The Dissertation Committee for Jantrathip Changwatchai certifies that this is the approved version of the following dissertation:

STUDENT PERCEPTIONS OF A COLLABORATIVE ONLINE LEARNING ENVIRONMENT

Committee:

Paul E. Resta, Supervisor

Edmund T. Emmer

Min Liu

Todd C. Reimer

Marilla D. Sivinicki

STUDENT PERCEPTIONS OF A COLLABORATIVE ONLINE LEARNING ENVIRONMENT

by

Jantrathip Changwatchai, B.A.; M.A.

Dissertation

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

August 2005

Dedication

To my parents and to my husband

Acknowledgements

I would not have been able to get through the process of this dissertation and come this far without the support of many people. Words are definitely not enough to convey how grateful I feel to them all.

First of all, I would like to express my gratitude to Dr. Paul Resta, my advisor, for his invaluable guidance and support. I would also like to thank my committee members, Dr. Edmund Emmer, Dr. Marilla Svinicki, Dr. Todd Reimer, and Dr. Min Liu, for their constructive comments, encouragement, and support. Besides being a committee member, Dr. Liu was also kind enough to offer me the opportunity to work as her teaching assistant for several years. It was a great experience working with her. I have become more confident and competent because of her guidance and because she is a great role model.

I would also like to thank all the people who provided help, support, and encouragement throughout the stages of this study. These people have greatly eased this difficult process: Dr. Dongjoo Lee, Haekyung Lee, Dr. Courtney Glazer, Dr. Laurie Williams, …., Dr. Tomoko Traphagan, Dr. Winnie Hao, and Siribang-orn Puttitwong. Special thanks go to all of the participants who devoted their precious time to take part in my studies. Their sharing, insights, and deep thoughts are much appreciated.

My doctoral journey started with the support of my dearest friend, Pachareepan M. Ratanaphon, who introduced me to the University of Texas at Austin. Her unselfish

friendship, constant encouragement, and emotional support have always touched me. My appreciation also extends to all my other friends in both Thailand and the United States. I am blessed to have such good friends.

Finally, my deepest gratitude goes to my family. First, to my parents: Sue-Fook and Suwimon Sae-Chin. Their unconditional love and understanding made me who I am. I cannot imagine how I could reach this point today without their love and support—financial, emotional, and sometimes spiritual! Also, to my brother, Surachai, and sisters: Pornvenus, Satanee, Jaroonrat, and Kamonmas, who could bear with me in any situation. Our conversations and laughter always cheered me up and brightened my day. I am grateful to my mother-in-law, Dr. Niramol Changwatchai, for her understanding and help in any way she could. Last but not least, my special appreciation goes to my beloved husband, Top Changwatchai, who is also my best friend, playmate, editor, counselor, and much more. Thank you for being there for me all the time, being patient with me, staying up all night, and cheering me up when I felt down. Thank you.

STUDENT PERCEPTIONS OF A COLLABORATIVE ONLINE LEARNING ENVIRONMENT

Publication No. _____

Jantrathip Changwatchai, Ph.D.

The University of Texas at Austin, 2005

Supervisor: Paul E. Resta

This study explores student expectations and perceptions of a collaborative online learning environment, how these perceptions changed based on their experience in the class, and which factors most influenced these expectations and perceptions. The setting of this study was a graduate-level online course emphasizing collaboration. Participants were interviewed at the beginning and end of the semester, and the results were analyzed according to grounded theory.

The emergent theory is that student expectations and perceptions of a collaborative online course are most influenced by prior information available about the course, students' previous education experience, individual differences, and students' online collaboration skills. By understanding these mechanisms, instructors can design collaborative online courses to adjust these expectations and perceptions and improve student learning.

Table of Contents

List of Tables

List of Figures

Chapter One: Introduction

Background

With growing access to the Internet and the World Wide Web interface, Web-based instruction that accommodates the information age and the networked world has become one medium for higher education (Daugherty & Funke, 1998). With the aid of modern information and communication technology, computer-supported collaborative learning (CSCL) is one of the most promising innovations to improve teaching and learning. To design a successful Web-based course, it is important that instructional designers or instructors consider the characteristics of online learners, their prior knowledge, and the preconceptions the learners bring to online courses (Xiaoshi, 2000). Knowing the attitudes, beliefs, understanding, and expectations of online learners, instructors can adjust and improve Web-based instruction in accordance with students' needs. This study thus focuses on student perceptions of an online learning environment that emphasizes collaborative learning.

Web-based Instruction

Economic pressure, quality demands, and greater diversity among learners are forcing changes in learning environments (Palloff & Pratt, 1999). Web-based instruction or online learning, a new type of distance education, has been developed to

satisfy these needs. A survey conducted by the National Center for Education Statistics (National Center for Education Statistics [NCES], n.d.) showed that during the 2000-2001 academic year, 56% of all two-year and four-year institutions offered distance education courses and another 12% of all institutions were planning to start offering distance education courses in the next three years. Among institutions offering distance education courses, 90% offered Internet courses using asynchronous computer-based instruction (NCES, n.d.). It is apparent, then, that Web-based instruction development for higher education is widespread and growing.

Web technologies are currently popular in all levels of education and training. However, not all Web-based instruction is fundamentally different from traditional face-to-face learning environments. Initially, many implementations of Web-based instruction were simply electronic versions of traditional teaching formats (Alexander & Boud, 2001), such as making instructional materials available on the Web (Mishra, 2002). These implementations did not exploit the new technology's full potential to improve learning. Indeed, rather than using the new technology as simply a delivery medium, well-designed Web-based instruction can provide rich learning environments.

To design an effective online learning environment, instructors need to understand the innovation features of the new technology and what it can or cannot accommodate. Unlike in conventional face-to-face classrooms, Web-based learning environments are not confined to a physical classroom, which requires the instructor and learners to be physically present at the same time. Online learning can occur

anytime and anywhere Internet access is available. Furthermore, with Internet access, learners can collaborate with their peers and communicate with their instructor without having to leave their home or workplace. Therefore, convenience and flexibility are key features of Web-based learning environments.

Nevertheless, Web-based instruction has some limitations. Verbal and social context clues are absent from online learning environments. Web-based instruction removes learners from the comfort of familiar classroom settings and places them in virtual learning environments where they are required to communicate and retrieve information and course content through the Web (Ewing-Taylor, 1999). Moreover, students need to possess a certain level of computer literacy and critical thinking skills in order to sift through the massive information provided on the Web. Without these skills, students may feel overloaded with information, and this may decrease student motivation and increase frustration.

However, regardless of the context in which learning takes place, proponents of a learner-centered approach, a component of constructivist learning environments, still view learners as the most vital component in a learning environment. Learners have needs and characteristics which instructors should recognize in order to help them learn most effectively (Huang, 2002). Thus, Web-based instruction should be designed to accommodate a learner-centered approach and constructivist learning environments.

Constructivist Learning Environments

According to the constructivist theory of learning, learners are active processors of information rather than passive participants in the learning process. Learning is the active process of making sense of the world, rather than simply being a transmission of knowledge. In constructivist learning environments, the teacher role thus shifts from "sage on the stage" to learning facilitator.

In addition, social constructivism emphasizes that learning is not only an internal process. Instead, it occurs in the context of interacting with others (Newby, Stepich, Lehman, & Russell, 2000). In fact, according to Vygotsky (1978), social interaction is a crucial component of the development of cognition. Through collaboration in realistic activities, students make their own meaning and construct their own knowledge by integrating new material into their own experience and understanding (Wilson, Teslow, & Osman-Jouchoux, 1995; Weller, 2002).

Furthermore, by collaborating with more competent peers, students can learn new concepts that they cannot acquire on their own. These additional concepts constitute the zone of proximal development (ZPD) (Ormrod, 1999). Instruction facilitates this process by providing collaborative situations in which students are able to construct new understanding of the material. Hence, constructivism encourages creating group learning activities or collaboration.

Collaborative learning is based upon a learner-centered approach in which learners are treated as active participants (Harasim, Calvert, & Groeneboer, 1997). In

collaborative learning environments, students interact, communicate, negotiate, and work collaboratively to create their own knowledge. To derive meaning from interaction and negotiation, students employ the process of requesting for clarification, making confirmation checks, and responding to each other's requests (Warchauer, 1998). As a result, proponents of collaborative learning claim that it supports active learning and deep processing of information (Steeples & Mayes, 1998). When we use computer networking to support collaborative processes, computer-supported collaborative learning becomes possible (Steeples & Mayes, 1998).

Computer-Supported Collaborative Learning (CSCL)

It has long been acknowledged that collaborative learning benefits traditional classroom settings (Lea, Rogers, & Postmes, 2002). Regardless of the contexts in which learning takes place, keys "to the learning process are the interactions among students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interactions" (Palloff & Pratt, 1999, p. 5). To build a learning community in an online classroom, relationships and interactions among participants must be nurtured and developed (Palloff & Pratt, 1999).

With the advent of computer networking, new technology can constitute learning environments that facilitate social interaction and collaboration (Gros, 2001). Given that technological and teamwork literacy are, and will continuously be, crucial skills in our lives, individuals who lack these skills will be left behind (Johnson &

Johnson, 1996). As a result, computer-supported collaborative learning (CSCL) has newly emerged as an area of research in instructional technology.

Online learning can incorporate collaborative activities through computer-mediated communication (CMC) technologies (Lea, et al., 2002; Tam, 2000). Students can share their ideas and communicate with each other, without boundaries or time constraints, through the Internet and the World Wide Web. In fact, without verbal cues in online communication, students are required to interpret discourse through a series of negotiations of meaning.

Koschmann (1996) addressed three characteristics of CSCL research: a focus on process rather than product, a tendency to be descriptive rather than experimental, and an investigation of the process from the viewpoints of the participants. In addition, Gros (2001) stated a necessity to focus the study of CSCL on the impact of the new technology on students' performance and group processes, and on how technology supports communication.

Studies have shown that CSCL promotes greater cognitive development (Gros, 2001). The potential of Web-based instruction in enhancing collaborative learning has caught the attention of higher education institutions in a profound way (Angulo & Bruce, 1999). One way to determine the effectiveness of CSCL is to investigate student experience and perceptions.

Student Perceptions of CSCL

A number of studies have been conducted to determine the efficiency and effectiveness of Web-based instruction from student perspectives. Documented student perceptions of learning experiences in Web-based courses revealed that students perceived online learning as convenient and flexible (Leasure, Davis, & Thievon, 2000). Because Web-based instruction is free from the constraints of time and space, students do not have to spend time traveling to the class and can study at their own convenience. As a result, convenience and flexibility are among the main reasons that students choose to enroll in Web-based courses.

However, when the collaborative aspects of online learning were included, students indicated both positive and negative feelings. Their opinions were extreme; they either had positive attitudes towards collaborative learning or hated it (Lavallee, 1998). Students with positive views expressed that collaborative activities were interesting. Group work provided them with the opportunity to meet with new people from different places and backgrounds, to share thoughts on the subject matter, and to make new friends. Student motivation also increased when they worked in groups (Hiltz, 1998). Moreover, students felt that collaborative activities made them responsible for their own learning (Lavallee, 1998).

Nonetheless, some students experienced difficulty and frustration in collaborating with people they did not know well (Curtis & Lawson, 2001). Difficulties arose due to slowness and lack of response, since students had to rely on other people

and their time frames. One student commented, “Just the task of fine tuning a group assignment is almost an assignment itself” (Curtis & Lawson, 2001, p. 31).

Since online students are familiar with individualized and self-paced learning, requiring them to engage in collaborative learning activities is problematic (McMurray & Dunlop, 2000). Student perceptions of individualized online learning may contribute to the formation of student perceptions towards collaborative online learning. As a result, when the course does not meet their faulty expectations, frustration may occur. To reduce student frustration and difficulty in a collaborative online learning environment, it is important that instructional designers or instructors take into account the expectations and perceptions the learners bring to the class.

Purpose of the Study

The goals of this study are to determine student preconceptions of a collaborative online learning environment, to explore how these expectations and perceptions affect their learning experience, and to examine how students adjust their initial perceptions at the end of the course.

Research Question

This study examines the following research question: in what ways do student expectations and perceptions of a collaborative online learning environment change as a function of their experience in that environment?

Significance of the Study

Studies of collaborative online learning have revealed both positive and negative reactions from students towards the collaborative online learning environment. Several studies have indicated that some students view collaborative online activities as time consuming and frustrating. What causes these negative reactions? How can instructors or instructional designers develop a collaborative online course to satisfy these students?

Walker (2001) suggests that instructors utilize research on student expectations to improve online courses, since students come to class with preconceptions that often affect their learning abilities and satisfaction. Students who have never taken an online course before may construct their expectations of an online course based on their experience from and attitudes toward a traditional classroom. They often develop implicit expectations as to what they can expect from traditional classrooms (Bigelow, 1999). Furthermore, they tend to set high expectations not only for themselves but also for their institutions (Schwitzer, Ancis, & Brown, 2001). Without guidance prior to

taking an online class, learners may have unrealistically high expectations (Cornelius & Higgison, 2000) that may result in a lack of motivation and frustration. Along the same lines, when taking a collaborative online course, students who have experienced individualized online learning may form their expectations based on their familiarity with and perceptions of this previous online learning experience.

As a result, knowledge of what students expect from a collaborative online learning environment can guide instructors to adjust and improve their courses. Alternatively, instructors may make learners aware of their faulty expectations and allow them to readjust their expectations before the course begins (Wanko, 2000).

With existing knowledge and perceptions of traditional face-to-face classroom environments, students may sometimes hold faulty expectations towards online learning, resulting in frustration (Hara & Kling, 1999) and high drop-out rates (Frankola, 2000). Many studies of online courses focus on student attitudes and learning outcomes (e.g., Hiltz, 1990; Leasure et al., 2000; Wegner, Holloway, & Garton, 1999), but few focus on the expectations students bring to a collaborative online course. Since there is little empirical knowledge of what preconceptions collaborative online learners bring to class, the need for research in this area is not only timely, but also imperative.

Definition of Terms

The following definitions are provided to clarify some terms used in this study.

Collaborative Online Course – a course focused on students working online as members of a collaborative learning team in completing learning tasks or projects.

Computer-Mediated Communication (CMC) – human communication that takes place through or is facilitated by computers and networked telecommunications systems. Two forms of CMC include synchronous communication (real-time communication, such as chat and video conferencing) and asynchronous communication (non-real-time communication, such as e-mail and bulletin boards).

Computer-Supported Collaborative Learning (CSCL) – the use of computer and Internet technologies to support an instructional method where students work in groups to accomplish a learning task.

Online Learning – any learning that uses the Internet to deliver some form of instruction to a learner or learners separated by time, distance, or both (Dempsey & Van Eck, 2002).

Web-Based Instruction (also called Online Learning) – a type of distance learning that utilizes the attributes of the Internet and the World Wide Web to deliver and foster the instruction.

Organization of the Study

This chapter laid down the background information of this study. It started with a description of how Web-based instruction developed and what its key features are. Then, it discussed the pedagogy underlying constructivist learning environments, since

well-designed online learning can facilitate and promote such learning environments. It then described how computer technologies support collaborative learning. Finally, this chapter showed the importance of taking student perceptions into account when designing an online learning environment.

Chapter Two is a review of literature relevant to this study. First, it discusses how Web-based instruction can be an ideal delivery mode to support distance learning. Next, it considers the design of constructivist learning environments. Then, constructivism is applied to online learning, leading to computer-supported collaborative learning. Last, it discusses studies and research related to student perceptions of learning experiences in collaborative online courses.

Chapter Three covers the methodology used in this study, including the methods of data collection and data analysis. Chapter Four presents the research findings on a case-by-case basis. Finally, Chapter Five discusses the findings, limitations of the study, implications for future research, implications for educational practice, and conclusions.

Chapter Two: Literature Review

If fully exploited, the new technology can create meaningful and rich learning environments. However, several online courses are not designed to take the utmost advantage of the new technology to enhance learning. They are just an electronic version of traditional face-to-face learning contexts. According to constructivism, learners construct their own meaning through interaction with others. Constructivist approach supports collaborative learning. Through collaboration with more advanced people, students can achieve what they might not be able to accomplish when learning on their own. With the advent of the new technology, computer-supported collaborative learning becomes an issue of interest.

This chapter provides a review of literature related to Web-based instruction, the pedagogy behind online learning, the use of technology to enhance collaboration, and student perceptions of collaborative learning environments.

