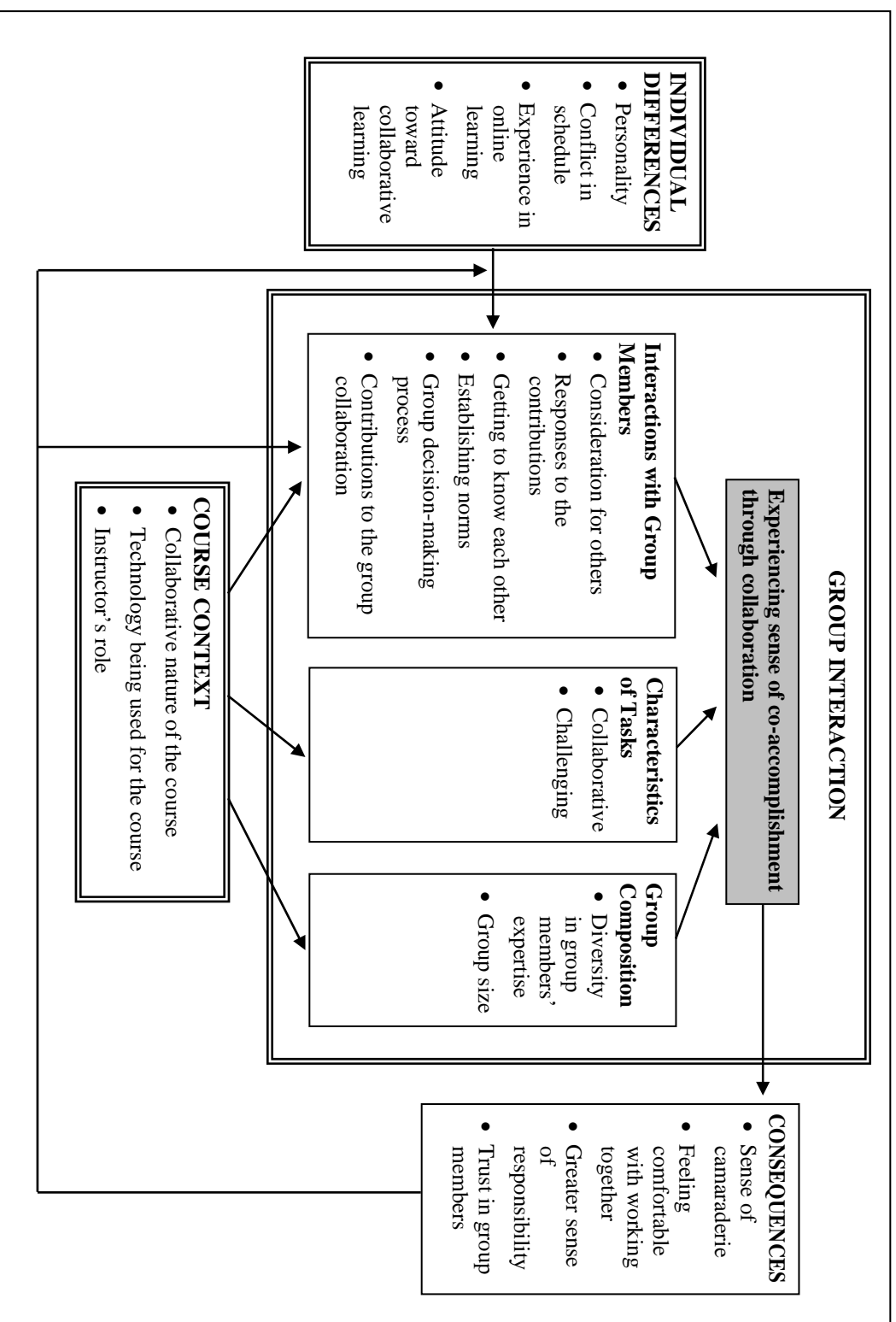
Figure 5.1 Theoretical Model "Sense of Co-accomplishment as Threshold in Establishing a Sense of Community in an Online Course"

INDIVIDUAL DIFFERENCES
- Personality
- Conflict in schedule
- Experience in online learning
- Attitude toward collaborative learning

GROUP INTERACTION

Interactions with Group Members
- Consideration for others
- Responses to the contributions
- Getting to know each other
- Establishing norms
- Group decision-making process
- Contributions to the group collaboration

Characteristics of Tasks
- Collaborative
- Challenging

Group Composition
- Diversity in group members' expertise
- Group size

Experiencing sense of co-accomplishment through collaboration

COURSE CONTEXT
- Collaborative nature of the course
- Technology being used for the course
- Instructor's role

CONSEQUENCES
- Sense of camaraderie
- Feeling comfortable with working together
- Greater sense of responsibility
- Trust in group members

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Sense of Co-accomplishment as Threshold for Establishing Sense of Community

As noted in the data analysis, students' sense of community evolved through the processes of getting to know each other, becoming comfortable with online collaborative learning environment, working together on a project, and completing the project. However, it was not until the students experienced a sense of co-accomplishment at the completion of one of the group projects that their sense of community was established. The word, "accomplishment," is defined as "something successful or impressive that is achieved after a lot of effort and hard work" in the Longman Web Dictionary. Based on the definition of accomplishment, a sense of co-accomplishment can be defined as the feeling that group members have after completing something successful or impressive through a lot of collaborative efforts and hard work of the group members. The results of the data analysis showed that students felt a sense of co-accomplishment at the end of a project when they produced something that one could not have produced individually. They felt proud of the product they had produced as a community as well as the process through which they worked together for the product.

The four elements of sense of community suggested by McMillan and Chavis (1986) help to understand the relationships between a sense of co-accomplishment and a sense of community in an online collaborative learning environment, that is, how experiencing a sense of co-accomplishment promotes a sense of community. The four elements of sense of community are membership, influence, integration and fulfillment of needs, and shared emotional connection.

Membership is a feeling of belonging, which provide members with the emotional safety necessary for needs and feelings to be exposed and for intimacy to develop. The second element, influence, refers to the influence of a member on the community as well as the influence of the community on the member, for example, making the members

conform to the rules of the community for its cohesiveness. In addition, the members must get their needs met through cooperative behavior within the community. Integration refers to the extent to which individual values are shared among community members, which organizes and prioritizes need-fulfillment activities. The last element, shared emotional connection, is an affective component of sense of community that develops through opportunities to experience a spiritual bond among members.

The facilitation of the four elements of sense of community strengthens members' sense of community (Bateman, 1998; McMillan & Chavis, 1986). Results of the data analysis indicated that experiencing a sense of co-accomplishment through collaboration to accomplish a group project facilitated the four elements of sense of community in various ways.

Membership. The first element, membership, was facilitated mainly through the experience of working together, conversations about personal lives, and joking around, which typically occurred during the process of experiencing a sense of co-accomplishment. Observing what each of the group members did while completing a group project helped the group members to get to know each other's work style and way of thinking. Conversations about personal lives and joking around while working together for the group project helped the group members to feel closer to each other.

Influence. Students influenced the group through their contributions to the group collaboration. Each of the group members brought his or her unique expertise and incorporated his or her special knowledge or skills to make the group project successful, which helped the group members to develop the ownership of the group project. Students felt a sense of belongingness when their opinions were accepted or their contributions acknowledged by other group members. Students not only influenced the group, but also were influenced by the group. To complete their large and complex group project,

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students were forced to conform to the norms that the group members agreed on, such as being timely in terms of communicating with group members, adhering to deadlines and requirements of the course, and providing high quality work.

Integration and Fulfillment of Needs. The third element, integration and fulfillment of needs, was facilitated by learning from peer students and developing the relationships with group members while working together to accomplish the tasks. Students learned from each other by sharing the various resources, experiences, and perspectives that each group member brought to accomplish the tasks. The activities of working together to accomplish the tasks also made students get involved in the activities themselves and experience all the different types of formats to work with people. In addition to learning from each other, students enjoyed interacting with their group members and developing close relationships with them while working together. The relationships were sometimes expected to be maintained even after the course was over.

Shared Emotional Connection. The last element, shared emotional connection, was facilitated by feeling strong ties with group members after the completion of a challenging and complex project. The bigger the project, the more the group members bonded together. Group members had to become intimately involved with each other and rely on each other because all the knowledge and skills of the group members were required to complete the project. After the challenging and complex task was successfully completed with all the contributions from every group member, students felt strong ties with their group members.

A student may increase his or her familiarity with other group members by getting to know their work style, thoughts, and opinions on things. However, while the familiarity with other group members can contribute to a sense of community, a student's

familiarity with his or her group members may not be sufficient by itself for the student to feel a sense of community with the group.

As examined above, the process of experiencing a sense of co-accomplishment through collaboration facilitated all of the four elements of sense of community in various ways, which resulted in promoting students' sense of community. Students had to cross the threshold by experiencing a sense of co-accomplishment at the end of a group project to establish a sense of community. That a sense of community was established means all the four elements of sense of community were sufficiently strengthened. Students' sense of community evolved gradually and inconspicuously through the processes of getting to know each other, becoming comfortable with online collaborative learning environment, and working together on group projects until they reached the threshold for establishing a sense of community. Students' feeling of co-accomplishment after the completion of a challenging and complex project made the last element of sense of community, "shared emotional connection," established among group members. Students who experienced a sense of co-accomplishment also felt strong ties with group members, which made them cross the threshold for establishing their sense of community.

The remainder of this section provides descriptions of other components of the theoretical model including the factors related to the group interaction, course context, and individual differences dimensions and the consequences of a sense of community.

Group Interaction Dimension

As shown in the diagram of the theoretical model (Figure 5.1), the phenomenon of experiencing a sense of co-accomplishment that establishes students' sense of community occurs within the group interaction dimension, which means the factors of the

group interaction dimension have the primary influences on students' sense of co-accomplishment. The group interaction dimension includes not only the factors related to the nature of interactions among group members, but also the factors that influence the nature of interactions, such as the characteristics of tasks that a group has to accomplish and the group composition.

Interactions with Group Members

With regard to the factors related to the interactions among group members, this study confirms earlier research findings that revealed students become more active participants when their contributions to an online discussion or group work are explicitly acknowledged, and when they receive positive responses from other members (Lally & Barrett, 1999; Wegerif, 1998) and that students' active participation in collaborative activities can foster a stronger sense of community (Brown, 2001; Haythornthwaite et al., 200; Moller et al., 2000). Students in this study also felt more comfortable and confident in the group when group members recognized their contributions and accepted their opinions. In addition, they felt a sense of distance from their group when they did not receive replies to their messages or comments. Students' active participation in the group projects and activities played an important role in not only promoting each individual's ownership of the group projects, but also developing trust among group members. Group members trusted a member because he or she submitted good quality work on time and was available when it was time to meet online.

Consideration for others also helped students feel a sense of belongingness to the group. Specific behaviors showing consideration for others include communicating in a friendly tone, seeking to understand other team member's situation rather than asking for an explanation, helping each other by sending reminders and providing advice for technical or other problems, and showing concerns about others' feelings. Students

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particularly cared about the feelings of those who were more likely to feel a sense of alienation because of technical problems, schedule conflicts, or different first-languages.

Opportunities for getting to know each other promoted a sense of familiarity among students. The student's biography completed at the beginning of the course enabled members to be familiar with other's work and educational experiences, technology skills, and individual characteristics. Students also had opportunities to get to know each other informally through conversations on personal lives and joking around while working together online. In addition, working together to complete several projects provided continuing opportunities for getting to know each other. Observing what each of the group members did while completing group assignments helped students to become familiar with each other's work style, way of thinking, and personality. This finding confirms the suggestion that socializing opportunities to create community may be more effective if structured within the context of the group project and related tasks rather than provided outside the formal context of the course (Berg, 1999).

Students also were involved in an activity to establish their own norms for effective online collaboration by sharing their ideas through threaded discussions. This activity not only helped everyone to develop shared expectations by reaching a consensus on the norms, but also reminded students of the desirable behaviors when working together later. The process of establishing the norms also allowed those who were new to online learning environments to anticipate what may happen in the online collaborative learning environment.

This study also found that contributing to the decision-making processes in terms of topics of group projects, the assignment of roles to group members, and the time schedule for completion of group project tasks helped students develop a sense of belongingness and ownership of the group work by promoting their sense of

involvement. However, dominance by some group members made others feel less involved and distanced from the group. The dominance was in part attributable to a person's level of knowledge or experience in the topic, personality, or advanced preparation for the project. That is, those who had more knowledge or experience in the topic related to the project, were more task-oriented, or had specific ideas on what to do by reading instructions for the project in advance, were more likely to dominate the process of deciding the topic for the project. However, to promote group members' sense of community and accomplish group work successfully, group members, especially those who tended to dominate the group decision-making process, needed to listen to and appreciate what others thought and be willing to negotiate with other team members to reach a consensus during the group decision-making process.

As examined above, factors relating to interactions among group members had the most direct influence on experiencing a sense of co-accomplishment at the conclusion of a complex online group project. These factors included promoting a sense of familiarity among group members, developing a sense of belongingness to the group, building trust among group members, developing a sense of involvement and ownership of the group project, and encouraging the desirable behaviors for effective online collaboration.

Characteristics of Tasks

The characteristics of the task that a group had to accomplish together had a significant impact upon both the nature of interaction among the group members during group collaboration and the members' feeling after completing the task. Students felt a sense of co-accomplishment at the completion of a complex project because of the collaborative and challenging nature of the task. That is, the collaborative nature of the task involved members from the planning stage and encouraged mutual engagement in a coordinated effort to accomplish the task. The project task also was challenging and

complex enough to require the contributions of all the group members. Group members had to become intimately involved with each other and rely on each other because the knowledge and skills of all the group members were required to complete the task. After the task was successfully completed through the efforts and contributions of each group member, the sense of co-accomplishment helped to foster a sense of community.

While students felt a stronger sense of co-accomplishment when they did something together that they thought impossible, a task beyond the ability of the group within the limited time constraints reduced collaboration among the group members. In some instances, to complete the task within the given time period, some students just divided the work among team members and then combined the parts together at the end. This finding suggests that the instructor needs to carefully consider the group's capacity and the available time when deciding on the size and complexity of a group learning project.

Group Composition

Students' sense of co-accomplishment occurred when the group successfully completed the complex and challenging task. Diversity in group members' knowledge, skills, and experiences was an important factor for the successful completion of the task. The diversity in group members' contributions allowed each member to bring his unique expertise, special knowledge, or skills to make the group project successful, which helped the group members to develop the sense of ownership of the task. Students also learned from each other by sharing the various perspectives resulting from the diverse backgrounds and experiences of the group members.

The group size needed to be large enough to provide diversity in group members' knowledge, skills, and experiences necessary for accomplishing the task, but not so large as to create difficulties in reaching a consensus and making decisions. Some students

sometimes spent more time summarizing or recapping ideas to ensure everybody was at a similar point in idea development. Especially for those who were not familiar with online group discussions, it was helpful to start with a smaller collaborative group and then move into a larger group so that they could become a little more comfortable with their online interactions. Lally and Barrett (1999) also suggested that the size of an online learning group be considered to secure students' full and active participation.

Course Context Dimension

The factors of the course context dimension were related to the context in which participants interacted with their group members. The factors influenced students' sense of co-accomplishment primarily by facilitating or interfering with group interactions. The factors of the course context dimension found in this study included the collaborative nature of the course, the technology used for the course, and the instructor's role.

The findings of previous research suggests that a cooperative goal structure within an online learning environment, established by using collaborative learner-centered instructional activities, fosters interactions with other members and promotes interdependence among the group members (Bragg, 1999; Lally & Barrett, 1999). Those findings are consistent with results of the present study. The instructional strategy that most showed the collaborative nature of the course was to have students work with various partners or group members from the very beginning to the end of the course. Every activity and assignment of the course was done with a partner or within a group comprised of three to six team members. Working together in completing the course activities and assignments throughout the course forced students to be involved with other classmates by promoting both course-related and the personal interactions among students. Working together to accomplish tasks also made students become more invested

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in the activities themselves and enabled them to experience the different types of formats in working with people online.

Diverse functions of the communication system used for the course also helped students' communication and collaboration with group members. The communication system allowed students to send email and voice messages to each other, communicate in real time privately or in a group through online chat, set up special virtual spaces for team projects and activities, publish webpages, have individual and team calendars, and edit the same document with other members online. In addition, computer conferencing systems that organize the online environment graphically instead of showing just a long list of messages provide a sense of a shared space in which participants can work together (Wegerif, 1998). The communication system used for this course provided the graphical organization of messages and folders, which not only made it easy for students to use and navigate the system, but also enabled them to feel that they had their own workspace within the system.