Web-based Instruction

The emergence of technological innovations has had a large impact on teaching and learning contexts (Daugherty & Funke, 1998). Many academic institutions, for example, are offering Web-based instruction. Khan (1998) defined Web-based instruction as "a hypermedia-based instructional program, which utilizes the attributes

and resources of the World Wide Web to create a meaningful learning environment where learning is fostered and supported" (p. 6). Palloff and Pratt (1999) suggested that successful Web-based instruction is "a process of taking our best practices in the classroom and bring[ing] them into a new arena" (p.6). To design an effective Web-based learning environment, instructors/designers need to understand the characteristics of Web-based instruction and how it is different from a face-to-face learning environment.

Characteristics of Web-based Instruction

Relan and Gillani (1998) presented comprehensive comparisons between Web-based instruction and traditional classroom environments. According to their studies, Web-based instruction offers new opportunities in learning environments, which include:

- *Providing less restrictive environments*. There is no need for the physical presence of teachers and students in the same location.
- *Allowing authentic learning*. The use of WebQuests (March, 1998), for example, offers information-based problem-solving activities, and enhances students' learning with real resources.
- *Encouraging social interaction*. Collaborative learning is a design goal of distance education (Kearsley, 1997-1998); students are encouraged to work in groups and socialize via e-mail or in online chat groups. However,

Kearsley commented that social interaction via online networks is not the same as face-to-face interaction and that the long-term usefulness of these types of communication is not yet known.

- *Facilitating learners' self-paced learning styles*. In networked computer environments, students have more control over their own learning. Using hypertext-formatted content, students are able to pursue content based on their individual learning styles.
- *Enhancing learners' autonomy*. In electronic communication, the role of teacher shifts to that of a participant or a facilitator because the capacity of the teacher to control the discussion is reduced (Peterson, 1997; Smith, Ferguson, & Caris, 2001).
- *Enhancing students' learning skills and self-regulation*. Students are required to exercise their metacognitive skills to sift through the abundant and sometimes unreliable information on the Web. Also, in Web-based instruction, students have a choice of time, content, resources, and media for expressing their ideas. As a result, they are forced to regulate and pay attention to their learning.

There are, however, some limitations of Web-based learning that need to be taken into account before integrating online learning to education.

- *Information overload*. The vast amount of information available on the Web is the typical issue of online learning environments. Students may feel

overwhelmed by the large quantity of information within the virtual communication (Moran, 1991) and what is provided on the Web. When information overloading happens, student motivation decreases and they may become frustrated (Liaw, 2001).

- *Inequalities in online communication*. The novice computer user may feel inferior to students with computer knowledge (Le Mon, 1988). Also, some students may not have access to computers while some may easily connect to the network (Cummins & Sayers, 1990).
- *Lack of nonverbal and social context cues.* Students may spend more time to complete each task because of the lack of nonverbal cues. Within the virtual communication, students may be confused with the turn taking. As a result, the loss of coherence in the discussion may occur. Moreover, the lack of social context cues also impedes effective communication (Hoppenbrouwers, 1995). According to Gousseva's (1998) study, a number of students commented on the effects of the anonymity of electronic communication. They felt intimidated about sharing their views with a group of people whose identity they did not know. In addition, because of the anonymity factor, students may show a lack of responsibility (Hoppenbrouwers, 1995)

Nonetheless, if well designed, Web-based instruction has the ability to provide resourceful, supportive, and collaborative learning environments. Studies have shown

that in terms of cognitive factors (such as amount of learning and academic performance) there were no differences between face-to-face and distance learning environments (Spooner, Jordan, Algozzine, & Spooner, 1999). In fact, several studies have revealed few significant differences between the learning achievement of students in Web-based instruction and in traditional classrooms (e.g., Hiltz, 1990; Leasure et al., 2000; Wegner et al., 1999; Buchanan, Brown, Casanova, Wolfram & Xie, 2000). Therefore, the question is not whether online learning is an acceptable medium, but how best to use this medium to delivery instruction and enhance student learning (Siragusa, 2000).

Designing Online Learning Environments

When dealing with online education, instructional design and delivery are two crucial areas to be addressed (Sasikumar, 2002). Ritchie and Hoffman (1997) defined instruction as "a purposeful interaction to increase learner's knowledge or skills in specific, pre-determined ways" (p.135). Therefore, simply placing the course content and resources on the Web does not constitute instruction. In fact, creating an effective online learning environment requires extensive preparation and thoughtful design (Siragusa, 2000). This means that the instructor or instructional designer needs to consider instructional design as a significant aspect of this process (Sasikumar, 2002).

Based on research and observations from various authors, Siragusa (2000) categorized and suggested important components of instructional design in creating online learning as follows:

- *Structure.* The course Web page should be structured in a way that it is simple, intuitive, and self-explanatory. Resources that encourage student discovery and collaboration should be provided. Also, the materials should be relevant to student prior knowledge.
- *Content*. Due to the lack of non-verbal context cues, instructor cannot see student expressions to determine whether they understand what has been given to them. Hence, the course content needs to be clear and concise.
- *Motivation and feedback*. The course material should be engaging and enhance student intrinsic motivation. Providing feedback, support, and meaningful learning can also increase student motivation.
- *Interaction*. Computer networking tools can be used to facilitate interaction and communication between students and their peers.
- *Involvement.* Student should be involved in the learning process as much as possible. Online communication tools allow students to work collaboratively and involve in the learning activities.

Taking these components into account when designing online learning results in effective Web-based instruction. Yet, instructors/instructional designers should first realize that the effectiveness of online learning does not depend on the hypermedia

aspects of the technology, but its pedagogical dimensions. Although the Web can be designed to support and enhance rich learning environments, it does not necessarily mean that all courses offered online have been designed to fully exploit the potential of Web-based instruction. Different types of online learning environments are discussed next.

Types of Online Learning Environments

Online learning can be subdivided in several different ways. Whitlock (2001) suggested at least three main models of online learning, each of which has variants:

- *Computer-based training (CBT) or Web-based training* – self-contained and self-directed training using a computer or the Web.
- *Synchronous learning* – live interaction between the instructor and remote learners, such as through video-conferencing.
- *Electronic classroom* – students are engaged in activities and communication with their peers and instructors through the Internet.

Along the same lines, Aggarwal & Bento (2000) classify Web usage for teaching into three models, based on how fully the Web is utilized:

- *Web support for repository of information.* Instructors and students use the Web as an information repository. For example, teachers may put the course syllabus or lecture notes online so that students can view it at their convenience.

- *Web support for two-way interaction*. The Web is used as an additional communication medium. For example, chat rooms allow instructors and students to interact simultaneously (synchronously). Alternatively, Web boards allow instructors and students to exchange ideas and hold long-running discussions at their convenience, at different times (asynchronously).
- *Web-based teaching*. The Web completely replaces face-to-face communication. In this model, the Web is relied upon most fully to provide interaction between instructors and students.

In addition, Weller (2002, p. 146) classifies online learning environments according to the two axes of technology and pedagogy. The vertical axis of the framework indicates how advanced the technology used is, while the horizontal axis represents the pedagogical approach. Where online courses fall on this graph depends on the degree to which they conform to the extremes.

- *High technology—didactic.* Many of the Web-based training (WBT) offerings belong in this area. They are professionally designed and fully exploit Web technology. Learning is self-directed, and exams are automated. Because WBT courses require little instructor interaction, they can be offered relatively cheaply to a large number of students, making them the most interesting commercially.

- *Low technology—didactic.* This area covers simple Web sites, containing not much more than instructional text. While these courses require relatively low investment from the institutions that offer them, they also do not live up to the full potential of the Web, usually making them the most disappointing to the students, especially those who are sophisticated Web users.
- *Low technology—constructivist.* Although the courses in this area use simple technology, there is one important difference: they add computer-mediated communication (CMC), enhancing interactivity between students and instructors. In order to be effective, however, these courses must be designed carefully to make this communication most effective. As well, they require that instructors actively participate in the learning process.
- *High technology—constructivist.* This is the ideal environment for online learning, requiring the most investment in resources but providing the most effective way to realize the potential of the Web.

No matter how we classify online learning environments, the best use of the Web in a learning environment is to facilitate flexibility and interactivity. A desirable online learning environment is the one that effectively uses technology to remove time and space barriers and foster student learning and interaction. Still, what important is not the technology but the learning process (Aggarwal & Bento, 2000). Many researchers have suggested that constructivism can be a dominant approach and should

be applied to online courses. What constructivism has to say and how it can be applied to online learning environments to enhance student learning is described next.

Constructivist Learning Environments

The constructivist theory of learning fits well with online learning environments (Thorsen, 2003). With the capability of computer technologies and the Internet, an instruction can be designed to facilitate a constructivist learning environment. The philosophy behind constructivism is that students learn by building their own knowledge. Learning is an active process in making sense of the world, not just the transmission of knowledge. Students make their own meaning and construct their own knowledge through collaboration in realistic activities (Wilson et al., 1995). Meaning making thus reflects their perceptions, experience, and prior knowledge. Instruction facilitates this process by providing collaborative situations in which students are able to construct new understanding of the material.

In addition to cognitive constructivism, Vygotsky's theory emphasizes the social interaction towards the development of cognition. According to social constructivism theories, the key assumption is that "learning is collaborative with meaning negotiated from multiple perspectives" (Smith & Ragan, 1999, p. 15)..

Common elements of a constructivist approach include:

- *Social construction of knowledge.* Learners construct knowledge via social activities.

- *Context of learning.* Learning is most effective in challenging and realistic learning environments, such as hands-on problem-solving.
- *Collaborative activities*. Collaboration encourages social interaction and promotes an authentic learning environment.
- *Learner-centered*. Rather than being a "knowledge-transmitter," the instructor is instead a facilitator in the learning process (Weller, 2002).

Wilson (1998) defined a constructivist learning environment as "a place where learners may work together and support each other as they use a variety of tools and information resources in their guided pursuit of learning goals and problem-solving activities" (p. 5). Jonassen (1999) proposed a model for designing constructivist learning environments. The model emphasizes the learner's role in knowledge construction (meaning making). The major methods offered in this model include:

- Selecting an appropriate problem (or question, case, project) for the learning to focus on. The problem should be ill-defined, authentic, interesting, and engaging.
- Providing access to a set of related experiences (cases) as reference for novice students.
- Providing relevant, just-in-time resources, providing cognitive tools that scaffold the learner's ability to perform tasks, such as visualization tools, static knowledge representation tools.

- Providing tools that support collaboration and communication, such as computer-mediated communications.
- Providing social/contextual support for the learning environment, such as modeling, coaching, and scaffolding.

These ideas of constructivism have important implications for the design of online instruction (Tam, 2000). Computer-supported collaborative learning is encouraged, where the WWW and CMC technologies foster student interaction and collaboration. A networked learning environment provides students with increased opportunities to communicate, share resources, and collaborate with people around the world. Students are no longer limited by geographical factors (Kearsley, 2000). Students have the opportunity to associate with peers or experts with different social and cultural backgrounds, resulting in a richer experience than with traditional face-to-face collaboration (Lea et al., 2002).

However, blindly following constructivism principles has potential drawbacks, both in traditional and online environments (Weller, 2002). First, with the focus on learner-centered instruction and student construction of their own knowledge, some teachers might feel that they can withdraw and let the students do the work. In fact, instructors are still required to actively guide and facilitate meaningful learning. Next, inexperienced learners might find this approach frustrating since they are familiar with teacher-oriented learning environments where the teacher is the “sage on the stage” and controls the instruction. In addition, a constructivist approach can be time-consuming

because it requires student to interact and engage in dialogue or activities that might require more time than with traditional learning. Therefore, great care should be taken in applying constructivism in an online learning environment.

With the advent of computer networking, it is apparent that the new technology has been used to constitute learning environments that facilitate social interaction and collaboration. Hence, the next section reviews what collaborative learning is, how computer enhances collaboration, and how to create a learning environment where collaboration is fostered.

Computer-Supported Collaborative Learning (CSCL)

Studies have shown that computer-supported collaborative learning enhances active learning, more thoughtful participation, interactive learning, student motivation, and critical thinking (e.g., Harasim, 1991; Gokhale, 1995; Fahraus, 2001). This process will essentially enhance student learning and transfer, higher self-esteem, and positive attitudes (Salomon & Globerson, 1989).

On the other hand, merely putting course material on the Web does not improve student learning. A study of Hiltz and Benbunan-Fich (1997) and Hiltz (1998) revealed that having individual students interact with the online course material is not as effective as traditional classroom. In fact, individuals online perform worse than learners in the collaborative face-to-face conditions. In order for online learning to be as effective as traditional face-to-face classroom, collaborative learning strategies are

necessary (Hiltz, 1998). The results also indicated that working in collaborative group significantly increased student motivation, perception of skill development, and solution satisfaction.

In fact, online learning with an emphasis on collaboration can take advantage of the benefits of Web-based instruction (convenience and flexibility) and overcome the disadvantages of Web-based instruction (a sense of isolation) (Hiltz, 1998). Before implementing collaborative learning strategies in an online learning environment, one needs to understand what collaborative learning is.

What is Collaborative Learning?

Hathorn and Ingram (2002) defined collaboration as "the interdependence of the group participants as they share unique ideas and experiences." (p.33). Along the same line, Dillenbourg (1999) defined collaborative learning as "a situation in which two or more people learn or attempt to learn something together." (p.1). In particular, collaborative learning pedagogy shifts the focus from a one-way knowledge transmission model to constructivist approaches where learning is viewed as a social process (Hiltz, Coppola, Rotter, & Turoff, 2000). When students do a collaborative group activity, they work together as a team to accomplish a shared goal. The success of the group thus depends on every team member's effort, responsibility and contribution.

However, a group of students working together is not necessarily collaborative. For example, placing 2 or 3 students to work as a group in which each student has

different task or goal to accomplish does not mean students are collaborating, but cooperating. It is important to differentiate between collaboration and cooperation. Cooperation is characterized as “dividing the work and delegating a portion to each individual” (Hathorn & Ingram, 2002, p.33). In other word, cooperative work is a collection of individuals working together, like completing a jigsaw puzzle. Yet, sometimes cooperation is used interchangeably with collaboration. For example, Johnson and Johnson (1996) used the term cooperation when they refer to higher-level processes of a group working with a shared goal, which Hathorn and Ingram, and Dillenbourg would label as collaboration.

Lowyck and Poysa (2001) discussed collaborative learning from four different angles: the individual in a social context, motivational aspects, distributed cognition, and learning community. First, according to a socio-cultural approach, individual knowledge results from an internalization of social interactions in a context. In other words, learners actively interpret information and construct their own meaning from the interaction with others. Second, collaborative learning enhances learners’ motivation. Peers are more likely to provide each other with emotional and tutorial support for learning. In addition, group activities, such as problem solving, encourage students to display greater intrinsic value of the subject matter or the task to be fulfilled. Third, regarding distributed cognition theory, knowledge and cognition do not reside in the head of each individual, but cognition is distributed over both individuals and their surrounds. Last but not least, if learning is defined as social process, the development of

expertise is related to participating and collaborating in an expert community or network.

In practice collaboration usually aims at achieving three attributes: work sharing, taking account of different viewpoints or expertise, and building sense of community (Hartley, 1999). Therefore, simply placing students into groups to talk to each other without the pressure of reaching a common goal and understanding does not guarantee that collaborative learning will occur. Students do not learn because there are two or three people working in their group, but because they interact with each other. The interaction triggers some mechanism that produces the effects of collaboration, such as internalization, conflicts, shared cognitive load, self-explanation (Dillenbourg & Schneider, 1995).

With the advent of the networking technology, collaborative learning can be enhanced. Computers with different interaction technologies, such as e-mail, bulletin boards, and chat rooms, offer ample opportunities for learners to collaborate with their peers, tutors, and experts. Computer-supported collaborative learning is, therefore, an issue of interest.

How Can the Computer Enhance Collaborative Learning?

Collaborative learning is the model of instruction underlying work in CSCL (Koschmann, 1996). Rodriguez Illera (2001) pointed out that CSCL is based on various approaches such as situated cognition, social constructivism, and activity theory.

However, these approaches share the same ground that is the emphasis of the social reality as the source of individual cognition and knowledge. Computer interaction tools are suitable in the framework of socio-constructivism in that they enhance students' interaction and negotiation of meaning. For example, by the use of computer-mediated communication (CMC), students interact, communicate and work collaboratively to create their own knowledge.

CMC also emphasizes the process of interaction and negotiation of meaning. Without verbal clues in the online communication, students are required to interpret discourse through a series of negotiations of meaning. To make meaning from interaction and negotiation, students employ the process of requesting clarifications, making confirmation checks, and responding for other's request (Warchauer, 1998).

In addition, since social context clues (race, gender, etc) that may cause discrimination are removed from the networked communication, students are considered equal. Gousseva (1998) provided an example of a comment from a student who participated in the study as an evidence of a benefit of lacking social context clues in the online communication.