Previous research has found that gentle and non-intrusive facilitation of collaborative activities by the instructor is conducive to the creation of an open and warm atmosphere (Barab et al., 2001), and that desirable behaviors modeled by the instructor and encouragement to collaborate provided by the instructor help communities to form more readily for students in online courses (Brown, 2001; Solomon et al., 1992). The instructor of this course, however, did not have to encourage students to collaborate with each other because every activity and assignment of the course was designed to be done through collaboration with a partner or group members. The instructor's role in this course was that of a facilitator and model of desirable behaviors. As a facilitator, the instructor arranged for the students to be prepared for the course in terms of technology and group assignments, checked if everybody was on the right track, and provided

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academic and technical help when needed during the course, which made students feel that they were largely responsible for their own learning. The instructor also served as a model of desirable behaviors for effective online collaboration. For example, the instructor's behavior such as appreciating differences in people encouraged students to appreciate other people's differences while working together in groups and thus promoted the creation of an open and warm atmosphere in the online course.

Individual Differences Dimension

Students' individual differences in backgrounds and characteristics influenced their interactions with group members in various ways. Factors related to the individual differences dimension include personality, conflicts in schedule, experience in online learning, and attitudes toward collaborative learning.

Two types of individuals were revealed to considerably influence the group interactions: the task-oriented person and social relationship-oriented person. Task-oriented people looked at their group as a function of getting a project done in a certain amount of time and thus tended to dominate the group decision-making process, seeking the goal of efficiency in getting the task done rather than including everyone's input. The dominance by task-oriented people often prevented other group members from feeling a sense of involvement during the group decision-making process. The task-oriented people also tended to have little regard for a sense of community because they were interested more in getting the work done on time while working together with group members rather than in developing the relationships with group members. In contrast, the social relationship-oriented people regarded the relationships with group members as important while working together and were very careful of others' feelings. Social relationship-oriented students' behaviors demonstrating their understanding of the

difficult situation and concerns about others' feelings helped group members

experiencing problems to feel a sense of belongingness to the group.

Conflicts in students' schedule occurred in arranging times for online group chats

because group members had to get together online at the same time. Some students

missed several online group chats due to conflicts between the online group chat times

and their work schedule, which tended to make them feel a sense of distance from their

group.

The findings of this study related to students' experience in online learning partly

confirmed results of previous research that posited that, while experienced students are

able to jump right into the course and become quickly engaged in the class, it takes some

time for new students to gain experience and confidence in online courses (Brown, 2001).

Most students in this course who had no experience in taking online courses expected that

this course would be similar to the traditional face-to-face courses or easier in terms of

the amount of time to be spent for the course and the number of times to meet. Some of

them also were embarrassed by the fact that they had to interact with each other without

any face-to-face contact at the beginning of the course. However, almost all of the

students, except for those who had some technical problems and schedule conflicts,

became used to the online learning environment after a couple of assignments with group

members at the early stage of the course.

Students' attitudes toward collaborative learning were a critical factor for having

a sense of community, especially if it was extremely negative. Students with a negative

attitude toward collaborative learning would not accept that students could learn from

each other by working together. Therefore, they had little interest in having a sense of

community by developing the relationships with group members in learning settings.

Rather, they seemed to think that relationships with classmates could interfere with their

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learning. It is likely to be very difficult for students to develop a sense of community in online collaborative learning environments unless their prior negative attitude toward collaborative learning is at least explored and neutralized.

Consequences of a Sense of Community

After experiencing a sense of co-accomplishment through the group collaboration, students established a sense of community in their group, which helped them to develop friendships or strong ties with their group members, feel more comfortable in working together, develop a greater sense of responsibility, develop confidence in their group's ability, and build trust in group members for help.

Many students felt that they had developed a friendship or strong ties with their group members beyond just feeling a part of the group after experiencing a sense of co-accomplishment through the group collaboration. After a sense of community was established among group members, students became more comfortable in sharing what they really thought and what they really wanted from each other as they did to their friends, which made the group collaboration more efficient. Moller, Harvey, Downs, and Godshalk (2000) also revealed that a sense of community might help students in online learning environments to fully participate in their learning process by having them perceive the environments as safe.

Students experiencing a sense of co-accomplishment with their group members also felt more comfortable in working together because they not only became more acquainted, familiar, and open with each other, but also got to know each other's work style and way of thinking while working together intensively for group projects. After having a sense of community, students also started enjoying each other's sense of humor while working together and their online discussions became much more personal. Some

students were reluctant to leave their group for other projects because they were very comfortable with the original group.

Most participants had a sense of responsibility to some extent even at the beginning of the group collaboration. After experiencing a sense of community, however, students had a greater sense of responsibility, which promoted their willingness to help their group members. A greater sense of responsibility also made students care more about the quality of the group product, which led to more active participation in the group collaboration. This finding is consistent with that of the study conducted by Moller et al. (2000). They found that a sense of community helped students to fully participate in their learning process by fostering their sense of obligation or responsibility to meet the needs of the group.

Students' sense of community was established by experiencing a sense of co-accomplishment when they produced something that an individual could not have produced on his or her own. Therefore, students feeling a sense of community had confidence in their group's ability to do something together due to their experience of successful completion of group work. A sense of community also made students develop trust in their group members to get help when necessary.

As examined above, consequences of a sense of community, in turn, influenced the factors that facilitated students' sense of community when the students engaged in the next collaborative task. Consequences of a sense of community not only promoted the group interaction itself, but also changed the ways in which the factors related to individual differences influenced students' interactions with other group members. For example, some students hesitated to participate in the group discussion at the beginning because of personal factors such as shyness or lack of confidence. However, once having a sense of community, they participated actively in the group discussion and

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collaboration because they developed a sense of camaraderie with the group members and felt comfortable with working together after experiencing a sense of co-accomplishment with the group members.

In summary, the findings of this study indicated that experiencing a sense of co-accomplishment through collaboration helped students to establish their sense of community by facilitating the four elements of sense of community: membership, influence, integration and fulfillment of needs, and shared emotional connection. The findings also indicated that the factors influencing students' sense of community related to three dimensions: group interaction, course context, and individual differences. Students' sense of community was influenced primarily by the outcomes of interactions with group members, such as group members' behaviors showing consideration for others, responding to their contributions, and contributing to the group collaboration. Factors of the course context dimension, such as the collaborative nature of the course, the technology used for the course, and the instructor's role, influenced students' sense of community by either facilitating or interfering with the group interactions. Some factors of the individual differences dimension, such as tendencies in working together and attitudes toward collaborative learning, were critical for students to develop a sense of community. Once a sense of community was established, students developed a sense of camaraderie with their group members, felt more comfortable in working together, developed a greater sense of responsibility, and developed trust in their group members.

LIMITATIONS OF THE STUDY

One of the limitations of the study related to the uniqueness of the setting and the participants of the study. The online course used as the setting of this study was complex and had its unique characteristics. One of the objectives of the course was to build a

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learning community among the participants throughout the course. In fact, the first module of the course focused entirely to community building activities. Other modules also used collaborative learning strategies that promoted the process of community building. The course required students to work with various partners or group members in every required activity. As one student described, the course could be characterized as "the whole premise of collaborative learning, not being a single component or just a part of the class." Therefore, some unique aspects of the course may not be applicable to other online courses. In addition, the participants of this study were selectively homogeneous because they were graduate students of a major research university. They might have a much higher level of motivation and self-expectations than other groups such as undergraduate students. This study, therefore, has limitations for generalizability of the findings. Whether the findings are applicable in another context depends on the degree of similarity between the two contexts (Lincoln & Guba, 1985). Therefore, readers who are interested in applying the findings of this study need first to determine how similar the situation of interest is to them in the context of this study.

Another limitation of the study is that the participants may have purposely withheld information during interviews. The researcher functioned in a role to support students having technical problems during the course. Therefore, the participants felt comfortable with the presence of the researcher. This role in the course also helped the researcher to build trustful relationships with the participants in the study. However, the participants may have regarded the researcher as one of the staff members of the course who were responsible for management of the course and could influence their grade like the instructor or the teaching assistant of the course. Because the interviews were conducted during the course, participants may have hesitated to provide additional information on negative aspects of the course during the interviews.

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In addition, the participants were aware that building a learning community was one of the important objectives of the course, which may have led them to make socially desirable responses while completing the survey of Sense of Community Index as well as during interviews. To eliminate the potential biases derived from the researcher's role and the participants' socially desirable responses, the researcher triangulated the findings with various data sources.

IMPLICATIONS FOR FUTURE RESEARCH

Findings from this study provide useful information in understanding the factors involved in students' sense of community in an online collaborative learning environment and the relationships among these factors. The setting of this study was a graduate-level online course in which all course activities were conducted collaboratively through online communications. This course was chosen as the setting of the study because the course was expected to manifest intensely the phenomenon being studied. As mentioned earlier, the online course had unique characteristics. The course had students work with various partners or group members in every activity. Therefore, future research can be conducted to investigate whether the theoretical model developed in this study is applicable in different settings. For example, students in the course were supposed to work in the same group for all the activities and assignments except the last module of the course. Therefore, students' sense of community in this study was developed within their own group. They had little personal acquaintance with members of other groups. However, if students are required to work in different groups during a course, interactions among students may be different from those of this study. In addition to the setting, the participants of this study were also very selective because they were graduate students of a major research university. Therefore, future research in different settings with different

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populations would guide development of a more comprehensive and richer theoretical model on students' sense of community in online collaborative learning environments.

Another implication for future research relates to peer assessment. Students of the course were asked to evaluate their group members in terms of contributions to the group discussion and collaboration after completing each group project. One of the students made an interesting comment on the peer assessment.

> The one thing that surprised me was the peer assessment piece. Prior to my knowing that we're going to have this peer assessment thing, I thought more relaxed and open to my team. After the first peer assessment, I became incredibly cognizant of my actions, my comments, my feedback, and my interaction with the group because I became aware of the things that I would be scored or marked. I don't know how to get around that. I think it does impact the scope and nature of the conversations that go on among team members even if it's just a little which, I think, is the case in my group. It impacted things a little bit, but I think it has the potential to impact the group significantly or it may even be detrimental to the group. So, I don't know how we get around that. But, I noticed that people started giving positive feedback a whole a lot more. "Good job! Way to go." And, one person in particular became a lot more diplomatic in terms of "Do we all agreed, we have consensus, everybody in agreement with this" than they were before.

Because similar comments were not made from other students, this study did not investigate the influences of the peer assessment component. However, this student's comment implies significant positive and negative impacts of the peer assessment on group interactions. Therefore, future research needs to investigate how peer assessment in collaborative learning environments influences group interactions and students' sense of community.

One of the critical factors that influence students' sense of community in this study was students' attitude toward collaborative learning. Students with a negative attitude toward collaborative learning would not accept that students could learn from each other by working together. Therefore, they had little interest in having a sense of community by developing the relationships with group members in learning settings. It

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seemed rare for them to develop a sense of community in online collaborative learning environments unless this negative attitude toward collaborative learning was at least neutralized. Therefore, research on how to change negative attitudes of students toward collaborative learning environments may provide useful information in designing an effective collaborative learning environment for students with different learning styles.

IMPLICATIONS FOR EDUCATIONAL PRACTICE

Findings of this study suggest that students' sense of community in online collaborative learning environments is established by experiencing a sense of co-accomplishment through online collaboration. Therefore, to promote students' sense of community, the instructor of an online collaborative learning environment must consider which strategies will facilitate students' experiencing a sense of co-accomplishment in the learning environment.

To have students experience a sense of co-accomplishment, the learning environment should foster interactions among students and promote interdependence among group members using collaborative learner-centered activities. Working together for the course activities and assignments can help students to become involved with other classmates by promoting both the course-related and the personal interactions among students. The activities of working together to accomplish tasks also make students become more involved in the activities themselves and experience different types of formats to work with people.

The findings of this study also suggest that the instructor needs to carefully consider the size and complexity of a group task, the group's capacity, and the given time for the task. Students felt a sense of co-accomplishment after successfully completing a challenging and complex task through contributions from every group member.

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Therefore, the task should require sufficient collaboration to have group members get involved from the planning stage and encourage mutual engagement in a coordinated effort to accomplish the task. The task also should be challenging and complex enough to be completed only with contributions from all of the group members. Group members became intimately involved with each other and relied on each other because knowledge and skills of all group members were required to complete the task. However, a task beyond the ability of the group within the limited time may interfere with the true collaboration among the group members. To complete the task within the given time, students may simply divide the work with each student, do their part alone, and simply combine the parts at the end.

The instructor also needs to be careful in choosing the technological tools for the course. Although using technology does not guarantee communities to occur, technological tools allow the instructor to use specific strategies to create the communities (Moller, 1998). The communication system that will be used for the online course should provide diverse functions for students' communication and collaboration with group members, such as synchronous/asynchronous and private/public communication. In addition, it is helpful if the communication system organizes the online environment graphically instead of simply providing a long list of messages. The graphical organization of messages and folders may not only make it easier for students to use and navigate the system, but also enable them to feel that they have their own workspace within the system.

The gentle and non-intrusive facilitation of collaborative activities by the instructor can facilitate the creation of an open and warm atmosphere. For effective facilitation of group interactions, the instructor needs to carefully monitor all the interactions among students and provide prompt academic and technical help when

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needed. The instructor also should serve as a model of the desirable behaviors for effective online collaboration, which can encourage students to do these same behaviors while working together in groups. The desirable behaviors include appreciating others' different opinions, willingness to negotiate with others, acknowledging others' contributions to the group discussion and collaboration, responding promptly to questions or requests for help from others, and providing constructive feedback for improving the work.

The findings of this study can be shared with students at the beginning of an online course so that they are knowledgeable about what to expect and how to participate in the process of the formation of their community in advance. If students understand the benefits of learning community and are provided the background and expectation for learning community, more students will gain a sense of community in their online classes (Brown, 2001).

CONCLUSION

While much remains to be explored, the findings of this study provide useful information in understanding the factors involved in students' sense of community in an online collaborative learning environment and the relationships among the factors. The theoretical model of this study titled, "Crossing the Threshold of Experiencing a Sense of Co-accomplishment through Online Collaboration," provides a useful framework for understanding the phenomenon of students' sense of community in online collaborative learning environments. In addition, the central theme of the model, "experiencing a sense of co-accomplishment through collaboration," helps to identify and better understand the relationship between working together for collaborative learning activities and students' sense of community. Although additional dimensions or factors may need to be included

or deleted in the future, the current model provides an overall picture showing the factors involved in students' sense of community and the relationships among the factors.

The results of this study demonstrate the importance of students' sense of community for successful collaborative learning. Through the process of gaining a sense of community, students develop friendships or strong ties with group members, feel more comfortable in working together, develop a greater sense of responsibility, develop confidence in their group's ability, and build trust in group members; all of which are crucial for effective collaborative learning. In addition, without a sense of community, working together with group members may be perceived as a burdensome obligation to receive credit for the course. However, once feeling a sense of community with group members, students begin to enjoy working together with them. Learning from each other by working together becomes very meaningful to each of the group members, which may change their perspectives on learning, and perhaps their lives.

Appendices

Module 1. Building a Learning Community

<Assignment 1.4> Install TeachNet on Your Own Computer

We are going to use "TeachNet" for our virtual workspace and communication. "TeachNet" is the name that we have given to our communication system that uses a network-based collaborative tool called FirstClass. TeachNet is a Web-based communication tool that not only enables us to send email and voice messages to each other, but allows us to communicate in real time with online chat, set up special virtual spaces for team projects and activities, create Web pages, have individual and team calendars, edit the same document, and other features.

To have access to all of TeachNet's functions, you need to set up TeachNet on the computer(s) that you will be using as you work on our projects. You can download the file for installing TeachNet from the TeachNet website (http://www.edb.utexas.edu/mike/teachnet/) or get a CD by your request. When you are not at the computer where you have installed TeachNet, you can still access your email and conference folders through the Web version of TeachNet at this URL, http://teachnet.edb.utexas.edu/.

After installing TeachNet, post a message indicating that you succeed in installing TeachNet in the *Cafe - CSCLO2* conference area by 12:00 noon CST on August 30.

<Assignment 1.5.a> Introduce Yourself

To help us break the ice, **post a message that will tell us more about you to the *Introductions* conference area in the *Cafe - CSCLO2* on TeachNet by 12:00 noon CST on September 3**.