> I've learned that once we take away our colors, accents, and anything else that would separate us in a physical world everyone is really similar. (Initial survey results section, ¶ 4)

Also, there are no nonverbal clues (frowning, hesitating, etc), which can intimidate inferior students. With the absence of social context clues and physical presence, which lead to an initial feeling of anonymity, students participated more in

online discussion (Smith et al., 2001), and felt more comfortable communicating than in face-to-face classroom settings (Daugherty & Funke, 1998). As a result, studies have showed an evidence of great equality of participation in the electronic discussion (Ghaleb, 1993; Chun, 1994; Warschauer, 1996; Kim, 1998).

Within the asynchronous communication mode, students have unlimited time to think and express themselves. Students have time to describe and expand on their texts much more freely than in the face-to-face communication (Chun, 1994). Warschauer's study (1996) compared students' participation in two modes: face-to-face discussion and electronic discussion. The study revealed an increase in students' participation in the electronic mode.

Furthermore, networking classrooms become discourse communities in which students read, write, and work collaboratively. Beauvois (1992) explored the effects of collaborative communication via e-mail and a LAN (Local Area Network) project. The results revealed that the project facilitated student interaction and put collaborative effort in writing.

Taken together, CMC can provide students with a richer learning experience than traditional face-to-face collaboration (Lea et al., 2002). However, effective online collaborative group learning can be undermined by the features offered by the new technology. For example, the lack of immediate feedback and dialogue in asynchronous communication may delay the group work. As a result, problems and difficulties in online collaborative learning occur. Several studies of collaborative online learning

have indicated possible problems encountered, such as technical difficulties, the greater amount of time spent in collaborative work, and communication problems.

Although students mentioned the benefit of integrating the use of new technology since they acquired both computer skills and content simultaneously (Daugherty & Funke, 1998), they also experienced some problems in using technology, such as the server being down, bandwidth limitations, and lack of technical skills, which detracted from their ability to communicate with their peers (Daugherty & Funke, 1998; Warf, Vincent, & Purcell, 1999). Technological difficulties can cause student frustration as well as communication problems, which in return hampers the collaborative processes such as explanations, sharing answers, and negotiation (Ragoonaden & Bordeleau, 2000).

The lack or delay of immediate feedback and response in asynchronous communication is another factor impeding collaboration. Students become frustrated and less motivated when their messages are ignored or answered at a much later time (Ragoonaden & Bordeleau, 2000; Ainslie, 2001). The time delays in communication may impede the work of the collaborative group since students have to wait and depend on their peers' responses and contributions.

Furthermore, a student in Warf et al.'s (1999) study noted that computer-mediated communication did not facilitate communication. This medium of communication is suitable "for people to share ideas which (they) pretty much agree on already, but if an idea threatens your world view you skim over it and delete it" (p.

146). In a decision-making situation or when complex negotiation is necessary, synchronous communication tools, such as chat, telephone conference or video-conference is more efficient than asynchronous communication (Fahraus, 2001).

To alleviate and avoid online collaborative problems, several studies have suggested developing a framework and guidelines to foster collaborative in online learning environment.

Guidelines for Designing an Effective CSCL Environment

With the help of modern information and communication technology, CSCL appears to engage students to participate in negotiation for meaning and knowledge construction. However, the technology only affords new opportunities and means for supporting collaborative learning. Whether the opportunities are actually taken and whether taking them enhances student learning does not depend on the technology but on the design of the instruction. Based on research findings, the following elements are essential in creating an online learning environment that promotes collaboration.

- *Promote positive interdependence*. Positive interdependency is one of the initial elements of an effective group that prevent potential barriers such as social loafing and free riding (Johnson & Johnson, 1996). Team members have to believe that they cannot succeed without success of the group. Each member is required to contribute and work together to achieve something beyond individual success. Positive interdependency can be established by

creating tasks that require group interaction and negotiation, and that the members of the group are required to provide necessary information to achieve the goal. Tasks that do not leave any opportunity for interaction and mutual regulation should be avoided (Dillenbourg & Schneider, 1995). Instead, the tasks of the team project should be authentic and challenging enough to demand teamwork and promote positive interdependency (Curry, 2001).

- *Establish sense of community*. The lack of social context clues in online learning environment may result in a student sense of isolation. But a sense of community can minimize the feelings of isolation and foster effective collaboration (Hughes, Wickersham, Ryan-Jones, & Smith, 2002). Without a sense of community students are on their own, likely to be anxious, defensive and unwilling to collaborate (Wegerif, 1998). Sense of community can be achieved by establish trust and comfort among team members (Hughes et al., 2002). For example, allocating time for team building by providing some time and opportunity for students to get to know their team members to build up the relationship, which will result in a successful collaborative experience (Curry, 2001).
- *Group composition*. One factor that determines the efficiency of collaborative learning is the composition of the group. The size of the group should be determined by the task. However, small groups seem to function

better than larger groups in that the contributions of every member can be noticed by the group and the instructor (Dillenbourg & Schneider, 1995; Hathorn & Ingram, 2002). As result, social loafing and free riding can be reduced or prevented. In addition, Dillenbourg & Schneider suggest that heterogeneous groups could be beneficial as a condition to trigger conflicts and require negotiation and social grounding.

- *Technical support*. Technical difficulties can create student frustration and hinder communication and collaboration among students (Ragoonaden & Bordeleau, 2000). Therefore, the instructor needs to make sure that students are comfortable with the technology and know how to deal with it (Hughes et al., 2002). To ensure that students have enough knowledge to manage the technology, common technological capabilities should be included as technical requirements. In addition, technical support or training should be provided as needed.
- *Grading policy*. To achieve individual accountability, the performance of each individual team member should be assessed (Johnson & Johnson, 1996). Therefore, individual effort and contributions should be included as part of grading. Also, the grading policy should indicate how each individual effort will be evaluated.
- *Provide guidelines for team formation and group processes*. Since some students might not be familiar with collaboration, team formation and group

processes guidelines are necessary. The guidelines can include how students select team members intelligently, manage their team (such as assigning roles), and create mutual respect among team members (Curry, 2001).

- *Get students to see the value of collaborative learning.* Some students are autonomous and highly independent. These students prefer working alone without peer interaction because they feel that collaboration is time-consuming (Ragoonaden & Bordeleau, 2000). These students may resist collaboration. Hughes et al. (2002) suggested techniques to get resistant students to embrace collaboration, such as let students share their positive collaboration experiences, create a small team project with high probability of positive outcome, and make sure team members recognize each other individual contributions.

Learners are viewed as one of the most vital components in all learning environments. Therefore, students' beliefs and feelings about themselves, others, situations, and events should be taken into account in order to understand what happens in learning context and how to improve educational practice. Along the same line, knowing the attitudes, beliefs, and understandings of the online learners, the instructor can adjust and improve the effectiveness of online learning (Ewing-Tylor, 1999). The next section will report on the effectiveness of computer-supported collaborative learning from the student's point of view.

Student Perceptions of CSCL

A number of studies have been conducted to determine the effectiveness of Web-based instruction from both student and teacher perspectives. However, to date, there is hardly any empirical research on student expectations of online learning environments.

Student Expectations of Collaborative Online Learning Environments

Wanko (2000) examined instructor and student expectations in an asynchronous online learning course. Students should have been prepared for the course because they were required to take a short distance-learning suitability quiz before registering, and they were informed of the basic course expectations and requirements one month before the class started. However, the qualitative data indicated that students' self-expectations were unrealistic. At the beginning of the course, students were excited about the flexibility and the possibility of working at their own pace. At the end of the course, however, most students requested more stringent deadlines since they felt that they tended to procrastinate and were concerned that this might affect their ability to learn the material. Thus, the attractiveness of "at your own pace" designs might be questioned. In addition, the results also revealed students' misunderstandings about taking an online course. For instance, students expected that they could spend the same amount or even less time on a Web-based course as in a face-to-face classroom, which

turned out not to be the case. As a result, the researcher emphasized the importance of the pre-course screening process and adjusting student expectations.

While Wanko found that students might misunderstand and bring unrealistic expectations to the online course, a study by Westrom and Pankratz (n.d.) suggested that students taking an online course had different expectations between online and face-to-face courses. Westrom and Pankratz conducted a study concerning online learning obstacles. Nonetheless, the findings also helped identify the difference between student expectations and the actual course in practice. The students were required to attend the first two classes, which focused on intensive instruction for getting online, using the Web and mail, and communicating with classmates and instructor via the Internet. In addition, the students were expected to attend the computer lab at a fixed time for three hours each week. However, their instructor did not attend the computer lab. Instead, the students were treated as if they were taking a normal online class, communicating with the instructor through e-mail, discussion groups, and Web postings. Due to the students' poor performance on the midterm exam and difficulties with the assignments, the online model was suspended and the instructor took over direct teaching during the last four weeks. Results from journal entries and e-mail exchanges from the students revealed that most students preferred the direct teaching format and were very frustrated while taking the course online. The researchers indicated that the frustration evidenced by the students was not apparent in the online course offered in the past. The researchers attributed the students' frustration to the lack

of a pre-course screening and to their expectations for the course. Since they were not screened, they were expecting a face-to-face format for the course. The researcher also highlighted that students had different expectations in online and face-to-face courses. Students taking an online course normally assumed greater responsibility for difficulties and for their own learning, while students expecting a traditional course did not assume these responsibilities.

In short, students who have never taken an online course before may construct their expectations of an online course based on their experience from and attitudes toward a traditional classroom. On the other hand, online-experienced students' expectations of online learning may reflect their perceptions of online courses they have taken. It is, therefore, essential to take student perceptions and experiences of online learning into account.

Student Attitudes Toward Collaborative Online Learning

A number of studies have been conducted to determine student experiences and the effectiveness of computer-mediated communication. However, it is important to note that communication and interaction do not mean collaboration unless the aim of the activity is toward achieving a common goal. Students may send messages asking and answering questions with each other, but not collaborating because they are not accomplishing a shared goal. To date, empirical research focusing on student perceptions of collaborative online learning environments is not voluminous.

Communication and Interaction

Studies of student attitudes have revealed both positive and negative feelings towards interaction in online learning. Based on a survey of the Collaborative Learning and Teaching (COLT) project (McMurray & Dunlop, 2000), where American and Japanese students were required to collaborate and conduct a final group project over the Internet, positive attitudes increased after students experienced collaboration in the course. They were excited making friends over the Internet.

In addition, since students' interactions in Web-based instruction were "goal-oriented" (McIsaac, Blocher, Maher, & Vrasidas, 1999), the students were satisfied with the degree and quality of communication with instructors and their peers (Daugherty & Funke, 1998). They valued the opportunity to interact with other students, which resulted in deeper understanding and increased learning.

> You have the ability, to brainstorm. That's hard to do alone.
>
> The group work online was really interactive and that helped my learning. (McMurray & Dunlop, 2000, Interactivity section, ¶ 2)
>
> I found the discussions on the web board would go into a lot more depth than those experienced in face to face discussion in class. (Ainslie, 2001, p.175)

Moreover, in the absence of social context clues and physical presence, which led to an initial feeling of anonymity, students participated more in online discussions (Smith et al., 2001), and felt more comfortable communicating than in face-to-face classroom settings (Daugherty & Funke, 1998). Yet, the results from a Fisher, Phelps, and Ellis (2000) study disagreed with this perspective. They reported that students were

conscious of the lack of non-verbal cues and expressed the uneasiness communicating online.

> I believed I have been feeling uncomfortable because I am not receiving all the extras messages that I normally received when having a conversation (verbal) with someone. The extras I am thinking about are the unconscious messages we both emit and receive. The intonation of the voice, whether it is soft or sharp. We get so much meaning from the speech. (Fisher et al., 2000, Communication section, ¶ 4)

The lack of visual cues can also lead to misunderstanding and miscommunication. Students, hence, need to be clear and careful when writing messages (Vonderwell, 2003; Fisher et al., 2000). Also, due to the lack of social context cues, students felt online communication was less personal (Vonderwell, 2003), and thus were looking for face-to-face contact (Cates & McIntosh, 2000).

Accordingly, students in a Kim, Derry, Steinkuehler, Street, and Watson (1999) study of the effectiveness of collaborative online discussion technology (TAPPED IN) perceived that online communication is less effective than the face-to-face context. To support this view, online survey results of Anderson and Kanuka's (1997) study of online forums indicated that most of the students were less satisfied with an online forum. Because of the limitations in online communication, they felt that an online forum was not as good as a face-to-face forum. Furthermore, a student in Warf et al.'s study (1999) noted that CMC did not facilitate communication. This medium of communication is suitable "for people to share ideas which (they) pretty much agree on already, but if an idea threatens your world view you skim over it and delete it" (p.

146). With all the difficulties, some students preferred to communicate in person (Curtis & Lawson, 2001).

Collaboration

Similar to students' perceptions of communication and interaction, studies indicated both positive and negative reactions towards online collaboration. Lavallee (1998) conducted a study with nine Internet courses offered by Eastern Pentecostal Bible College (EPBC), focusing on the implementation of collaborative learning activities. The survey results showed that both faculty and students were divided over the use of collaborative learning. There were two extreme opinions on the matter; they either had positive attitudes towards collaborative learning or hated it.

The major disadvantages of online collaboration result from communication difficulties discussed above and uncooperative team members. The communication difficulties, such as time delays, lack of response, and conflict schedules, hinder effective collaboration. And, uncooperative team members or autonomous students who prefer working alone make things worse.

Like face-to-face collaboration, positive interdependency is important for effective online collaborative learning. The group success depends on each individual team member's contributions. Students interact and collaborate using communication networking tools. However, the lack of immediacy in asynchronous communication

causes time delays and frustration. As a result, even though students think collaboration is worthwhile, they prefer working alone.

> It was extremely frustrating depending on other people and their time frames. (McMurray & Dunlop, 2000, Collaboration section, ¶ 2)

> The slowness and lack of response of the other students mean I went ahead and did most of the work. Which made it rather pointless. I'm better off working alone when my marks depend on it. (McMurray & Dunlop, 2000, Collaboration section, ¶ 2)

> I found the collaborative group activity to be interesting as it provided me with an interface with other students and thus exposed me to their thoughts in the subject matter. This part of the course was very time consuming …. The need for interaction on the assignment caused some delays in completing the task …. Just the task of fine tuning a group assignment is almost an assignment in itself! (Curtis & Lawson, 2001, p. 30-31)

Feedback

Frequent feedback and continuous communication are necessary for distance learning courses (Anderson, 1997-1998). Teachers in distance courses are, therefore, supposed to provide students with timely feedback. A finding in terms of instructor response was that students expected consistent and timely feedback (Vonderwell, 2003). Yet, McIsaac et al.'s (1999) study revealed that students occasionally felt dissatisfied and isolated because of the lack of immediate feedback from teachers and their peers.

According to the quality of feedback, students indicated that they felt uncomfortable criticizing other people's work (Hughes & Daykin, 2002). Even though when they were requested to comment on other people's work, there was no critical appraisal. The responses mostly were peer support with praise (Hughes & Daykin,

2002). As a result, students expressed that they did not learn much from each other (Vonderwell, 2003).

Technology

Students mentioned the benefit of integrating the use of new technology with content-related work since they acquired both computer skills and content simultaneously (Daugherty & Funke, 1998). However, they also experienced some problems in using technology, such as equipment problems, bandwidth limitations, and lack of technical skills, which detracted from their ability to learn the course material (Daugherty & Funke, 1998; Warf et al., 1999).

Due to lack of computer skills, some students felt that they needed to spend time mastering computer application tools and completing activities (Daugherty & Funke, 1998). Being requested to rank nine main activities related to the course in terms of time consumption, students in Alexander's (1999) study rated learning to use various technology tools as the most time consuming activity. They commented that technical difficulties were a stumbling block. Some students even associated Web-based courses with more difficulties in finishing assignments (Leasure et al., 2000). A student in the study by Leasure et al. (2000) gave this reason for choosing not to enroll in a Web-based course: "I have heard other classmates who have taken Internet classes complain about more assignments, poor test scores, and difficulty turning assignments in" (p. 151). To support this point, Fisher et al. (2000) reported that all students' fears and

anxiety at the beginning of the semester were related to the technology: “I don’t really know what I am doing in relation to the technology, and that’s scary.”

All in all, these studies show that applying collaborative learning strategies in online learning environments can minimize students’ sense of isolation, enhance their motivation, and promote deeper understanding. However, the studies also revealed problems involving online collaboration, including students’ negative attitudes toward this type of learning. Consequently, numerous studies of student perceptions and experiences in online collaborative learning environments have been conducted, to investigate and find solutions to prevent or alleviate the problems in online collaboration. These studies also suggest how to design a course to encourage collaboration, including how to incorporate new technologies to further enhance collaboration.