In your message, please share:

1. Your goals or expectations for taking this course

2. An educational experience that has had a big impact on who you are today

3. Your special interests and hobbies

4. Interesting things about yourself that you want to share with other member

<Assignment 1.5.b> Read and Respond to Others' Introductions

Now, it's time to get to know each other. **Read all the introductions in the _Introductions_ conference area in the _Cafe - CSCL02_ on TeachNet and respond to at least three introductions of other members by 12:00 noon CST on September 5.**
Your responses will include:

1. Three adjectives that describe your impression on the member and brief explanations on the adjectives.

2. What are particularly interesting to you in the introduction?

3. What do you share common with the member?

4. What do you want to know more about the member? (**If you get questions from other members, please answer them.**)

<Assignment 1.6> Provide Information for Staff Directory

An online form is provided for you to conveniently provide the following items of information for the staff directory. Only the members of our learning community will be able to access the staff directory.

- Name

- Email address

- Home address

- Home and office phone numbers

- Work experience (including current position)

- Educational background

- Experience in using computer software

- Online course experience

- Kind of computer you use

- Internet access

Please submit the information no later than 12:00 noon on September 5.
Click here to enter or edit your information.

Also, send us your picture.
Since we are located in different places, we may not have a chance to meet face to face. When we are collaborating, it enriches our communication to know what we each look like. We would like to post your picture in the staff directory so that

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your fellow members will have a greater sense of knowing you. **Attach a scanned version of your photo to an email using the link at the bottom of this web page**.

<Assignment 1.7> Establish Norms for Effective Online Collaboration

Now, let's share and establish our own norms or rules for effective online collaboration. The discussions on the norms will help us create a learning community that provides a safe, intimate, and cohesive space in which we can openly share our thoughts and feelings while learning from each other.

- **Post at least three messages including your ideas on norms or rules for our effective online collaboration in the *Cafe - CSCL02* conference area by 12:00 noon CST on September 9**. The messages have to include one of the following items.

  o Your new ideas on the norms and rules

  o Agreement to others' ideas and elaboration

  o Disagreement to others' ideas and why

In our first webcast **from 4 to 6 PM CST on September 9**, we will vote which rules might be important for effective online collaboration.

Module 2. Understanding CSCL

<Assignment 2.2> Get to Know Your Office Mates - Office Team Task

Now that you have been introduced to your office mates, it is time that you begin to build your knowledge together. In this assignment, we would like for you to share some of your views and experiences in cooperative or collaborative learning and to also, in a more personal way, get to understand the experiences and perspectives of others related to cooperative learning.

1. Go to **your office conference area** in your suite on TeachNet and share your answers to the following questions with your office mate(s) **by 12:00 noon CST on September 10**:

   o What was your best and worst collaboration experience in an education or work setting? What factors were most important in the success and failure of the collaborative activity?

   o Have you taught classes or lead a group at work or in another setting utilizing cooperative and collaborative learning strategies? If so, identify what you feel were the most important things to consider in helping to effectively lead the collaborative activity?

2. Read the posted experiences of your office mate(s) and respond to at least

one of them identifying either a shared or contrasting experience to the one that they noted **by 12:00 noon CST on September 11**.

3. As a team (with your **office mates**), identify, summarize, and briefly describe a few themes, points, or factors that you and your office mate(s) jointly feel are most important to the success of a cooperative or collaborative activity and **post in the *Assignments* conference area in your suite on TeachNet by 12:00 noon CST on September 13**.

<Assignment 2.4> Make Connections & Check Understandings - Office Team Task

In this activity, you will work individually, cooperatively with your office mate(s) and explore other offices' perspectives and experiences.

1. Each member of your **office** has to select a different article of the following four articles.

   o Cooperative Learning (http://www.co-operation.org/pages/cl.html)

   o A Definition of Collaborative vs Cooperative Learning (http://www.lgu.ac.uk/deliberations/collab.learning/panitz2.html)

   o The Case For Student Centered Instruction Via Collaborative Learning Paradigms (http://home.capecod.net/~tpanitz/tedsarticles/coopbenefits.htm)

   o The Characteristics of CSCL (p. 64-65 in the textbook, *Implementing Computer Supported Cooperative Learning*)

2. After reading the article, **post a message in your office conference area on TeachNet by 12:00 noon CST on September 15**, explaining three most important ideas emerging from the article related to CSCL.

3. As a team (with your **office mates**), synthesize your ideas emerging from the articles through discussions with your office mates and post it in **the *Assignments* conference area in your suite on TeachNet by 12:00 noon CST on September 17**.

<Assignment 2.5.a> Make Connections - Suite Team Task

Your **suite** team has two options to complete this assignment. Chose one of the following.

Option 1. Controversy

Johnson & Johnson discussed various aspects of conflicts in their Web site. Topics

include:

- Academic Controversy (http://www.clcrc.com/pages/academic.html)

- Decision Controversy (http://www.clcrc.com/pages/decision.html)

- Conflict Resolution (http://www.clcrc.com/pages/conflict.html)

- Teaching Students To Be Peacemakers
  (http://www.clcrc.com/pages/peace.html)

1. Individually, select one of the readings and read it.

2. Identify the strategies that you may want to use when controversies or conflicts arise. Take a stand and make your argument, and then **post your message in the *Assignments* conference area in your suite on TeachNet by 12:00 noon CST on September 18**.

3. As a **suite team**, identify the key strategies that your team will use to resolve controversies or conflicts that may arise and **post in the *Assignments* conference area in your suite on TeachNet by 12:00 noon CST on September 20**.

Option 2. Social Aspects of Collaborative Learning

Michael Hammond (1999) discussed issues associated with participation in online forums.

1. Read the article, "Issues associated with participation in online forums."

2. Identify the strategies that you may use to promote positive interdependence and facilitate participation. Take a stand and make your argument, and then **post your message in the *Assignments* conference area in your suite on TeachNet by 12:00 noon CST on September 18**.

3. As a suite team, post your list of strategies in a message in the *Assignments* conference area in your suite on TeachNet by 12:00 noon CST on September 20.

<Assignment 2.5.b> Reflections

After having more understanding key elements about CSCL, what is CSCL, why use CSCL, and the social aspect of CSCL, we would like for you to reflect on your learning experience. The followings are only some examples of questions that may help you reflect back on your learning in this module.

- What aspects of the learning about CSCL did I feel were the most important or relevant to me? What aspect(s) do I disagree with?

- What further questions do I have regarding CSCL theories and related issues?

- What is my view on how CSCL may be applied in the area of my interest?

- Are there other important aspects or issues that I would like to learn about CSCL?

- What problems did I encounter in working through this module?

- How could they be overcome in the future?

1. **Go to the *Reflections* conference area on TeachNet and post some of your thoughts and reflections by 12:00 noon CST on September 20.**

2. Please read and comment on at least one other reflection by another member of the class by 12:00 noon CST on September 23.

<Assignment 2.5.c> Submit Portfolio

Post your portfolio in **your personal folder in your suite conference area on TeachNet by 12:00 noon CST on September 23**. Your portfolio consists of two types of information:

- Excerpts from your best contributions to online discussions

- Your specific product contributions to the team project

<Assignment 2.5.d> Practice Peer and Self Evaluation

Peer evaluation involves making critical judgments about the learning of peers. It is important to apply the same standards to both peer and self evaluations. Self evaluation involves taking responsibility for making judgments and monitoring aspects of your own learning. Statistics show that the process of conducting reliable and valid peer and self evaluations is learned. It is the goal of this task to enhance your problem-solving techniques in the complex skills of peer and self evaluation and to help you feel comfortable with and to apply standards to these evaluation processes.

1. Review the table showing the errors in peer and self assessment. It is important to keep the points in mind while determining the score that you will assign for each item in the peer or self evaluation rubric.

2. Read the article, "Examining a collaborative assessment process in networked lifelong learning," by D. McConnell.

3. Please familiarize yourself with the peer and self evaluation rubric.

4. Please read <u>the scenario</u>. After carefully reading the scenario, pleas rate John using <u>the rubric</u>, according to the standards and techniques you have just reviewed, and your good judgment.

All the tasks should be done by 4:00 pm CST on September 23. In the second webcast, we are going to discuss the rationale for rating John.

Module 3. Designing CSCL Learning Activities

<Assignment 3.2> Reflect on Reading

Read Chapter 5 of the text, Designing for CSCL (pages 109-150) and reflect on the differences between traditional and cooperative learning environments and the aspects of effective CSCL environments. If you have had experience in both traditional and cooperative environments,

- What aspects of each were appealing to you?

- What aspects did you not like?

Post your reflections in the *Assignments* in your suite conference area by 12:00 noon CST on September 27.

<Assignment 3.3.a> Identify Curriculum Area for a Collaborative Learning Activity

1. Think of a knowledge domain, curriculum, or subject area for which you might want to design a collaborative learning project or activity.

2. Look at the following figure and write one example of an enduring understanding, what is important to know, and what is worthwhile knowing and **post in the *Assignments* in your suite conference area on TeachNet by 12:00 noon CST on September 27**. The message will include:

   o Name of curriculum area, knowledge domain or subject area

   o One example for each of:

      ▪ an enduring understanding (indicate which facets)

      ▪ what is important to know

      ▪ what is worthwhile knowing

3. Read the examples of your suite team members.

<Assignment 3.3.b> Reflect on Reading

1. Read the article, "The Case for Authentic Assessment" (http://ericae.net/pare/getvn.asp?v=2&n=2) by Grant Wiggins.

2. Post two or more points that you found helpful, concur with, or disagree with in the article in the *Assignments* in your suite conference area on TeachNet **by 12:00 noon CST on September 27**.

3. Read others' reflections.

<Assignment 3.3.c> Develop a Rubric for Collaborative Learning Activity

1. Review the curriculum priorities you identified in Assignment 3.3.a.

2. Select a specific learning task, performance, or product that would provide evidence of the desired knowledge or skill. You may use any of the Rubric Resource tools to develop your rubric. **Post your rubric in the *Assignments* folder in your suite conference area on TeachNet by 12:00 noon CST on October 2.**

3. Review at least two other rubrics in the *Assignments* folder in your suite conference area and **give your comments on the rubrics by 12:00 noon CST on October 4**. In your constructive feedback, indicate the strengths of the rubric and areas that might require more clarification in addition to other suggestions you feel would be helpful to the author in further refining the rubric.

<Assignment 3.4> Explore Tools for Collaborative Learning

Please review one of the above tools or another tool you may have discovered on the web and **post a message including the following information in the *Assignments* in your suite conference area on TeachNet by 12:00 noon CST on October 4**.

- Name of tool

- URL address

- Cost (note if free or may be used on trial basis)

- Features of tool (describe the capabilities of the tool relevant to support group work or collaborative learning)

- Ideas for potential use of the tool in online learning activities

<Assignment 3.5.a> Reflections

1. Reflect on your learnings and questions related to the design of CSCL learning experiences.

o   What questions remain?

o   What ideas are emerging for a possible project you might do?

Post your reflections in the *Reflections* conference area on TeachNet by 12:00 noon CST on October 4.

2. Please read and respond to at least one of others' reflections by 12:00 noon CST on October 7.

<Assignment 3.5.b> Submit Portfolio

Post your portfolio in **your personal folder in your suite conference area on TeachNet by 12:00 noon CST on October 7**. Your portfolio consists of excerpts from your best contributions to online discussions.

Module 4. Strategies for Collaborative Writing

<Assignment 4.2> Develop a Topic Paper Related to CSCL - Office Team Task

You and your office mates will develop a topic paper related to computer-supported collaborative learning (CSCL) that you and your office mates would be interested in learning more about.

Preparing the Topic Paper

Your paper should attempt to provide a concise synopsis of the topic that will be useful to other CTI staff members. Your office team should first discuss the topic and its components. You might then organize the topic paper into subtopics. The final paper should be 6-10 pages in length including references and should represent the contributions, consensus and best ideas of your office team. It is important that the final topic paper look and read as though it were written by one person rather than a collection of smaller papers.

The suggested steps for this project are as follows:

1. Consider the topics that are of interest to you. Go to your office conference area on TeachNet and post your suggestions to your office mates for a topic that might be used for the topic paper. Read suggestions of other team members and look for similar topics or areas of interest. The purpose of this discussion is to quickly move toward consensus in selecting the topic that will be used by your office team for the Handbook paper.

2. After selecting a topic or theme related to CSCL, identify major subtopics, issues, or aspects related to the topic. Each member will then select one or more subtopics that will be the focus of their component of the paper (approximately 2-

3 pages).

3. As a team, you will need to develop a coherent and seamless single paper that is comprised of an introductory section at the beginning of the integrated paper and a summary section at the end. Decide as a team how best to accomplish this goal, you may decide that one person may develop the introduction section and another the summary section. One member of the team might serve as the editor of the final paper.

Post your office's final topic paper (6-10 pages) in the *Topic Paper 2002* folder in the *Projects 2002* conference area on TeachNet by 12:00 noon CST on October 18.

<Assignment 4.4.a> Reflections

1. Consider the following questions as you reflect back on your experiences in collaboratively writing the topic paper and working with others online.

   o What did I learn from this project?

   o What questions do I have about collaborative writing or CSCL?

   o What learning strategies did I find useful?

   o What problems did I encounter?

   o How could they be overcome in the future?

      Post your reflections in the *Reflections* conference area on TeachNet by 12:00 noon CST on October 18.

2. **Please read and respond to at least one of others' reflections by 12:00 noon CST on October 21.**

<Assignment 4.4.b> Evaluation & Portfolio

- **Complete <u>peer evaluation</u> and <u>team product evaluation</u> by 12:00 noon CST on October 21.**

- Post your portfolio in **your personal folder in your suite conference area on TeachNet by 12:00 noon CST on October 21**. Your portfolio consists of two types of information:

   o Excerpts from your best contributions to online discussions

   o Your specific product contributions to the team project

Module 5. Collaborative Web-based Inquiry Skills

<Assignment 5.3> Explore a Webquest - Suite Team Task

To gain some initial experience with a webquest, your suite team should do the exercise under *Task* on the *A Webquest about Webquests* (http://edweb.sdsu.edu/webquest/webquestwebquest-hs.html). This exercise will help your suite team not only experience a webquest but will help you to critically analyze the quality of webquests.

The task exercise of the Web page was designed to be used by a small group in face-to-face meeting in a classroom. We, however, have modified the task so your team can do this task online. An adaptation of the worksheet developed by Bernie Dodge (1997) is shown on Table 5.1 below.

Your suite team can do this exercise either synchronously by using the TeachNet chat function or asynchronously over a period of a couple of days. Use the resources identified for the exercise for your analysis. These include:

- **The Titanic: What Can the Numbers Tell Us?**
  (http://asterix.ednet.lsu.edu/~edtech/webquest/titanic.html) - Use spreadsheets and a database to seek the truth.

- **Banned Book Quest**
  (http://www.plainfield.k12.in.us/hschool/webq/webq52/banned.htm) - Respond to pressure from the school board to remove books.

- **Conflict Yellowstone Wolves**
  (http://powayusd.sdcoe.k12.ca.us/mtr/ConflictYellowstoneWolf.htm) - Take a stand on the reintroduction of wolves to Yellowstone.

- **The Gilded Age**
  (http://www.oswego.org/staff/tcaswell/wq/gildedage/student.htm) - Create a documentary on this historical period.

- **World Hunger**
  (http://www.manteno.k12.il.us/drussert/WebQuests/HallOvandoRobinson/start.html) - Prepare a report to the United Nations.

This assignment should be done by 12:00 noon CST on October 24. The detailed instruction for this task is provided below.

The Task Process

The steps your suite team will use in completing the exercise are as follows:

Step 1. Decide which roles each member will take. More than one person can assume a role but make sure all roles are included in your team. The roles include (B. Dodge, 1997):

The Efficiency Expert: You value time a great deal. You believe that too much time is wasted in today's classrooms on unfocused activity and learners not knowing what they should be doing at a given moment. To you, a good webquests is one that delivers the most learning bang for the buck. If it's a short, unambitious activity that teaches a small thing well, then you like it. If it's a long term activity, it had better deliver a deep understanding of the topic it covers.

The Affiliator: To you, the best learning activities are those in which students work together. Webquests that force collaboration and create a need for discussion and consensus are the best in your view. If a webquest can be done by a student working alone, it leaves you cold.

The Altitudinist: Higher level thinking is everything to you. There's too much emphasis on factual recall in schools today. The only justification for bringing technology into schools is to give students the opportunity to analyze information, synthesize multiple perspectives, and take a stance on the merits of something. You also value sites that allow for some creative expression on the part of the learner.

The Technophile: You love this Internet thing. To you, the best webquest is one that makes the best use of the technology of the Web. If a webquest has attractive colors, animated gifs, and lots of links to interesting sites, you love it. If it makes minimal use of the Web, you'd rather use a worksheet.