How to Improve Collaborative Online Learning Environments

Based on studies of students’ perceptions and experiences in CSCL environments, researchers suggested factors and strategies that can make these environments successful.

Building students’ sense of online community

Gunawardena (1995) discussed two studies that examined whether social presence is a major attribute of student perceptions of CMC. In these studies, graduate students completed a questionnaire at the end of the 1992-1993 Globaled computer

conferences, a program that promotes collaborative learning among several participant institutions. The studies noted that although CMC is considered to be a medium with low social context cues, CMC can be perceived as interactive, active, interesting, and stimulating, depending on the interactions that take place between the participants and the sense of community that is created. During the first three weeks of this program, students were given the opportunity to introduce themselves, get to know each other's interests and experience, and develop a sense of community, all before the scheduled activities began. Gunawardena concluded that the development of a social presence and a sense of an online community is the key to promoting collaborative learning and knowledge building. Instructors need to develop students' sense of an online community and make a space for social interaction to take place.

Wegerif's study (1998) also supports the establishment of a sense of student community in collaborative online learning. This study indicated that a student's success or failure in a course depends on the extent to which the student is able to cross the threshold from feeling like an outsider to feeling like an insider. Therefore, building a sense of community is crucial. In addition, the results showed that students prefer being given more structured activities and working in smaller groups: this makes collaboration easier and more straightforward. Therefore Wegerif suggested providing maximum structure and support at the beginning of the course. As students learn to work together and take charge of their own learning, they can be given more student-centered activities toward the end of the course.

Instructor role

Although CSCL environments are student-centered, a number of studies recommended that CSCL environments still be given sufficient instructor guidance and support. For instance, Vonderwell (2003) suggested that students are hesitant to contact each other on their own, and therefore some students do not get a sense of their teammates as a cohesive group. Instructor guidance and support as well as peer support are therefore important for communication and learning. As well, Zhang and Carr-Chellman (2001) examined the quality of peer online discourse. In their study, college students discussed a collaborative problem-solving assignment using two different types of online forums: peer-controlled vs. structured and moderated. Those teams using a peer-controlled forum interacted without any intervention from the instructor, while those teams using a structured forum were closely monitored by the instructor and received scaffolding, moderation, and structuring prompts from their instructor as needed. The researchers found that the structured teams collaborated more effectively, whereas the peer-controlled teams experienced little or no collaboration.

Class orientation

Providing students with orientation in group work may or may not improve their experience. Swigger, Brazile, Byron, Livingston, Lopez, and Reynes (1999) evaluated the effectiveness of collaborative technology on student learning outcomes, student attitudes, and attitudes about collaboration. They found that initially most students

lacked both organizational and interactive skills, which explained why students often ended up working alone to complete tasks. Training sessions on how to use the collaborative tools and how to collaborate were then implemented. After these training sessions, collaborative activities were much more successful. On the other hand, Dirkx and Smith (2004) found that students still felt ambivalence toward online collaboration even after receiving a two-week orientation which included guidelines and rules for working in teams. These researchers felt that some students may resist identifying with a team despite this orientation, and that group functioning can be a difficult and contentious process about which instructors must be cognizant.

Course structure

In addition to instructor guidance, instructor support, and orientation sessions, some studies showed that student participation increased if it was compulsory. Based on their qualitative research study, Yakimovicz and Murphy (1995) suggested that assigning a substantial part of the grade to CMC activities provided an initial motivation for students to learn the technology. In the same vein, grading focused on collaborative projects provided additional motivation for students to collaborate with their peers. These findings were consistent with those of Wilson and Whitelock (1998). These researchers examined student reactions to online collaboration and suggested that students could perceive benefits from group work and use the medium more if initial use was mandatory.

Further suggestions were made by Fisher and Coleman (2001-2002) in a case study conducted at the Pepperdine University in the Online Master of Arts in Educational Technology program. They found that students wanted clear guidelines on how to contribute, when, and mostly how much. Moreover, the face-to-face meeting at the beginning of the course helped less-experienced students become comfortable with the technologies and with interacting with their peers. The researchers also proposed several course design guidelines such as limiting group size to small groups, creating a protocol for communications, and designing open-ended and workplace-related assignments.

Summary

With the advent of technological innovations, online learning offers new opportunities in learning. Computer mediated communication (CMC) and Web technologies facilitate environments where learning is no longer restricted in time and place. However, studies have shown that simply placing learning materials online does not promote student learning. To fully exploit the new technology in improving the student learning process, studies have suggested applying a constructivist approach to designing online learning environments. In essence, constructivist learning environments promote authentic, learner-centered, and collaborative activities.

Numerous studies recognize the value of collaboration, which provides thoughtful and interactive learning in a social context, motivates students, promotes a sense of community, and allows students to share work, different viewpoints, and diverse expertise. These studies also suggest how to design a course to encourage collaboration, including how to incorporate new technologies to further enhance collaboration. Computer-supported collaborative learning (CSCL) then becomes a topic of interest. Research based on student perceptions and experiences has revealed benefits and challenges of CSCL environments, as well as what students like or dislike about online learning or collaborative learning. This yields insight into how a course should be designed to promote student involvement and satisfaction. Nonetheless, few studies have investigated in-depth the causes of student dissatisfaction and other challenges to learning in a collaborative online course.

A pilot study conducted by this researcher found that students can come to a collaborative online course with preconceptions based on their experience in individualistic online learning or traditional classroom contexts. The discrepancy between these preconceptions and the actual learning environment may contribute to negative attitudes toward the course. How can such a course be designed to reduce this discrepancy and otherwise enhance the learning experience? The proposed research aims to illuminate how student expectations of a collaborative online course influence their perceptions of that course, and how the course design can minimize improper preconceptions and thus promote student learning.

Chapter Three: Methodology

This chapter presents the methodology used in this study. The first section explains the rationale behind the research methodology selected. The second section provides a description of the participants and setting of the study and explains how the participants were chosen. The third section addresses the sources and methods of data collection. The fourth section describes how the data was analyzed. The last section presents the methods that were used in the study to ensure its quality.

Selection of the Research Methodology

This study set out to examine what preconceptions or expectations students bring to a collaborative online learning environment and how their perceptions change as a function of their experience in the course. Since the purpose of the study was to comprehend how students interpret and think about a collaborative online learning environment, a qualitative research methodology was selected as most appropriate. Specifically, three reasons justify the use of qualitative methods in this study.

First, the nature of qualitative inquiry is to understand how people construct social reality and interpret phenomena. Qualitative researchers believe that realities cannot be studied by the analytic methods of positivist research. Thus, the purpose of qualitative research is to find ways to get individuals to reveal their constructions of

social reality. Qualitative methods therefore allow the researcher to study phenomena in-depth and in detail without being constrained by predetermined categories of analysis (Patton, 2002). Unlike quantitative research, qualitative methods do not try to reduce the varying perspectives and experiences of participants into numbers and fit them into standardized measures. Instead, qualitative researchers try to capture the participants' points of view by providing a framework within which the participants can accurately and thoroughly reveal their depth of thought, experience, and perceptions. As a result, applying qualitative methods in this study enhanced the researcher's ability to obtain a wealth of detailed information from the participants of the study.

Second, this study set out to explore student perceptions of an online course that emphasizes collaborative learning. Student perceptions and experiences are greatly influenced by the course in which they participate. Since collaborative online learning is a complex environment, generalizability is not an aim of this study. Instead, the research goals call for a deep understanding of a small number of study participants.

Third, in order to obtain intricate detail of the participants' perceptions and experiences, the researcher is required to get out into the field in which the phenomenon naturally occurs (Strauss & Corbin, 1998). The researcher should also have direct contact with and get close to the participants and phenomenon under study, since the researcher's personal experiences are important for understanding the phenomenon (Patton, 2002). A characteristic of qualitative inquiry is studying the real-world setting as it naturally unfolds without trying to manipulate or control it. Along the same lines,

qualitative research emphasizes that the study of individuals' interpretations of social reality must occur at the local and immediate level. Taken together, a qualitative research methodology not only was suitable for this study but also strengthened it.

There are different approaches to doing qualitative research. This study followed the grounded theory approach originally developed by Barney Glaser and Anselm Strauss (Strauss & Corbin, 1998). The main focus of this approach is generating theories that are grounded in the data. It thus provides the researcher with systematic techniques and procedures for handling masses of raw data and developing inductively derived theories about the phenomenon under study. The two essential procedures for the development of these theories are asking questions and making theoretical comparisons, during which the researcher plays an interactive role with the data. The overt emphasis on the systematic and specific procedures for generating theories gives grounded theory greater scientific integrity than other qualitative methods (Patton, 2002). More details of the grounded theory procedures used are provided in later sections.

Site Selection

The setting of this study was a graduate-level online course which emphasized collaborative learning. The course, called Instructional Technology Planning and Management (ITPM), was offered in Spring 2004. This online course was chosen for the study because its major component was a focus on collaborative learning activities:

students were required to work in groups to complete learning tasks. Therefore, this course was particularly apt for the purposes of this study.

In addition, purposive sampling was used to select students for this study. Qualitative inquiry emphasizes in-depth understanding over generalizability. Therefore, it focuses on relatively small samples that can yield insight and in-depth information. Information-rich cases are "those from which one can learn a great deal about issues of central importance to the purpose of the research" (Patton, 2002, p. 46). Since a goal of the study was to explore student perceptions of an online learning environment that emphasizes collaborative learning, students who participate in such a course can serve as information-rich cases for the study.

The researcher had ready access to the study participants. The instructor of the course agreed to let the researcher enroll in the class and conduct the study as a fully participating member of the class, including being a member of one of the collaborating teams.

The Research Setting and the Participants

Setting

ITPM emphasized collaborative learning and project-based learning. The goal of the course was to enable students to understand the issues related to the changing role of technology in education, as well as to complete collaborative projects related to

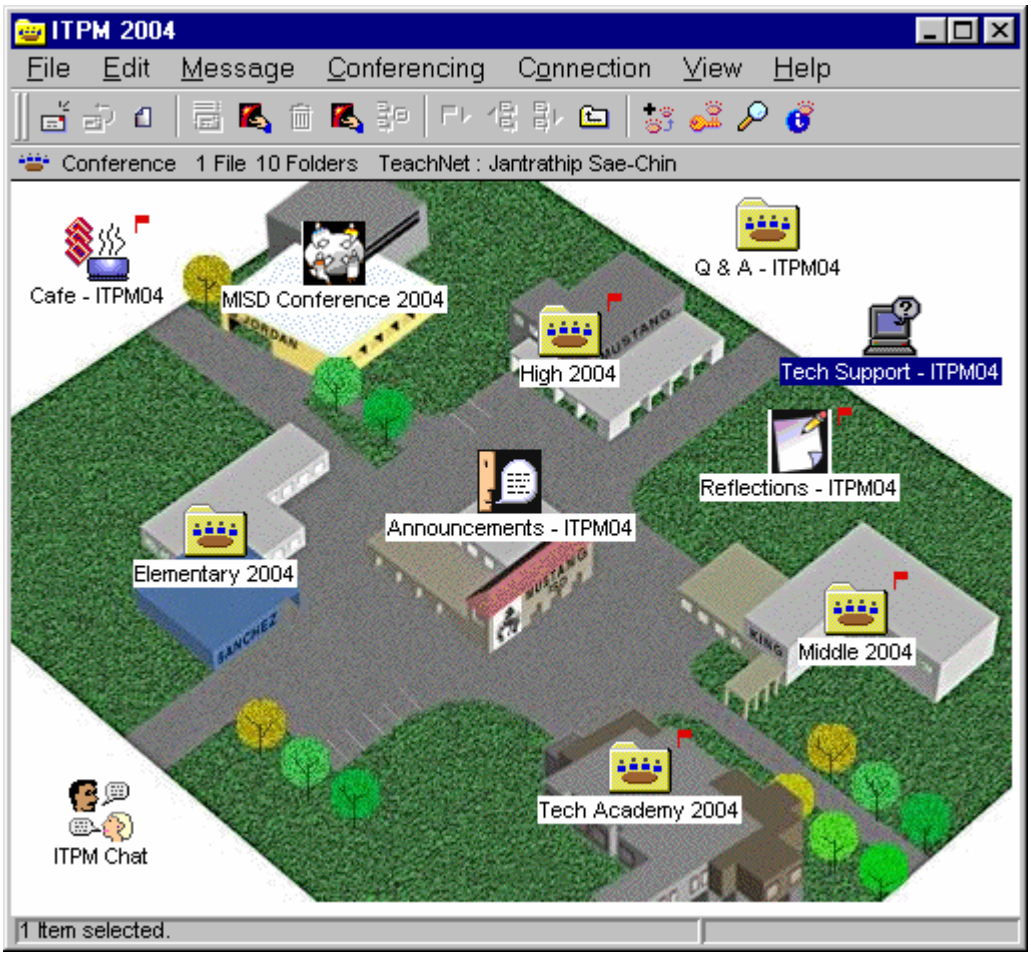
planning and management. In this class, students worked in teams to learn about the technology planning process and to develop a technology strategy plan. To promote authentic learning, a realistic scenario was created as a learning context.

In this scenario, each student serves as a member of a planning team for a hypothetical school district, the Mustang ISD. The district wants all of its schools to have a technology strategy plan, but four schools have not yet developed one. The students are therefore grouped into planning teams representing each of the four schools: Sanchez Elementary School, King Middle School, Mustang High School, and Technology Academy. At the beginning of the semester, students were asked their preferences and were assigned to schools accordingly.

Right before the semester started, students received email messages from the instructor welcoming them to the class. They were also instructed to install and login to the course communication tools, Blackboard and Teachnet. Blackboard is courseware that supports the course Web site on which the course content, assignments, instructions, newsletter, and resources reside. Students were expected to check it at least once a week. Teachnet is a service that uses a network-based collaborative tool called FirstClass, which serves as a virtual workspace where students can communicate with their team members and the instructor about assignments, class discussions, and reflections. Teachnet offers many features facilitating online collaboration, such as real-time chat and message boards. Students were encouraged to check their messages and participate on Teachnet every day.

Figure 3.1 shows the virtual workspace on Teachnet, which includes a number of graphics representing forums in which students can participate and communicate with the class.

Figure 3.1 Virtual Workspace on Teachnet



During the semester, students had to complete six learning modules. While there were some individual tasks in each module, most of the tasks required students to work closely with their teams. Therefore, from the very beginning of the semester,

students were reminded that online collaboration requires extensive communication and responsibility. Hence, students needed to be prepared to engage in continuous discourse with their team and participate in their team's online discussions and projects every day.

Module One: Organizing the Planning Efforts

In this module, students introduce themselves and share their personal information and background with the class. Students get to know their team members and understand the expertise of each member. They are also asked to provide norms and rules for effective online collaboration.

Module Two: Assessment Phase

In this module, students prepare to start the technology planning process. Individually and in sub-groups, students read articles focusing on critical issues and trends in education technology. They then share ideas and opinions about important factors that should be considered in developing a technology plan.

Module Three: Developing Vision (role-playing)

In this module, students do role-playing activities and learn how to develop a vision and mission statement for their school and for the school district, Mustang ISD.

Module Four: Needs Assessment and Data Analysis

In this module, students analyze and complete a needs assessment of their school based on the schoolchildren's academic performance, stakeholders' perspectives, school infrastructure, and technology resources. Based on this assessment, the students then develop goals and objectives for a technology plan.

Module Five: Developing Technology Use Projects, Budget, and Evaluation Components

In this module, students develop technology use projects, a budget, evaluation components, and an executive summary of the technology plan.

Module Six: Developing Funding Resources

In this module, students learn about funding resources and how to write a grant proposal.

In addition, to assure group and individual accountability, at the end of each module the students submit a portfolio including their contributions to the group assignments and to the group communication, and they complete online peer and self-evaluation. Also, the students must write a reflection of what they have learned and how their group works together.

Each learning module is introduced with a Webcast session. This is an opportunity for students to meet with the instructor and their classmates. Students can

attend the Webcast sessions on campus or off campus. On-campus students come to class and meet face-to-face with the instructor and other on-campus students. Off-campus students connect to the class using teleconference systems. They can see and hear the class through the Internet. If they want to participate, they can call in or use the online chat.

Participants

Nine **of the** graduate students who were taking the ITPM class in Spring 2004 responded to the invitation email and volunteered to participate in the study. Initially, ten students agreed to take part in the study, and all ten did participate in the first round of interviews. However, only nine students remained through the second round of interviews when the course ended. The missing participant was an off-campus student. Despite many attempts to reach the participant via phone calls and email, no response was heard. As a result, the researcher decided to remove this participant from the study.

Detailed information on the number of participants and their demographic information are shown in the following tables. Specifically, Table 3.1 shows for each school, the number of students assigned to that school and the number of students interviewed.

Table 3.1 Number of Students and Participants From Each School

Name of School	Number of Members			Number of Members Interviewed		
	Male	Female	Total	Male	Female	Total
Sanchez Elementary School	1	4	5	1	1	2
King Middle School	1	4	5	0	2	2
Mustang High School	3	2	5	2	1	3
Technology Academy	3	3	6	1	1	2
Total	8	13	21	4	5	9

Table 3.2 displays which participants were assigned to each school. Participants' actual names were replaced with pseudonyms.

Table 3.2 Assignment of Interview Participants to Schools

School	**Interview Participants**
Sanchez Elementary School	Robert, Janet
King Middle School	Mickey, Linda
Mustang High School	Paul, Jack, Jill
Technology Academy	Teresa, Peter

Table 3.3 shows a brief description of each participant, which includes their demographic information, their online learning background, and their learning preferences.

Table 3.3 Brief Description of Study Participants

Name	Teresa	Jill	Paul	Jack	Linda	Robert	Mickey	Janet	Peter
Gender	F	F	M	M	F	M	F	F	M
Age	24	35	26	30	23	56	27	26	35
Native speaker	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Degree	Master's	Master's	Master's	Master's	Master's	Master's	Master's	Master's	PhD
Educational status	last semester	2nd semester	4th semester	2nd semester	1st semester	1st semester	2nd semester	2nd semester	1st year
Technical skills	advanced	advanced	advanced	intermediate-advanced	intermediate	beginner	beginner	intermediate	intermediate
Physical location	off campus	on campus	on campus	telecampus	on campus	on campus	on campus	on campus	on campus
Internet access	home, work, school	home, work	home, work	home, work	home	home, school	home	home, work, others	home, work, school
Full-time student?	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes
Work?	full-time	full-time	full-time	full-time	part-time	No	No	part-time	full-time
Online learning experience	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Collaborative online learning experience	Yes	Yes	Yes	Yes	No	No	No	No	No
Online vs face-to-face	online	online	online	no preference	face-to-face but open to online	face-to-face	online	face-to-face	face-to-face
Group vs individual	group	group	group	individual	individual, but not mind group	individual	group	combination: work alone first, in group later	individual or small group work

Data Collection

In this study, data were collected from three sources: face-to-face interviews, transcripts, and field notes from the researcher's observations of the Webcast sessions. The transcripts included the participants' written reflections on their learning for each module and the participants' messages posted on Teachnet. To protect the rights of the research participants, participation in the study was absolutely voluntary. Participants were informed about the purpose and scope of the study, and they were assured of the confidentiality of the study. They were asked to sign a consent form to confirm that they understood the purpose and process of the study, and that they were willing to participate in the study. However, they had the right to review the material and withdraw from the process at any time.

The primary data source of this study came from interviews. The primary purpose of in-depth interviews is not to get answers to prepared questions but to understand and capture the experience of the participants and the meaning they make of that experience (Seidman, 1998). In-depth, open interviews yield, without predetermination, in-depth responses and verbatim quotations from the participants about their experiences and perceptions. Direct quotations also provide context for the participants' responses, thereby aiding the researcher in understanding and interpreting the data.

To facilitate the interview process, it is important that the researcher build a relationship and rapport with the participants. Hence, this researcher attended the course as a participating observer by enrolling in the course as a full-time student. The participants became familiar with the researcher from the beginning of the course, which should have resulted in greater comfort in sharing their point of view during the interview process.

The researcher interviewed each participant twice: once during the first few weeks of the course, and once at the end of the course. The purpose of the first interview was to explore how participants perceived collaborative online learning, what preconceptions they brought to the class and what they expected from the class (see interview questions in Appendix D). The purpose of the second interview was to examine the participants' perceptions at the end of the course, as well as to investigate how their perceptions toward collaborative online learning changed or remained the same.

The researcher conducted face-to-face interviews with all participants. To facilitate active listening, all interviews were tape-recorded with the participants' consent. Tapes were transcribed and analyzed as soon as possible while memories of the interview atmosphere were still fresh. The transcript and analysis of the interviews acted as guides for additional follow-on questions through e-mail and further interviews with other participants.

The second data source was available documentation, which included transcripts of the participants' messages posted on Teachnet, and transcripts of participants' written reflections on their learning. Throughout the course, the participants used a number of Web-based tools to facilitate their learning process. However, participants mainly communicated and coordinated efforts with their team members using the FirstClass groupware called Teachnet. Therefore, most of the communication among students and with the instructor took place via this computer conferencing tool. Essentially, Teachnet is a virtual learning environment and workplace where students can communicate and collaborate. Students can read and post messages on Teachnet. Therefore, there was a copious number of messages available to the researcher. Only transcripts posted by the participants were collected and used to triangulate the data from the interviews.

In addition, all students (not just study participants) were required to reflect on their learning at the end of each module. The transcripts of participants' written reflections on their learning were also used as a data source to triangulate the data from the interviews.

Last but not least, data was collected through field notes from the researcher's observation of class-wide video conferencing. Even though the primary source of the data was through interviews, there are some limitations to how much can be learned from what the participants say directly. To fully understand the participants' experience

in the course, the researcher needed to get into the natural setting and observe what was going on.

The ITPM course was offered online. However, students were given the chance to meet either face-to-face or online with the instructor and classmates during Webcast sessions four times throughout the semester. The researcher, as a participant observer, attended the Webcasts on campus to observe the participants' interaction and their experience in the class. Non-verbal messages were observed and collected both to help the researcher understand student experience in the class and to triangulate the data from the interviews.

Data Analysis

To analyze the data collected from the sources mentioned above, this researcher used the data-coding process of grounded theory developed by Strauss and Corbin (1998). The process involves three stages: open coding, axial coding, and selective coding. Open coding is the first phase of analysis. The purpose of open coding is to discover concepts, define categories, and develop categories in terms of their properties (the general or specific characteristics or attributes of a category) and dimensions (the range along which general properties of a category vary). In this stage, the data were broken down into small meaningful units. To generate the categories quickly, this researcher started by analyzing the data phrase-by-phrase or sometimes word-by-word. Once several categories were obtained, this researcher analyzed the data, when

appropriate, in whole sentences or paragraphs so as to code the data specifically in relation to the existing categories. The categories resulting from this open coding analysis are given in Appendix G.

While open coding breaks apart the data, axial coding is the process of reassembling the data. In axial coding, categories are related to subcategories along the lines of their properties and dimensions. While categories stand for phenomena, which can explain what is going on, subcategories offer greater explanatory power of phenomena by answering such questions as when, where, why, who, how, and with what consequences. Answering these questions helps the researcher identify the variety of conditions, actions/interactions, and consequences associated with a phenomenon, which in return contextualizes the phenomenon.

In this stage of analysis, this researcher first laid out the properties and dimensions of each category. Categories were then grouped together appropriately under major categories. Next, this researcher looked for cues in the data to see how the major categories might be related to each other. Irrelevant categories were removed and, if necessary, categories were renamed. The relationships among categories were verified over and over again in light of the data. As a result of axial coding, a relational chart of categories was developed; this chart is given in Appendix H.

The third phase of analysis, selective coding, is "the process of integrating and refining the theory" (p. 143). The purpose of this process is to reduce the number of categories by integrating major categories, and to develop a theory. To integrate

categories, this researcher identified two themes that represent the central ideas of the study: what operative factors most influence initial student expectations of a collaborative online class, and how student perceptions of their collaborative online learning experience change as a function of their experiences. Once the central themes were defined, major categories were related to them. To refine the themes, the researcher ensured that there were no inconsistencies or gaps in logical development. Poorly developed categories were filled in, and excess categories were trimmed. The resulting categories represent the most important factors underlying the themes that emerged from the data. Finally, the themes were validated by comparing them to the raw data. A detailed description of the two central themes resulting from selective coding is presented in Chapter Five.

Methods for Ensuring Quality

Quantitative research uses *reliability* and *validity* to determine the quality of the research. However, qualitative research uses *trustworthiness,* as suggested by Lincoln and Guba (1985) in reference to reliability and validity. The trustworthiness of any qualitative research can be assessed in terms of four factors: credibility, transferability, dependability, and confirmability. Erlandson, Harris, Skipper and Allen (1993) summarized the comparisons of conventional and naturalistic inquiry. They paired creditability in naturalistic inquiry with internal validity, transferability with external validity, dependability with reliability, and confirmability with objectivity. Several

techniques can be used for establishing trustworthiness, such as purposive sampling, prolonged engagement, persistent observation, triangulation, member checks, reflexive journal, and peer debriefing. Among the techniques suggested by Lincoln and Guba (1985), this study used the following techniques to ensure quality: prolonged engagement and persistent observation, triangulation, member checks, and thick description.

Prolonged Engagement and Persistent Observation

Prolonged engagement requires that the researcher be involved with the setting over an extended time period, to learn the culture of the setting and to temper distortions introduced by particular events, the newness of the researcher, and the participants. It also enables the researcher to build trust and develop a rapport with the participants. Thus, this researcher enrolled in the ITPM course and participated fully as a student throughout the entire semester. Nonetheless, it should be noted that the researcher participation was limited to just this single class.

While prolonged engagement serves to temper distortions, persistent observation helps the researcher sort out relevancies from irrelevancies in the issue under study, and determines what should be focused on in detail. In other words, "prolonged engagement provides scope, persistent observation provides depth" (Erlandson et al., 1993, p. 137). For persistent observation, the researcher observed and focused on the

study participants' communication and collaboration that took place on Teachnet and during the video conferencing sessions.

Triangulation

Triangulation is the use of multiple or different sources of data, methods, investigators, or theories. It is carried out with data from one source checked with data from other sources. The purpose of triangulation is to increase the research credibility and to reduce bias that might result from relying on only one data source. This study used the interviews as a primary data source and used the data from other sources, such as student written reflections and the researcher's field notes, to triangulate the data from the interviews.

Member Checks

According to Lincoln and Guba (1985), member checking is the most important technique in establishing credibility. This technique allows the researcher to verify with the participants the accuracy of the categories, interpretations, and conclusions. This researcher conducted member checking by summarizing each interview and providing it to the participants to check for accuracy. All participants approved the summary of their interviews.

Chapter Four: Findings

Case Study One: Teresa

Profile

Background

Teresa is a Master's student in the Curriculum and Instruction Department, majoring in General Studies. Her background is in Computer Science and Communication, so she has a lot of technical skills. She rated herself 8 out of 10 when asked how technically savvy she is.

As for experience with previous online courses, Teresa once took a training course that was offered online. She defined that course as an individually-based course that was "just a how-to instruction course." It was simply an electronic version of the class, and there was no feedback or interaction between students. She had also taken an online course which emphasized collaborative learning. From this experience, she expected collaborative online courses to be time-consuming, challenging, and fast-paced, but also to provide a cooperative and motivating environment.

Teresa decided to take this course (ITPM) due to her previous positive experience with a collaborative online course as well as her interest in the content of ITPM. While taking ITPM, she was employed and was also taking two other online

courses at the same time. The other two online courses had some collaborative aspects, such as peer interaction; however she said they were not as collaborative as the collaborative online course she had taken before.

Learning Styles

Teresa learns best through repetition and through information presented multiple ways. Therefore she feels many online learning features, such as retrievable records and threaded messages, facilitate her learning. Working in a group also helps her learn. After she has done her work, she can get feedback from her peers on which to reflect and combine with her current knowledge.

Expectations at the Beginning of the Class

Course Structure

Course Format

Initially, Teresa did not think that this online course would emphasize collaboration. However, she had previously taken a collaborative online course taught by the same instructor. Therefore, once the students in the class were divided into groups, she expected that ITPM would be the same as the previous class and that there would be a number of interactive activities.

Organization

In terms of course organization, Teresa expected ITPM to be very organized and structured such that earlier modules would serve as a foundation for later modules.

Workload / Time Spent

From her past experience, Teresa expected that ITPM would be time-consuming and demanding, so she guessed she would be online a lot and estimated she would spend at least four hours each week on the course. Yet, she hoped that it would not be so time-intensive that she would not have time to reflect on and digest the information before moving on to the next module.

> I'm also hoping that it's not time consuming and not that demanding, so demanding and so time consuming that we don't actually have time to spend on each subject before we jump to the next one, that we actually have time to absorb and take in module one before we jump into module two …. And, I'm hoping that it's also not … so demanding that we don't have time to take in each subject in each module, that we have time to actually examine and reflect on it and learn from it before move on to the next one.

Learning Outcomes

Since her group consisted of people from various backgrounds and with different experiences, Teresa expected to learn a lot from her peers as they interacted.

> We have a lot of people that are already in the school districts, a lot of people who are technology directed, so I think that if we collaborate, we're gonna learn a lot from one another.

Furthermore, with her teammates' real-world experience, combined with an authentic scenario where they had to assess the needs of and design a technology plan for a

hypothetical school, Teresa thought that what she learned from this course would be very helpful in the real world.

Online Collaboration

Benefits of Synchronous Online Communication

Teresa expected to interact a lot with her teammates using class-provided online communication tools: a chat tool and a message board. She looked forward to using the chat tool more than the message board because of its immediacy. For Teresa, online chat is very useful and saves time. During chat, questions can be answered and misconceptions can be clarified right away. There is no "wait time":

> The chat [has] the advantage of clearing up misconceptions or questions that may come up, instead of when you post an email, and someone may have a question, then you have to wait for them to read the questions, then post their reflections on it or they have comments on it. You have to wait for that feedback, whereas with the chat everything can be taken care of at once. So, I'm hoping to use the chat more.

Teammates

Since this course required everybody's efforts and contributions, the team's success depended on each member. Therefore, Teresa expected her teammates to check their messages at least once a day or once every other day, in case there was an emergency or announcement from the instructor or TA; this way, the group would have enough time to adjust to and solve any problems. However, in an early class activity where students shared their opinions on *Norms and Rules for Successful Online*

Collaboration, she posted that she did not realistically "expect group members to be available for chat 24/7 and check email every five minutes."

Moreover, to be able to learn from each other's various experiences, Teresa expected her teammates to be honest and willing to communicate and share with the group, because:

> No matter who they are, what their experience is, even if they don't have any experience, that's still good feedback for those who do, because you get an outsider's opinion or you get an opinion that you may not have thought about.

Perceptions at the End of the Class

Course Structure

Course Format

At first Teresa thought "group work was just kinda, split it up and everybody come back and do their part and just turn [it] in." Experiences in this and her previous online class changed her perceptions of online collaboration. ITPM was a real collaborative course where everybody was encouraged to work together: "You actually get to experience group collaboration." From her point of view, some classes "[do] not end up actually being true collaboration. It is just a division of duty."

Teresa came to ITPM with no experience in grant writing and technology planning, and grant writing used to be "intimidating" to her. She stated that the grant writing module would have been harder for her if it were not collaborative.

Workload / Time Spent

At the beginning of the course, Teresa felt the workload was light so she had time to "let it soak in" before moving on to the next module. In fact, she felt the course took much less time than she expected. Since this class was not as time-consuming as her previous collaborative online course, she felt relaxed and laid-back. However, toward the end of the course, she thought the pace speeded up. The schedule was tight and the assignments were more demanding. Hence, the workload at the end of the course was comparable to what she had expected. On average, Teresa estimated she spent three hours per week for this course, some weeks more than others.

Course Satisfaction

Overall, Teresa said she really enjoyed the class because of what she learned. She would recommend this class to anybody because of the class content:

> I would definitely recommend taking an online course, particularly this one, because they learn about grant writing which is very important.

She also felt that online learning would be a good learning experience for anyone, since she believed that in the "real world" more and more learning situations occur online.

Learning Outcomes

Even though she did not have any specific expectations toward her learning outcomes, Teresa was satisfied with what she learned about grant writing and writing up

a technology plan. However, with the time limitations at the end of the course, she felt that she did not fully learn about applying for grants:

> I think we kinda got an overview but we really didn't get the detailed meaning of the instruction or how to apply for a grant.

All in all, Teresa felt she learned a lot from this class. Reflecting, Teresa mentioned that:

> I feel very confident that I could contribute to developing a technology plan and that I can assist in writing and/or researching grant proposals.

Online Collaboration

Challenges of Synchronous Online Communication

At the beginning of the course, Teresa's group used a synchronous online communication tool, the course-provided chat, at least once a week. However, toward the end of the semester, they did not chat as much. Instead, they mainly communicated using an asynchronous communication tool, the course-provided message board. One of the reasons the group did not chat as often was scheduling conflicts. To do an online chat, everybody had to be online at the same time. Therefore, it was hard to find a time when everybody was available, since at the end of the semester many people went to conferences and were out of town. Still, even when the whole group could not make it to the group chat, sometimes only a couple of the team members did the chat. Then, they would post a transcript of the chat to the message board so the rest of the group would know what was going on.