Step 2. Select one member to be the moderator of this activity. This person will facilitate the discussion and completion of the task.

Step 3. Review each of the sites listed above and use the worksheet to jot down some notes of your opinions of each from the perspective of your role. You'll need to examine each site fairly quickly. Don't spend more than 10 minutes on any one site.

Step 4. When you have completed your review of the sites, post a message in your suite conference area on TeachNet indicating that you have completed your review. When all members of your team have seen all the sites, the moderator should ask each team member to submit the names of what they consider the two best and two worst Webquests.

Step 5. There will probably not be unanimous agreement, so the next step is to talk together to hammer out a compromise consensus for your team's nominations for best and worst. Pool your perspectives and see if you can agree on what's best for the learner.

Step 6. One person in each group should serve as the recorder and **post a**

summary of your suite team's conclusions in the *WebQutest 2002* in the *Projects 2002* conference area on TeachNet by **12:00 noon CST on October 24**.

Step 7. Go to the *WebQutest 2002* in the *Projects 2002* conference area on TeachNet, read other suite teams' conclusions, and see if there is agreement with your team's conclusions.

<Assignment 5.4.a> Create a Webquest Related to a Topic or Question of Interest - Suite Team Task

Create a webquest related to a topic or question of interest to you and your suite team members. **The webquest should be up on Teachnet or Website by 12:00 noon CST on November 1.** When your webquest is completed, post a message in **the *WebQuest 2002* in the *Projects 2002* conference area on TeachNet**.

Similar to your work on the Topic Paper, you will need to plan and organize the project. Your first step is to decide which member of the team will serve as the team leader for this project. The team leader's role will be to serve as a facilitator and coordinator of the project. There may be other roles that are important to your team based on their areas of expertise and interest. You may want to have one member who has strong technology skills to help in placing the webquest on Teachnet or Website. You will also need to decide how you will divide the tasks up among the team to be sure that you develop a high quality webquest within the project timelines.

<Assignment 5.4.b> Reflections

1. Reflect back on your experiences and learnings in the webquest project. The following are only some questions to stimulate your own ideas and reflections.

   o What were the most successful aspects of the team's collaboration in designing and developing the webquest and what were the things that were less successful?

   o What were any unanticipated learnings or difficulties?

   o If you were to do this again, how might you make it better?

   Post your reflections in the *Reflections* conference area on TeachNet by 12:00 noon CST on November 1.

2. **Please read and respond to at least one of others' reflections by 12:00 noon CST on November 4.**

<Assignment 5.4.c> Evaluation & Portfolio

1. **Complete <u>peer evaluation</u> and <u>team product evaluation</u> by 12:00 noon CST on November 4.**

2. Post your portfolio in **your personal folder in your suite conference area on TeachNet by 12:00 noon CST on November 4**. Your portfolio consists of two types of information:

   o Excerpts from your best contributions to online discussions

   o Your specific product contributions to the team project

Module 6. Designing a CSCL Project

<Assignment 6.2.a> Create and Implement a CSCL Project

Your final assignment in the course is to plan, design, develop, implement, evaluate and document a CSCL project or activity of your own with a small group of learners (5-7). You are advised to plan and carry out the final project with your suite team or at least one or more members of the class. The target audience for the CSCL activity will be members of the class or another group that your team may have access to (e.g., one member of your team is a teacher and he would like to do a CSCL project with his class). The following are some of the basic steps to consider in planning and carrying out your project:

- **Use the backward design process.** Before you begin your project identify the curricular priorities, goals, instructional objectives and target audience for your project, determine acceptable evidence, develop an authentic assessment, and develop the activities, strategies, materials, resources and rubrics for the learning activity.

- **Develop the evaluation plan.** Determine the types of information you will collect during the tryout of the CSCL project. Remember that different online environments and tools offer different capabilities for the types of information or data you can collect from the tryout of your online learning project.

- **Select the collaboration tool.** Although you may select one of the tools for your project that was used in the previous assignments, you are encouraged now to branch out on your own and be a pioneer in exploring and mastering other tools for online collaboration. New tools are emerging all of the time and the use of tools, other than the ones you have used in prior projects, will provide you both you and the learners with an opportunity to explore and learn the features of your selected online tool. You can refer to the listing of tools provided in Module 3 as a resource for exploring other tools.

- **Prepare and submit your CSCL Project Plan in the *Design Projects***

2002 in the *Projects 2002* **conference area on TeachNet by 12:00 noon CST on November 11.** The plan should include the following information:

- o Description of target audience

- o Goals and objectives of the learning activity

- o Description of the learning materials that will be used in activity

- o Description of the collaborative learning tools or environment

- o Description of the procedures and processes that will be used in the learning activity

- Develop the learning materials and tools that will be used in the learning activity **by 12:00 noon CST on November 15**.

- Invite members to participate in your learning activity. **Post a message in the *Design Projects 2002* in the *Projects 2002* conference area on TeachNet by 12:00 noon CST on November 15**. The message should provide the class with the information about your project (objectives, tool that will be used, dates, etc.) and invite members of the class to participate in the learning activity. Notify the participants as soon as possible as to when the learning activity will start and what will be involved in their participation. **The project should start no later than 12:00 noon on November 18 and end by 12:00 noon on November 26**.

- **Monitor, mentor, and facilitate the project**. Since your project will be conducted over a short time period, it is important that you monitor it very closely to identify and correct any problems.

- **Collect data and information throughout the tryout**. Based on the capabilities of the collaboration tool, you should collect relevant information related to the collaborative learning activities. For example, you may collect and analyze transcripts of threaded discussions, drafts of knowledge products, etc. Remember that the purpose of the tryout is to provide you with information as to how the learning project or activity may be refined and improved. You need to actively solicit comments on the things that they liked about the project as well as the things that could be improved. The latter information is the most important and will be used in developing your suggested revisions to the project for future use.

- **Analyze data, prepare and submit a report on CSCL Project**. Analyze the data. A report on your CSCL project should be prepared that includes the following information:

- o Description of target audience

- o Goals and objectives of the learning activity

- o Description of the learning materials used in activity

- o Description of the collaborative learning tools or environment

- o Description of the procedures and processes used in the learning activity

- o Analysis and summary of the results of the CSCL project including:

    - Learner performance and activity data (e.g., samples of online dialogue)

    - Learning activity critiques by participants that indicates strengths of project and areas that may be improved

    - Your observations of what went well, what went wrong, and what surprised you about the CSCL project activity

- o Analysis of results from tryout of learning activity

- o Specification of revisions to learning project based on the tryout results.

- o Reflections on what you learned from the project

The followings are the examples of the final reports from the previous course.

- o <u>Leadership Development Project</u>

- o <u>Motivational Factors in Distance Learning</u>

- o Rubrics Development Project (<u>http://www.geocities.com/final_report_cscl</u>)

- o Water CSCL Project (<u>http://teachnet.edb.utexas.edu/~Eunmi_Lee/water/report1.html</u>)

Submit your final report by 12:00 noon CST on December 11 by either:

- posting an email message **in the *Design Projects 2002* in the *Projects 2002* conference area on TeachNet** with a **Word document** for your report attached.

- posting an email message **in the *Design Projects 2002* in the *Projects 2002* conference area on TeachNet** with **the URL of the web page** on which the course project report may be found. Be sure that you give the correct URL address of the web page and that it works. Have others check it from their computers to be sure that it is working.

<Assignment 6.2.b> Participate as a Learner in a CSCL Project

In addition to designing and carrying out your own CSCL project, you will also participate as a learner in a project designed by other members of the class.

1. Participate actively in at least one of CSCL projects designed by other members of the class and, at the same time, note aspects of the activity that worked well as well as suggestions for aspects that might be improved in future applications of the project.

2. Post your reflections on the experience and your constructive comments on improving the CSCL project **in the *Design Projects 2002* in the *Projects 2002* conference area on TeachNet by 12:00 noon CST on December 3.**

<Assignment 6.2.c> Reflections

1. In your final reflection, think about what do you consider to be the most important, difficult, useful, or surprising aspect of the course and what you have learned or experienced during the semester. The following are some questions that may be helpful in stimulating your reflections:

   o Reviewing your earlier reflections, how have your ideas of collaborative and/or online learning changed or evolved from the beginning of the course?

   o What were the most important or surprising things that you learned in planning and carrying out your learning project?

   o What did you like best in the course? What areas were difficult? What suggestions do you have to improve the course?

   Post your reflections in the *Reflections* conference area on TeachNet by 12:00 noon CST on December 12.

2. **Please read and respond to at least one of others' reflections by 12:00 noon CST on December 13.**

<Assignment 6.2.d> Evaluation & Portfolio

1. **Complete <u>peer evaluation</u> and <u>team product evaluation</u> by 12:00 noon CST on December 13.**

2. **Post your portfolio in your personal folder under your suite conference area on TeachNet by 12:00 noon CST on December 13.**

Q1. What did you expect to get out of this course before the semester started?

Q2-1. Have you taken other online courses? What courses?

Q2-2. Would you tell me your experiences of the courses?

Q2-3.Compared to the other courses, what are the differences between this course and the other courses you took?

Q3. Would you tell me your experience and feelings at the beginning of the course?

Q4. Were you familiar with the subject matter of the course like collaborative learning and online learning at the beginning of the course? Can you tell me your thoughts on collaborative learning and online learning?

Q5-1. Did you have any problems with the technologies for the course?

Q5-2. Are you comfortable with the FirstClass? What do you think are the strengths and weaknesses of FirstClass?

Q6. What do you think are the advantages and disadvantages of online communications compared to face-to-face communications?

Q7. What do you think about the instructor's role in this course?

Q8-1. How do your team members communicate with one another?

Q8-2. What's the best rewarding experience during working in your team so far?

Q8-3. What's the worst experience during working in your team so far?

Q8-4. Did your team have any problems with working together? If so, please describe them.

Q9-1. Do you ever feel the distance in your team? If so, when? What causes it? How do you deal with it?

Q9-2. Do you ever notice anyone else in your team feeling the distance? If so, what do you think caused it? How can you and others help the member?

Q10-1. Are you familiar with the term "community or learning community"? What does it mean to you?

Q10-2. Do you feel your group became a kind of community?

    If yes,

    Q10-2-1. When did you feel that way at first? And, would you describe that moment?

    Q10-2-2. How would you characterize your team as a community? Can you tell me some specific incidents or examples that indicate the presence of community?

    If no,

    Q10-2-3. Can you tell me any barriers or problems that prevented your team from becoming a community?

    Q10-2-4. How would you characterize your team?

Q11-1. Do you feel belonging to your team or a sense of ties with your team members?

Q11-2. When did you feel that way at first? And, would you describe that moment?

Q11-3. Can you tell me any differences between before and after you felt a sense of community?

Q11-4. What factors or events helped you to gain a sense of community?

Q11-5. Can you tell me if there were any barriers or problems that interfered with getting a sense of community?

APPENDIX C. QUESTIONNAIRE FOR BACKGROUND INFORMATION

Email

URL for My Homepage
http://

Work Experience

Educational Background

How many online or Web-based courses have you taken?
○ None   ○ One   ○ Two   ○ Three or More

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File   Edit   View   Favorites   Tools   Help

If any, what online courses have you taken and how would
describe the learning experience?

What do you want to learn from this course?

How comfortable do you feel using the following computer
technology?

	Very	Somewha
Word Processing (Word, Word Perfect, ClarisWorks, Simpletext, etc.)	○	○
Spreadsheets or Databases (Excel, Filemaker Pro, etc.)	○	○
Desktop Publishing (Pagemaker, QuarkXpress, Print Shop Deluxe, etc.)	○	○
Authoring or Multimedia (Hyperstudio, Authorware, Director, Multimedia ToolBook, etc.)	○	○
Instructional Demonstration/Tutorial (Powerpoint, Persuasion, etc.)	○	○

File   Edit   View   Favorites   Tools   Help

Audio/Video Capture or Digitizing (Premiere, Videoshop, etc.)	○	○
Art/Graphic Development (Photoshop, Painter, Illustrator, Canvas, etc.)	○	○
Internet or Online Service Access (Navigator, Internet Explorer, AOL, Compuserve, etc.)	○	○
Web Page Development (FrontPage, Dreamweaver, HomePage, Pagemill, BB Edit, etc.)	○	○
E-mail (Eudora, Outlook, Exchange, Emailer, Groupwise, etc.)	○	○
Computer Conferencing Tool (FirstClass, Webboard, etc.)	○	○

What kind of computer are you using?

How do you access the Internet for this course?
○ **28.8 or 56 Kbps Modem**
○ **64 or 128 Kbps ISDN**
○ **DSL or Cable**
○ **T1 or LAN**
○ **10 Mbps**

Institution

Submit   Reset form

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APPENDIX D. INSTRUMENT FOR SENSE OF COMMUNITY

is like.

7. My team members are willing to work together for the purpose of group success.	○	○	○	○	○
8. My team members generally get along with one another.	○	○	○	○	○
9. My team members and I want the same thing from the team.	○	○	○	○	○
10. My team members are interested in me.	○	○	○	○	○
11. If possible, I would like to work with my team members in another class.	○	○	○	○	○
12. If there is a problem in my team, my team members would get it solved.	○	○	○	○	○

Thank you very much for your time and input!

[Submit]   [Clear Form]

- Membership: 1, 5, 10

- Influence: 2, 6, 12

- Integration and Fulfillment of Needs: 3, 7, 9

- Shared Emotional Connection: 4, 8, 11

Background Information

- Expectation

- Definition of community

- Collaborative learning

- Experience in online learning

- Online communication

- Experience in collaboration

    o Constant communication

    o Members' flexibility

    o Mutual respect

    o Involvement in the process

    o Commitment to the responsibility

    o Division of work

    o Knowing each other

    o Sharing expectations

    o Leadership

    o Encouraging each other

    o Shared knowledge

Characteristics of Community

- Characteristics of community

    o Thoughtful consideration for others

- Appreciating differences

- Joking around

- Compliment

- Including everyone's opinions

- Constant communication

- Caring about the group work quality

- Supportive

- Responsible

- Reluctance to leave

- Sense of camaraderie

- Personal conversations

- Feeling comfortable with working together

- Willingness to help

- Sharing information

- Feeling proud of the group work

- Personality coming through

- Voluntary initiative
- Ways of communication

Factors in SOC
- Establishing norms
- Characteristics of the course
- Others' response to the input
- Technical problem
  - Use of two different tools

- TeachNet account
- Prometheus account
- Difficulty in using TeachNet
- Limitation of the Web version of TeachNet
- Technical training
- Getting to know each other
  - Class activities
  - Social conversation
    - Conversation on personal lives
    - Joking around
- Getting used to the environment
- Diversity in members' expertise
- Capability of technology being used
- Strength of TeachNet
- Weakness of TeachNet
- Caring about team members
- Group decision-making process
- Team members' commitment
- Group members with difficulties
- Timeliness of others' response
- Experience of working together
- Personality
- Cultural difference
- Conflict of schedule
- Group size

- Peer assessment

- Collaborative nature of the course

- Trust in team members

Influences of SOC

- Confidence in the capability of the group

- Trust in members for help

- Exchange of candid opinions

- Sense of camaraderie

- Feeling comfortable with working together

- Willingness to help

- Greater sense of responsibility

- Enjoying the discussion

APPENDIX F. LIST OF CATEGORIES AS A RESULT OF AXIAL CODING

Conditions

Course Design

- Collaborative nature of the course

- Peer assessment

- Characteristics of tasks

- Capability of technology being used

- Instructor's role

- Technical problem

  - Use of two different tools

  - TeachNet account

  - Prometheus account

  - Difficulty in using TeachNet

  - Limitation of the Web version of TeachNet

  - Technical training

Group Composition

- Diversity in members' expertise

- Group size

Individual Differences

- Expectation

- Definition of community

- View on collaborative learning

- Experience in online learning

- Personality

- Cultural difference

- Conflict of schedule

- Getting used to the environment

Actions/Interactions

- Friendly atmosphere

- Understanding others' situations

- Others' response to the input

- Helping each other

- Getting to know each other

    - Class activities

    - Conversation on personal lives

- Concern about others' emotions

- Joking around

- Establishing norms

- Group decision-making process

- Team members' commitment

- Group members with difficulties

- Trust in team members

- Working together for the same goal

Consequences

- Confidence in team members' abilities

- Exchange of candid opinions

- Sense of camaraderie

- Feeling comfortable with working together

- Willingness to help

- Greater sense of responsibility

- Enjoying the discussion

- Sense of co-accomplishment

- Lively conversations on personal lives

- Personality coming through

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