Advantages of Online Communication / Collaboration

Friendly Environment. Teresa felt her team members were open to sharing personal information and the events going on in their lives. For example, one of the team members told the team that his house was broken into. Teresa herself shared with the team news of her upcoming wedding. She attributed this openness to the online nature of the communication; to her, online is "a more friendly environment" where there is no prejudgment: people relate to each other only through what is said, not through other cues. She speculated that if this were a face-to-face class, the group "probably would never really say too much, especially something on a personal level."

On the other hand, Teresa did have a chance to meet one teammate face-to-face; she had previously taken a class with this person. She felt closer to this person than to the rest of the team, whom she had only met online.

Facilitate Teamwork. Due to the "friendly environment" of online communication, the team members were comfortable enough with each other to remind those members who did not turn in assignments or respond to messages. In addition, they were comfortable "asking questions about how someone felt, why did they respond this way, or having them clarify [their comments]." This question-answer process and open communication helped the group to get to know each other better.

Teamwork

Since the beginning of the class, Teresa's teammates got to know each other and learn each other's personal information, background, personalities, and working styles. They came to know each other so well that they could predict a team member's behavior:

> We had one team member who was very wordy in their writing, and so we knew that. And when doing assignments, something like [the professor] would say "This should only be one page long." We knew when we divided our task or when we worked on the assignment to make sure we told that person [to] cut it short.

Knowing each other's backgrounds and expertise helped group collaboration; the team members knew who could contribute what to the group. Teresa felt that her group worked very well together at the beginning of the course, as she "really felt that group connection." During the early modules, all team members were at the same level; nobody dominated, and everybody had something to contribute to the group. Although the tasks were split up and each team member had to take responsibility for a part, they did a lot of chats and discussions before submitting the final work. Activities such as role-playing in the beginning module also encouraged the group to work together.

However, toward the end of the course, even though her group still worked as a team, she felt that it was not as good as in the beginning. Instead of working mutually as a group, they just split up the tasks according to each person's expertise, and put it all together in the end. The experienced team members had a say, while the non-experienced members did not contribute as much as they did in the beginning.

> I think toward the end when it came to the grant writing portion, those people who had grant writing experience, I think they more or so led the way. And I think some people kinda held back; they weren't so much supported as they were before when we were kinda all at the same level doing the inventory, and then analysis, the needs assessment, and the role-playing …. So I don't think we worked as well as a group … toward the end.

Teresa attributed this to the team members' experience levels with a task. Those team members with experience related to the task played a role, while people with no experience faded away.

> I think more toward the end … the things like experience really came into play. I think those people who did have grant writing experience versus those who didn't, I think it just kinda made a difference. I think some people just kinda pulled back from the assignments. And they weren't as involved as they were before.

Changes of Perceptions

Before the semester began, Teresa thought this class would not require much interaction or collaboration. Once the class began, the class format reminded her of her previous collaborative online class which was taught by the same instructor. She then expected ITPM would have the same structure as her previous course: she would have to collaborate a lot with her teammates and the class would be very organized.

At the end of the semester, Teresa felt that her group collaborated a lot and worked very well together in the beginning when everybody felt they could contribute something to the group. However, near the end of the course, the team worked in a different cooperative way: each team member took responsibility for the task in which the member had expertise, and then the team as a whole put all the work together.

During this time, the experienced team members led the group and the inexperienced team members followed.

Since this was a collaborative online course, where each team's success relied on the contributions of all its members, Teresa expected her teammates to be willing to share and communicate. Also, she looked forward to communicating with her teammates using the chat tool due to its immediate nature. Through group interaction, she expected to learn a lot from her teammates' various expertise and real-world experience.

At the end of the course, Teresa observed that her group did use the chat tool to communicate, though it was not easy to schedule a chat time because of schedule conflicts. In terms of teammates, Teresa felt that she learned a lot from her teammates and from the course itself, which led to her satisfaction with the course. Her teammates were open and even willing to share some of their personal lives. As a result, she felt comfortable communicating with her team. She attributed the friendly environment and positive teamwork to the collaborative online nature of the learning environment. She did note, however, that among her teammates, she felt closest to the one with whom she had previously taken a class and had met face-to-face.

Regarding the course workload, based on her previous online experience, Teresa expected this course would be time-intensive. Yet she was hoping there would be time for her to digest the material before moving on to the next topic. Nonetheless, she prepared to devote time to being online and communicating with her teammates. At the

end of the course, Teresa reported that the course workload in the beginning was not as demanding as she had expected, giving her time to digest what she learned. The pace speeded up toward the end of the course, meeting her initial expectations.

Case Study Two: Jill

Profile

Background

Jill is a Master's student in the school of Education, and ITPM was her second Master's class. She worked full time as a technology director while taking this class. Usually she takes one class per semester, so this was the only class she took in Spring 2004.

The reason Jill took this class was to help her job in planning and coordinating a technology plan. Also, she enjoyed her experience in her previous collaborative online course, which was given by the same professor. She described her previous online class as "boot camp, comprehensive, and valuable." She enjoyed the class so much that when it ended, she felt sad.

> When last semester came to a close and everybody stopped posting I felt like the magic was gone.

Jill expected ITPM to have the same format.

Learning Styles

Jill considers herself an extrovert and an energetic person. She likes working with other people, especially in graduate classes, because getting feedback from peers makes her feel confident and not isolated. Feedback from peers also helps her learning. For example, Jill feels that she is not good at writing. In a collaborative writing situation, she can not only receive feedback from the instructor, but she can also receive comments from peers to improve her writing.

> Writing is one thing you have to get feedback from, and if it's just from one teacher, then it's hard for me to feel like I'm growing very much. But working with the team, I feel like I do grow because I have all those people to look at what I'm saying in a written form and comment on it before the actual piece goes out.

In terms of communication methods, Jill prefers online communication to face-to-face communication. To Jill, it is easier to avoid conflicts since there is no facial or physical expression in online communication. In addition, online communication allows her time to think and reflect on what she is saying or what the other person is saying.

Expectations at the Beginning of the Class

Course Structure

Course Format

Before taking her first collaborative online course, which was also her first course in graduate school, Jill was very apprehensive about the tasks in the online

course syllabus and the prospect of working in a group. There was a lot of uncertainty: it was her first graduate course, she had never met her teammates, and she had never worked online before. However, with ITPM, she came to class with confidence since she knew what was going to happen and what to expect.

From her previous experience, Jill expected ITPM to have the same format as her first collaborative online course since it was offered by the same professor. She pictured herself in a virtual team, working collaboratively with her teammates. However, after a few weeks in the class, Jill thought there was less collaboration than in her previous collaborative online course. In the previous course, she had to contribute to the team constantly. Everybody was trying to contribute and outdo everybody else to make sure that they would get a good peer evaluation. However, at her first interview she did not feel the same way about ITPM since there was no constant daily communication and no daily contribution to the group.

> I didn't feel that way this semester. And really especially in this module here we've had some solo individual assignments and then maybe we haven't had many collaborative things so far. I mean, possibly toward the end we will, but for instance we have one person synthesizing whatever we just did … whereas the last semester we had all the team members working to do the synthesis.

Instructor's Role

In terms of the instructor's role, Jill prefers the instructor to be an authority figure like in a traditional classroom. However, from her previous online course she understood that instead of taking an authoritarian role, the professor would instead act

as a facilitator or a coach who guides the format of the class and the activities through the course design.

> I think I did expect for the professor to be more … like [in] a traditional classroom setting, where they would be looked up to as an authority figure. But I really see how that professor takes a step back and is more of a peer and more of a coach and more of a facilitator.

Workload / Time Spent

Jill came to her first collaborative online class with no expectations about what she had to do in the class. Nonetheless, since it was her first graduate class, she was prepared to work hard, and she did work hard. She found the course workload consisted of individual contributions to group projects rather than individual assignments. Based on this experience, Jill expected ITPM to be as demanding, so she also planned to work hard.

> I expected it to be just as demanding … the class I took last semester, it was actually my very first graduate course. So really I had no expectations and I expected to work very hard … and I did. I tried to overcompensate; [in] whatever activities, I tried to do more than the actual assigned tasks. And I expected to do the same thing in this class [ITPM].

Online Collaboration

Online vs. Face-to-Face Communication

From her experience, working online is a skill that one needs to learn and get familiar with in order to communicate effectively online. For example, at the very beginning of the semester, she asked one of her team members about which communication methods he preferred. He told her that he most preferred face-to-face

communication. She then told him, “Well, let’s see how you feel at the end of the semester, because you’re going to be so into online, you might prefer it.”

Nevertheless, Jill does believe that meeting face-to-face improves online communication. When meeting in person, people can reveal their personalities to each other, thereby helping them see each other in a different way. Jill gave an example of the interaction between her and José, her teammate from the previous semester, whom she met in person for the first time this semester. Before meeting in person, she felt that their relationship was purely professional, so she was not as quite comfortable communicating with him. Afterward, she felt relaxed and thought he understood her better.

> Now that I know [José] face to face and I’ve revealed my personality to him: I think that would allow him to understand maybe some of the things [that] I write in different way. And now I actually feel more comfortable just being who I am through my writing because … I feel like he would be able to pick up on some nuances that possibly weren’t there before.

Teammates

Even though Jill had taken a collaborative online course before, she still felt anxious about meeting with a new group of people in this class. She hoped the group atmosphere would be like with her last online team where everybody worked very well together. Her group in this class included one teammate she knew previously, José, and three other students she had not known before. Jill had heard stories about a “disaster in online learning where one person would just never participate in the group.” Therefore, she was apprehensive about her new team. She wanted to get to know her teammates

well, and to establish some communication and working rules that she learned from her previous online class, so that her new group could work as efficiently as possible.

Perceptions at the End of the Class

Course Structure

Course Format

According to Jill, ITPM was not formatted in a way that promoted much collaboration during the beginning of the semester. Unlike her previous collaborative online course, where the tasks required everybody to work collaboratively from the beginning of the course, this semester Jill noticed that during the first few learning modules her group worked independently. The leader of each learning module would compile the work at the end of the module. Nobody seemed to care very much about the work or the teamwork.

> The way our team worked, we just relied on the leader [who] just summed up everything and then, whatever, we're just fine with whatever they came up with. The first three months it was like, "We don't care, submit," and then it was fine.

Jill wished there would be more "official collaborative activities" during the beginning of the semester so that the team could get to know each other and create a "team culture": the way the team interacts and collaborates. For example, the whole group could write a paper or create a Web site together. Nonetheless, toward the end of the class, the team was required to work collaboratively and interdependently.

> I did feel like we actually had to do collaborative work until really the very end. And so it got really intense. We never really had to in the first four modules.

> We didn't have to really create anything beyond the one-page document. We didn't have to do anything official for a project. But then the fifth and sixth modules, we had all come together and created a technology plan, put everything into a technology plan, which ours is big, it was a 75-page document …. It felt like it was so late that we had to do something official that we didn't really get to create our team culture, the way our team was going to really work until the last two modules.

Workload / Time spent

Jill spent about 10-15 hours per week for this course. Compared to her previous online course, Jill felt that this class was more laid-back. Even though the pace of the course sped up at the end, she did not feel exhausted as in her previous class.

Course Satisfaction

Jill was satisfied with this course for several reasons. First of all, the format of the course, collaborative online learning, suited her schedule, considering her full-time job and a two-year-old child. Second, she learned a lot from this class. Third, since the format of the class was new to many of her classmates, she was proud that she was skilled in an area many people do not even know.

Learning Outcomes

Coming to this class, Jill felt she only needed to get an overview of how to develop a good technology plan. However, she ended up learning more than she expected. Not only did she get an overview of creating a technology plan, which she believed she could do by taking a one-day class, but she also learned the whole process

and went through the whole process herself. She was thrilled with what she learned. She felt she knew how to do technology planning. And, she was confident that she had all the resources and will know what to do or say when she actually leads a team developing a technology plan.

Besides the course content, Jill expressed that she learned how to work in a collaborative group and "knows what to do to be in a healthy team relationship." Even though she worked collaboratively the previous semester, she still learned more this semester. She became confident about working in groups. She was no longer afraid of having conflicts with other people. In fact, she learned to expect some conflict and learned how to deal with it.

> I'm terrified to have conflict with anybody. And this class has taught me that I don't have to be terrified of that. I can have my own opinions and share them and expect a response that might be critical or it might be another opinion, but I do expect respect back from my original disagreement.

However, she accepted that she did not learn as much as she did in the previous semester, because she did not put as much effort into this class.

> I got more out of last semester because I put more into it, and I got less out of this semester probably because I put less into it. But it was just what I was willing to do.

Online Collaboration

Online vs. Face-to-Face Communication

When comparing online and face-to-face communication at the end of the semester, Jill still prefers online communication. To Jill, online communication helps

equalize two personalities. To illustrate, Jill considers herself an "aggressive talk[er]," so online communication slows her down. Conversely, it helped one of her teammates, a "thinker," to communicate more.

> I don't know if I'm a talk girl, more aggressive talk girl. I don't know what it is, but online, maybe it slows me down, and I think [my teammate] is more that of a thinker so it allows him to put all of his thoughts down, because in person I don't think he tells all the thoughts that he's thinking. But online he may contribute or review a little more and then I am scaled down and I reveal less. So then that [makes] us equal.

In addition, Jill does not feel comfortable communicating face-to-face because she is not skilled at reading facial expressions, and she does not know what the other person is thinking when there is a pause in the conversation. On the other hand, when communicating online she feels that she does know what the other person is thinking. Jill had a surprising experience when she met José in person this semester. Jill sensed that José did not like her whenever they met face-to-face, but she is certain that he likes her when they communicate online.

> I mean every time I met him face-to-face, I would think he didn't like me. I just don't get a sense that he likes me at all, but online I think he likes me.

Despite personal feelings, Jill still thinks that meeting face-to-face can help build relationships. Again, Jill used her relationship with José as an example. In the previous semester, she never got a chance to meet him face-to-face. No matter how well she thought she knew him, they focused on the work more than personal matters. However, when they met in person this semester, Jill felt that José seemed more relaxed when interacting with her.

> I think the face-to-face did help 'cause I don't know that we would ever have broken through that … barrier, being online and 'work work' and [being] professional. It was just always very, very professional in the first semester.

Challenges of Online Synchronous Communication

Jill revealed that her team did not communicate through online chat very much. They did not have a scheduled weekly chat. The chat would be scheduled as necessary according to the tasks. Jill felt that not having a frequent chat was good in a way, because synchronous tasks such as chat are time-consuming. Sometimes during chat the team would get off-track or have a controversy and the conversation would bog down. Also, it was hard to get everybody to meet online at the same time for the chat.

> I found that when you chat with the whole team online, it's easy to get off-task or to get real focused on one controversy and just stay stuck on that controversy. You spend five hours in a chat but maybe you've done 20 minutes' worth of work.

Therefore, Jill was happier when her group held asynchronous discussions using a shared document. Everybody could contribute something to the document, and anybody in the team could add to or modify it.

> It helped me to feel like we're moving forward faster when we were actually not chatting as much. We were kind of putting our thoughts into a shared document. And when we just contributed to a shared document and then I guess that felt a little more like we were collaborating and like we didn't have argue so much online.

Teamwork

Personal Contributions. Unlike her contribution to the previous online class, Jill admitted that this semester she did not always contribute a 100% effort into the group

work. Neither did her team members. Jill rationalized this situation several ways. First, other members in her group were busy with other things. Second, she wanted to balance her work, study, and personal life. Third, she felt burned out from the last class because she devoted a lot of her time and energy to it.

> I don't think I put as much time as I could have into [ITPM]. And part of it, I think, it's because I was so exhausted from the last semester and I'm trying to balance work and the two-year-old and everything else.

Fourth, the class assignments were not as intense and demanding as in the previous semester. In her previous online class, the tasks required everybody to devote a lot of time and work together from the beginning. Everybody was very devoted to the tasks and wanted to make their work perfect; this resulted in a feeling of trust and bonding within the team. Unfortunately, Jill did not feel the same this semester.

> [Last semester] we had no idea even how hard to work, so we all just worked so hard and tried to be so perfectionistic. That's just my view of it, of what happened last semester. And in doing that, we all really bonded pretty well. It's almost like we worked so hard together, we just learned to really trust each other and learned how each other works and that was a really great part of what last semester was about. And through all that controversy and conflicts, we created this great project that we were so proud of. And we would all pat each other on the back and give comments to each other. So it felt really good to be in that group that I trusted and we could all have conflict and work together and make great things. But this semester I didn't quite feel like that because I don't think we all had the same [feelings], we weren't all perfectionistic.

Group Contributions. This semester, even though everybody was busy outside of class and did not contribute a 100% effort to the group work, Jill felt that each member's contribution, though not equal, was at least a fair share. For example, when the group divided the tasks, everybody would get an equal amount of work. However, prior to

turning in a project, there would always be some little subtle details in addition to the allocated tasks, such as compiling the work and expressing it in one voice. Among the five team members, three would always like to put more time into the little details, whereas "the other two players just did their part and left the scene."

Jill recognized the problem of unequal contributions, but she did not really feel irritated with that. She reasoned that it depended on each team member's personality.

> We couldn't make [a] person stop working. There's one person [who] stayed up three nights in a row straight to get something just the way [that person] wanted it

However, the group did try to equalize the contributions in the last module. They designated one team member who loved to do the final touches to be the final editor. This equalized the work and made all the team members happy.

> So he did very little … in the beginning and middle because he knew he was going to have to do a lot at the end. And everybody felt good about him doing that because we didn't feel like he was doing too much work, and then he didn't feel like he had to do work for everybody else, 'cause he was just picked as the final editor person.

Leadership Role. Since Jill had had experience in a collaborative online course before, she volunteered to serve as the first leader. She was very impressed with her experience in the previous class. She wanted to have those kinds of feelings and bonding again with this group. Being the first leader, she hoped to make a good start, to set the stage for good teamwork, and to lead the team using her previous group collaboration as a model.

> The reason I chose to be a leader was because I guess I wanted to kind of model the way. I wanted a solid start to work. I wanted to pick up where we left off in the [previous semester] … I had a team that … all worked very well together. By the end it's just I felt like it was in sync …. I did try to do some certain [things] that I thought would help get us started for the rest of the module, and I think it did. It kind of set the stage for the rest of the semester.

Team Relationships. Working collaboratively with her teammates throughout the semester, Jill did feel she ended up bonding with her teammates. At the end, she posted a message telling her teammates, "I am not quite ready to say goodbye!" She attributed this to her being a sensitive person, but she could not help loving her teammates.

> I mean I'm just I guess a sensitive kind of person, but just ended up loving everybody so much in my group, and I would talk about them to my husband and things.

Changes of Perceptions

Jill enjoyed the collaborative format of her previous online course, which was taught by the same professor, so much that she decided to take this class. Like Teresa, who also took the same course previously, Jill came to this class expecting it to have the same format as her previous online class. She also expected this class to be as demanding as her previous one. However, after the first couple of weeks in the class, Jill sensed that this class was not as intense as her previous one because there was no constant daily communication and no daily contribution to the group.

After the course ended, Jill was satisfied with the online course format in that it fit her schedule, though she did not think that it was as demanding as her previous

online course. As with Teresa, Jill confirmed her initial feelings about the course workload: this course was more laid-back and less demanding than her previous online course, especially in the beginning.

Moreover, Jill agreed with Teresa in that she learned a lot from this class. In fact she learned more than she expected, because not only did she learn an overview of technology planning, but she also went through the whole process herself. In addition, despite her experience in the previous course, she learned even more how to work in a collaborative online group. However, she felt that she did not learn as much as she did in the previous semester because she did not put in as much time and effort as she did in the previous online class.

In terms of group communication, Jill prefers online communication. She believes that working online is a skill that one needs to learn and get familiar with. She also believes that occasionally meeting face-to-face improves online communication.

Throughout the semester, Jill's group did not use chat as much as the discussion board. Unlike Teresa, who preferred online chat, Jill felt that online chat was time-consuming and made it easy for discussions to get off-track. Jill did agree with Teresa that it was very difficult to schedule chat times.

At the end of the semester, Jill agreed with her initial thoughts. She still prefers online communication because she thinks that it equalizes different personalities. That is, it slows down loquacious people, and it allows reserved people to express themselves more. Also, she still believes that meeting face-to-face can improve relationships.

Similar to Teresa, who felt closer to the teammate she met face-to-face, Jill sensed that one of her teammates became more relaxed after they got to know each other in person.

Even though Jill had worked with a collaborative online group before, she was still anxious about meeting a new group of people in this class, because she had always heard stories about problems with group work and teammates. She hoped her teammates would work very well together like in the previous class. Also, she hoped that her new group would be able to establish online communication and teamwork rules like she had in the previous semester.

From her experience in the class, Jill revealed that she as well as her teammates did not put 100% effort into the group like in her previous online class. She attributed part of this to the nature of the tasks in ITPM, which were not as intense and demanding. Interestingly, while Teresa felt that her group collaborated more at the beginning of the semester and simply cooperated in the end, Jill felt the opposite. Instead, Jill wished there would be more collaborative activities during the beginning of the semester so that she would get to know her teammates sooner and develop a team culture. Also, she felt her team collaborated intensely toward the end of the course and therefore bonded well.

As for her group work, Jill volunteered to be the first leader of the group in hopes that she would both get to know her teammates well and be able to establish rules and norms for the group from the very beginning. She indicated that the workload was

not equal, but was allocated fairly. Everybody shared the same amount of work, but some people were willing to put more time and energy into their work.

Case Study Three: Paul

Profile

Background

Paul is a Master's student in the Instructional Technology program. While taking this class he was also working full-time and taking another course. Before taking ITPM he had taken a collaborative online course offered by the same instructor. He described his experience from the previous course as "flexible, diverse, organized."

Paul took this course both to fulfill his degree requirement and because he was interested in the course content. Furthermore, he enjoyed his previous collaborative online course format in that it was flexible and interactive. There was no specific class meeting during the week and he could work at his own pace. Yet, there were many ways for him to interact with the class and his teammates.

> We could post massages or we could discuss [in the] online chat room, post written essays. So, there are so many different ways that we could contribute to the class, interact with the class, and get feedback from the class that I thought it was really flexible.

In his previous collaborative online course, students came from different places and brought with them various work experiences and educational backgrounds.

Therefore, Paul felt that he was not just tied to students on campus who all had similar experiences. He treasured these opportunities where he could interact and learn from other students' different perspectives.

In sum, he enjoyed his experience in the previous collaborative online class enough that he thought he would enjoy this class, which he expected would have the same format.

Learning Styles

Paul learns best by doing. He likes learning situations that are based on a real-world context. Also he values collaborative learning: it helps him learn better than when he studies on his own. In collaborative learning, he can clarify and rationalize his ideas as well as get feedback from others.

> I think I learn best when I collaborate with other people, just because it gives me an opportunity that I wouldn't usually have to explain my thoughts and rationalize my thoughts and get feedback from my thoughts.

When comparing traditional face-to-face learning and online learning, Paul prefers online learning environments where he feels more comfortable to speak up and share his ideas. He feels that online communication tools make it easy for him to interact online. However, he realizes that social aspects such as people's moods and reactions are missing in collaborative online learning environments.

Due to his previous online class, Paul discovered that he enjoys collaborative online learning environments more than he expected. Paul explained his reasons:

> I think a lot of my thinking was just coming to understand what online courses are all about. I think it was much more collaborative than I thought and I found that I really enjoy that collaboration. And, the collaboration was in fact a lot more intense than [almost] any face-to-face class I've ever had. So, that's a large reason why I enjoy it more than I thought. And, I was a lot more comfortable with it than I thought I would be. I found that it was just a very easy way for me to interact and that was very surprising, and something that I was glad to find out.

Expectations at the Beginning of the Class

Course Structure

Course Format

Based on his previous experience, Paul expected that there would be a lot of interaction with people from different backgrounds in this class. Also, he expected that this class will be very organized: the course would build from basic information to more difficult concepts.

Time Spent

Paul anticipated a lot of time involvement in this class, based on his understanding of the nature of collaborative online courses: it takes more time to interact with people and negotiate different perspectives. As a result, Paul planned to spend 8-10 hours per week for this class.

> I think that collaborative courses are time intensive and that's something I experienced. It's not necessarily a three-hour sit-down-and-learn situation. It's more of an around-the-clock situation where you're learning constantly. You're constantly logging on to interact or you're constantly thinking about something that came out of the class. And I just think that collaborative learning in general takes a little bit more time.

Learning Outcomes

Paul expected to "acquire a practical skill-set regarding the planning and management of instructional technology, particularly in primary and secondary school environments." Besides the course content about technology planning and management, Paul was curious about how students with collaborative online experience and students without collaborative online experience could work together in this learning environment, especially at the very beginning of the course. He thought that this was a very unique aspect of the course. Also, since this course included students from different backgrounds and focused on collaborative learning, he expected to learn from other people's perspectives.

Online Collaboration

Ideal Online Learning Environment

To elicit people's interaction and contributions, Paul suggested that an online learning environment should make people comfortable in expressing their ideas. The environment should be non-threatening and friendly. Also, it should be clear that there are no consequences for expressing ideas since the process of interaction is more important than the end results. To Paul, there is a whole process of learning how to do well when working online.

Teammates

Since Paul anticipated having teammates with a variety of different backgrounds and experiences, he expected to interact a lot with his teammates. Paul hoped that he would be in contact with his teammates in one way or another nearly every day. In terms of relationships with teammates, Paul expected that the group would quickly become very comfortable working as a team.

Perceptions at the End of the Class

Course Structure

Course Activities

The course activities did not require collaboration at all times. Throughout the semester, there were some tasks that required more collaboration than others. During the not-so-collaborative period, each person would do their own work and later integrate it with the rest of the group's work. Yet there were times when the whole group was required to collaborate, especially during the last two modules of the course, when the group was assigned to develop a technology plan proposal. Even though Paul agreed that there are times when it is not always appropriate for everybody to be working on the same task at the same time, he felt that collaborative efforts are very essential for tasks that require decision-making.

Workload / Time Spent

At the end of the course, Paul reported that the workload varied throughout the semester. The workload was very light in the beginning and was heavy toward the end of the course. Paul spent approximately 10-15 hours per week. Overall, he believed that the workload of this course was about what he expected, although he found that "there were times when there was more than I expected." Yet, he thought the amount of workload also depended on the role he was taking at the time. For example, during the final project, Paul's role was as the final editor. Therefore, he worked harder at the very end of the project, while his teammates were busier during the beginning of the project.

Course Satisfaction

Overall, Paul felt he enjoyed the class. He would recommend this class to his friends and tell them:

> It is a great form of learning that's very different from what most people are used to doing. And it's a great way to learn and to apply your knowledge … and to communicate and learn from others.

Learning Outcomes

Paul felt that he learned a lot about technology planning because most of the coursework was devoted to developing a technology plan for a hypothetical campus. He also learned a certain amount about the ongoing management of school technology. However, he did not feel that he learned about the management aspects as much as the planning aspects.

Online Collaboration

Course Communication Tools

As discussed earlier, there are several tools available on Teachnet for communicating within the class. Paul's group used the message board a lot in the beginning, but they used the chat tool more toward the end. To enhance group communication, Paul suggested having better collaborative writing tools, voice communication, and video communication tools.

Synchronous Online Communication

Toward the end of the course, Paul's group communicated through online chat a lot because of its real-time aspect. When one or two of the team members were online at the same time, they could request impromptu chats to solve problems right away. It was fast and saved time.

Overall, Paul had a good experience with the chats. However, he thought the chats would be more effective and efficient if there was a set goal for each chat and everybody came to the chats well-prepared.

> I think the important thing is to have some type of a plan to guide the chatting process, because sometimes we would chat and we didn't really have a very clear idea of what we wanted to accomplish during the chat or what we were there to meet about.

In addition, Paul thought that chatting online was challenging and that people needed to develop skills to be able to communicate through chat effectively.

> The chat tool was probably the most challenging because it was a little bit different for the people [who] hadn't used it much before. So they didn't really know how useful it could be or how we could have these spontaneous chats when we invited each other in the chat. So there was a lot of learning there.

Teamwork

Paul enjoyed the group collaboration experience because his teammates were very cooperative and diversified. His group included people from various fields and occupations such as school principal, technology director, and an industry position. Therefore, each person had different experiences and perspectives to share with the group.

Without collaboration, Paul believed the technology plan proposal would not be as complete and well-rounded since it would miss different inputs and contributions from the group members.

> I think we could certainly have done that individually but I think it would have lacked something, just for not having the different perspectives and the different viewpoints and just having different people look at and contribute to it and state their ideas about what it should be.

Furthermore, comparing his team this semester and the team he had in his previous collaborative online course, Paul felt that he enjoyed the team in this course more, because this semester's team seemed more laid-back, friendly, and easy-going.

Factors that Facilitate Effective Online Teamwork. According to Paul, effective online collaboration requires time and experience. He said there are three things that students need to learn to enhance online teamwork: how to use communication tools, how to

collaborate, and how to communicate. During the first two modules, all team members had a chance to get familiar with the different tools they were given for communicating and sharing information. Therefore, everybody knew how to use the tools to collaborate. However, unlike in Paul's previous collaborative online course, this class was not intended to teach how to resolve conflicts and how to write collaboratively. Therefore, the team members had to find out on their own how their group could best work together.

> So we were kind of left on our own to figure out what we wanted to do and what would be most effective. And I guess just through that experience and trial and error, we came up with what worked the best.

Through trial and error, the group got to know how to work together. They developed mechanisms to keep up with the work. For example, the leader of each module would set up the group timelines to complete the module two or three days before the actual due date. This way they could turn everything in ahead of schedule, or at least on time. Also, the team members who felt they had the most to contribute or could do the best job would volunteer to do the job. Paul said it is not difficult when everyone knows how to work together.

Fortunately, the atmosphere in Paul's group made the team members feel comfortable in expressing their ideas and perspectives. Whenever disagreements occurred, everybody was willing to consider multiple perspectives and to make compromises so that the group could proceed. Paul felt the group established a good

sense of trust and believed that each team member was competent and interested in making good and thoughtful decisions.

Online vs. Face-to-Face Collaboration

Comparing face-to-face collaboration and online collaboration, Paul said he still prefers collaborating online. To Paul, the strongest aspect of collaborative online learning is the communication tools which make it easy to communicate and negotiate ideas. Learning and communication can take place around the clock at one's own pace.

> In a face-to-face class you have to wait until you meet in class to communicate, and I think one of the benefits of online collaborative learning is that learning is ongoing and there is never really a set stopping point or starting point. You can work at your pace when you want to work.

Paul felt that the tools enhanced his ability to communicate more freely than he could face-to-face. Without online communication tools, it would be difficult for the group to share information and to create a record of information.

> It would be very hard to really just do the work of the class, and [draft] the document, and [let] everyone see it … to manipulate it and post it back for the group to consider.

In addition, Paul said he knew his teammates better in this class than he did in other traditional face-to-face classes. He had a good relationship with his teammates since everyone was very respectful of each other and was very willing to consider everyone's ideas. Yet, he admitted that he developed better rapport with on-campus teammates than off-campus teammates, because he got a chance to meet on-campus teammates in person and talk to them, especially after the Webcast sessions.

> I think that created a little bit of interesting dynamic, just because I knew the people on campus a lot better than I knew the people off campus, just because I saw them in person and got to speak with them in person and associate a face with the name better than I could with those who were offline.

Due to the remoteness of some team members, sometimes it was difficult to feel a real connection and have a strong relationship with all teammates. Paul indicated that sometimes he felt isolated from certain team members because he did not know them well. As a result, to reduce the sense of isolation, Paul suggested having face-to-face meetings every now and then. Also, to help promote collaboration, he suggested team-building activities that encourage all teammates to express themselves and learn about others.

Changes of Perceptions

Paul had previously taken a collaborative online course offered by the same instructor. Like Teresa and Jill, who took the same previous course, Paul enjoyed the format of that course. He expected that ITPM would have the same format. Also, like Teresa, Paul expected that this class would be organized and built up from easy to difficult concepts. Since he knew that collaborative online courses can be time-consuming, he planned to spend 8-10 hours per week on this course.

At the end of the course, Paul felt that the workload varied throughout the semester. As with Teresa and Jill, Paul thought that the course was laid-back at the beginning and became intense toward the end. Sometimes the workload exceeded his expectations, especially at the end. In fact, he found that his workload depended on the

role he took in each module. He agreed with Jill in that there was not as much collaboration at the beginning as at the end.

Besides the course content, Paul was looking forward to learning how students with and without experience could work collaboratively online together. At the end of the course, like Teresa and Jill, Paul found that he learned a lot from the course content and from his teammates, but he found that the content focused more on the planning technology aspect, not the management side as he expected.

From the beginning, Paul anticipated interacting a lot with teammates who had various perspectives and backgrounds. As he had hoped, his teammates had diverse backgrounds, and they were also cooperative and open-minded. Thus Paul enjoyed working with his teammates more than in the previous online course. Yet, he wished there would be more communication during the "not-so-collaborative" period.

Paul said his team used the course chat tool a lot toward the end of the class. Even though chatting online was challenging and required some skill, he liked it. Like Teresa, Paul thought online chat was fast and time-saving. In addition, Paul felt it would be even more effective if everybody came to the chat well-prepared.

Since Paul, Teresa, and Jill had taken a collaborative online course in the previous semester, they all found they liked collaboration, especially when it is online. Paul felt more comfortable collaborating online. However, he agreed with Jill that it takes some learning to work online. At the end of the course, Paul indicated that he still prefers online collaboration because of the communication tools which allow immediate

feedback and open communication. Yet, like Teresa and Jill, he felt that he got to know better those teammates he had a chance to meet in person. He believed that meeting face-to-face improves relationships with teammates, since he felt isolated from those teammates he never met face-to-face. Hence, Paul suggested having a supplemental face-to-face meeting once in a while. Also, he wished for communication tools that allow everybody to see and hear each other. In addition, based on his experience in online collaboration, Paul suggested three things to learn to ensure effective online teamwork: how to use communication tools, how to collaborate, and how to communicate.

Case Study Four: Jack

Profile

Background

Jack is a Master's student in the Educational Technology Telecampus Program. The semester he took this course, he was taking one other course, as well as working full time in a higher-education environment. He took this class to fulfill his course requirements and to fit with the other course he was taking.

In terms of experience with online learning, Jack had taken two online courses during his first semester in the program and enjoyed them. He reflected on his previous online learning experience:

> The vast majority of the work this semester was readings and lecture in the form of online chats that were scheduled in advance. There was some group work in both courses but the group work really was a pretty minor [part] of the grade. The majority of the grading as well as the majority of work was really individual.

According to Jack, his previous two online courses primarily focused on individual work. For each class, group work constituted about 20-25% of the grade. The real collaboration was in the final presentation (group project), which was presented through online chat. There was no discussion board; the classes communicated through email and online chat. The course structure was more like in a traditional classroom, except that the courses were offered online.

> During these weekly chats we all had readings that covered whatever topics we were discussing that week. And the instructor would bring up some questions or expand upon some of the information or present some of the readings, [and] focus on some things versus other things. And then we in the class would ask questions, give our comments, make responses to questions that the instructor asked.

Jack defined his previous online experiences as "exciting, interesting, and challenging." He thought online classes were challenging because there was too much flexibility and freedom in his schedule. He feels, therefore, that online courses require self-discipline, organization, and good planning.

As for his technical skills, Jack considered himself at the advanced beginner or intermediate level, as compared to most people. He felt that he had pretty good technology skills; for example, he knew how to create a web site and use a lot of major software.

Learning Styles

Jack is a solitary person. He prefers working alone, especially when getting a basic understanding of material he is learning. By working alone, he feels that he has control over the scope and timetable and does not have to bother discussing the material with others. However, he realizes that for learning some subject areas, such as languages, communication with others is important.

Jack indicated that he learns well via just a factual presentation, such as a documentary on TV, without needing a good instructional design. However, he learns better with contextualized information.

> I try to get some of that information in my mind first. So when the instructor gives me more information I can put it in a context that I've already built.

Jack has no preference between face-to-face and online learning environments. He can enjoy a well-designed online course as much as a face-to-face one.

> If the online class is well-structured, the instructor's taking advantage of technology and using technology to do things that couldn't be done in a face-to-face class, as opposed to just taking a face-to face-class and making it all on a Web page or by email …. For me, I think I would probably enjoy [an online class] almost equally as much as [a] face-to-face [class].

However, Jack decided to take online courses because he did not like to have assignments every week like in most face-to-face classes. Due to his learning style and work schedule, he would rather have a big project which is due in a month, so he can spend long hours on it but for a short period, rather than have small assignments which are due every week or a couple of times a week.

Expectations at the Beginning of the Class

Course Structure

Course Format

Before taking the class, Jack tried to find out more from perusing the course schedule and the course catalog. However, he was able to turn up little information, so he did not have many expectations going into the class. Shortly after the semester began, however, he could tell that he would be working in a team a lot. One month into the class, Jack felt he collaborated more than a whole semester of his previous online courses.

Workload / Time spent

Even though it was hard for him to pinpoint the amount of time he would spend on this class, Jack expected to spend 4-5 hours a week. After one month in the course, Jack thought the scope and amount of work seemed manageable, though he did not like the frequency of deadlines that hardly gave him any break time.

> I'm doing it because I didn't want to have three or four deadlines a week in a face-to-face class, where if you take a face-to-face class automatically you have to be somewhere one to two times a week, and automatically [you have] a schedule that's based around a week … For example, if I can work eight hours or ten hours on a weekend … and get caught up for the whole month, I'd rather do that than spend 45 minutes Monday night, 45 minutes Tuesday night …. It seems like I finish something, I take a deep breath and then the next day I've got the next thing to work on, [then] the next thing, etc.

Learning Outcomes

Jack came to class with the expectation that ITPM would "give insight into the best practice followed by technology planners in a real-world setting." Therefore, he expected to learn about the process or accepted methods of technology planning that people in a real educational environment have used.

After a few weeks in the class, Jack felt that up until then the real learning focused more on planning and working in a team, rather than on standards and process of technology planning.

> It seems to be, the point is to go through the process of planning and working in a team, and that probably ultimately will be the real information that I take away from this class, is the experience of having worked with a team online. Actually there'll be facts and specific information that I learn, but at least at this point it seems like the real learning process is the process of working with the team.

Online Collaboration

Course Communication tool: Teachnet

Jack was new to Teachnet. He had mixed feelings about Teachnet; overall, he wasn't sure if he liked or disliked it. He didn't like Teachnet at first because of its lack of usability. Although it is like newsgroups or a discussion board, he did not find it to be intuitive. He found it took many steps to get to the messages, and he found folders and messages to be unmanageable: he could not organize the folders himself or move messages. In addition, Teachnet was not similar to the tools he used in daily life. He was more familiar with email, and the previous semester he used email to communicate

in his online classes. He felt that he had to learn how to use Teachnet in addition to all the other things he had to learn in the class. As a result, he tended to be against Teachnet.

As time went by, however, he started to think Teachnet was a good tool, especially when he would search for a message. He hoped he would like Teachnet more as he became more familiar with it and became more comfortable using it.

Teammates

From his previous experience with online classes, Jack felt that a good feature of online courses is having classmates of various backgrounds and geographical origins. This excited him about this class. After working with his group for a few weeks, Jack found that his teammates were good: everybody contributed and wanted to get involved. In fact, he felt his teammates were ideal: everybody made an effort, tried to accommodate each other, understood each other's learning styles, and kept the goals in mind. He believed he would have a problem if he did not have cooperative teammates.

> My team is good. I think everybody's interested … and everybody wants to contribute. Everyone wants to be involved. I could imagine though if there was a team with some people who just weren't timely or weren't turning things in on time, [or] weren't doing things according to whatever schedule the team has decided upon, you'd have problem.

Perceptions at the End of the Class

Course Structure

Course Content

The course was not what Jack expected. At the beginning of the semester, he had little knowledge of what the class would be like. All he knew about the class came from the one-to-two paragraph course description. From this short description and the course title, "Instructional Technology Planning and Management," he thought this class would be more about technology planning, which to him meant project management, managing technology resources, or management training. He was hoping to have an emphasis on practical solutions and real-life issues. Instead, he found that this course was more an overview of the basic issues of technology planning.

> I thought it was going to be almost more management training as opposed to what it was, which is much more of a general overview of how public schools or at least K-12 schools tend to create a technology plan.

Jack thought the class would be more "hard tech and less soft skills." He found that group work was the major element of the course.

> It seems to me like [with] a lot of the assignments, the assignment itself was not the point, the point was to have a discussion or to have the learning that goes on to get to that assignment.

Workload

Jack felt the amount of work required was reasonable and comparable to other classes, but there were too many deadlines. The constant deadlines meant he had no time to reflect on his work or what he learned.

> It was difficult for me anyway to have time to reflect and feel like I had enough opportunity to really think deeply about all the material, because as soon as I finished a reading, … [there was an] assignment that was due the next day, and then when that was due, I had two more days to the next one, and so forth.

Course Satisfaction

Jack found he enjoyed learning the course content, which was about K-12. It was outside his field, and he found it interesting to learn. Also, he was satisfied with his course grade, which was what he expected. Moreover, he had a good time with his teammates, so he enjoyed the teamwork.

However, he was not satisfied with the number of assignments, which were due every week. Jack added that he would have enjoyed the course more if there were fewer deadlines and more time to digest what he learned. Therefore, he decided not to take this kind of class again.

> I mean the reason that I'm in a distance education program is to not have to have something every week …. If I can go back in time, or you know time travel and tell myself a semester ago about the class, I don't think I would take it again.

Jack felt this course was for someone who likes group work and communication, unlike Jack himself. He did not value the building-relationships or interpersonal aspects of the course. He was more interested in knowledge and data.

Although this course turned out to not be what he expected, and to not quite match his personality, he decided to do his best in the class.

> I figure I can either take myself out of the situation or just be comfortable with it and do what I have to do. And frankly I used to consider dropping this class. [But] since it was a requirement, I think it would have been a little bit too difficult for me logistically to have to adjust my schedule, taking another class. I decided, well, just do the best I can.

Online Collaboration

Course Communication Tool: Teachnet

After using Teachnet for the whole semester, Jack finally concluded that he didn't like it. He thought the interface looked like old technology: every time the user clicks an icon, it opens a new window, instead of the more modern approach of having a fixed window with a navigation bar on the side. Also, the system was not logical to him. For example, all of his posted messages, no matter where they were posted, would show up in his Inbox. At first he thought he made a mistake, posting the messages in the wrong place, but later he found this was how the tool was designed.

Even though Jack did not like the tool, he had to use it. He compared using Teachnet to driving a rental car:

> So in my mind I thought it was a rental car. I travel somewhere and I have to rent a car and I may not like it and it may not be very good, but I need a rental car, that's what I use. And when I'm done, I don't want to use it again.

Teammates

Jack had teammates from various backgrounds: both higher education and K-12, both faculty and administration. His teammates impressed him since the beginning of the course, and he still felt the same toward the end. He felt that he had good teammates, and that the group worked together very well. Everybody was respectful of each other's opinions, which was especially evident when there were disagreements.

> We were all really respectful of each other's opinions and tried to be inclusive about what everybody was doing …. We didn't agree 100% on everything every time, … but when we did have disagreements, we always tried to be respectful of people …. [We] offered an alternative or tried to explain why we think going one way versus another is preferable for a certain number of reasons, as supposed to just, "Well I don't like that, I want to do it that way."

Teamwork

Even though Jack got along well with his teammates and was happy with the group, he still didn't like group work and doesn't consider himself a "socialized" person. He prefers to work by himself because he gets more personal satisfaction out of the final product. If the product turns out well, then he can be proud of himself, otherwise he knows where he needs to improve and what he did wrong. On the other hand, in group work, everybody tries to accommodate everybody else's ideas and opinions. The resulting product is a compromise of everybody's ideas.

Changes of Perceptions

At the beginning of the course, Jack did not have many expectations; all he knew about the course came from the course catalog. By the end, he admitted the course was not what he expected.

One of the reasons Jack took this course was that he enjoyed his previous online courses, which focused on individual and self-regulated learning. Therefore, coming to this course, he did not expect to have due dates every week. He prefers to have a big project and have more time to work on it. A few weeks into the course, however, he realized that the course had frequent deadlines, which he did not like. At the end, Jack felt that the amount of work was reasonable, but he still felt that there were too many deadlines.

From the course description, Jack expected to learn about the processes and accepted methods of technology planning in a real-world setting. After a few weeks into the course, he realized that the course focused more on team processes than technology planning processes. He confirmed these thoughts again at the end of the course. Despite these differences from his initial expectations, he did enjoy the class content even though it did not directly relate to his field; the class focused on K-12, while Jack worked in higher education.

In contrast to Paul, Jill, and Teresa, who love collaboration, Jack prefers working alone. Yet, he was excited to have teammates from various backgrounds and

experiences. A few weeks into the course, he realized he did a lot of group work, which was different from what he initially expected.

At the end, he confirmed that the class focused on group work. However, he did not feel he learned about how to work in a group, since he felt he already had this knowledge. Also, what he expected to get from this course was concrete knowledge rather than building relationships in groups. And even though he enjoyed working with his teammates, who he felt were dedicated and considerate, he still prefers to work by himself.

Jack initially reported mixed feelings about the course communication tool, Teachnet. There were a number of aspects he did not like: messages could not be organized, it was not easy to navigate, and he was not familiar with it. He hoped to like it more after becoming familiar with the tool. However, at the end of the course he felt he still did not like Teachnet, because its interface was not logical to him.

Case Study Five: Linda

Profile

Background

This semester was Linda's first semester as a Master's student in the Curriculum and Instruction department. She was a full-time student taking a total of five courses,

and she had a part-time job during the weekends. She took this course to fulfill her course requirements and to balance her on-campus coursework.

This class was Linda's first collaborative online course, although she had taken three individualistic online courses from a community college before. These online courses consisted mainly of email correspondence between the instructor and the students. There was no interaction among students, so she did not know any of her classmates.

These online courses followed the same format. First, the instructor would email her an assignment. Then, she would do the reading and email the instructor her summary and the completed assignment. The instructor would then give her feedback and credit, and send her the next assignment. At the end of the semester, she would go to the testing center in person and take a paper-and-pencil test.

Linda found that taking these online courses was convenient since she could work from home. Plus, she found them to be easy, so she took them to ease and balance her course load.

In terms of her technology skills, Linda felt comfortable with new technology, since she was in the first graduating class of the Laptop Initiative for Future Educators program. This program aims to prepare future teachers to become familiar with and competent in using technology learning tools in their teaching. Despite this program, Linda realized that there were many more things for her to learn about new technology.

Learning Styles

Linda considers herself an organized and structured person. She always plans ahead and does not procrastinate, because she does not like getting behind. Furthermore, she is tenacious and does not like to do things halfway. Therefore, she considers herself a perfectionist.

In terms of learning, Linda is open to learning anything new. However, she learns best from multi-sensory inputs. Also, she is a visual person and prefers to have visual stimuli. When it comes to work, she prefers to work alone. Yet, she does not mind working in groups and thinks she can do it well in such a setting.

Expectations at the Beginning of the Class

Course Structure

Course Format

Since Linda had only had prior experience in individualistic online classes and had never experienced a collaborative one, she did not feel she had preconceptions about this class. Yet, based on the instructor's reputation and her feelings after meeting with him, Linda expected the course to be good.

To begin with, she did not even know this course would be online. Once she knew this, she thought it would be even better because she could work on her own time.

> When I found that it was Web-based, it was wonderful because … it was on my schedule at 7-10 at night. And so that was just the first meeting, but I was

> thrilled to know we can use [the online communication tools] on our time on our schedule. So, that immediately gave me big points toward this course.

Once she found out the course was online, she expected that this course would be the same as her previous online courses: simply an electronic version of traditional instruction, with interaction mainly through email correspondence. She did not anticipate synchronous communication.

However, after a few weeks in the course, Linda thought this course would be challenging for her because she would have to work and collaborate with her teammates online. She hoped the course would be fun and enlightening for her, and she was excited to take the class.

Workload

After only a few weeks in the course, Linda realized there would be more work than she initially expected. However, at that point she still enjoyed the course.

Learning Outcomes

Linda considers herself an "open book" and was willing to learn new things in this class. Besides the course content, she anticipated learning how to work in a team. She felt this learning environment could be applied to a real-world situation.

Online Collaboration

Advantages of Synchronous Online Communication

By the time of the first interview, Linda had already experienced the chat tool. She very much enjoyed her first-time chat experience because it was new to her and it was so efficient. Due to its immediacy, Linda felt there was no wait time and she could get her questions answered "right then and there."

Challenges of Online Communication

Linda found that communicating and interacting with her teammates online was a challenge. She is a visual person, but there was no visual stimulus in online communication; without visual stimuli, the messages must be clear, detailed, and unambiguous. Since the course's online communication typically involved only black and white text, she found ways to show her personality, such as using colored text and different font styles and sizes. Linda explained what was missing in online communication:

> There's something about having a face-to-face communication that you just can't deny. I mean that you get [the other person's] personality, you get their likes, you get their interests that [is] sometimes … hard to convey in just black and white text writing.

Moreover, Linda found online communication to be sometimes unreliable. To reduce this problem, her group exchanged phone numbers for emergencies, so they could continue to work even if there were problems with the online systems.

Course Communication Tool: Teachnet

Like her other classmates, Linda used Teachnet to communicate with her teammates. As a well-organized person, she liked many features of Teachnet that helped her remember and organize her tasks, such as "red flags" to mark messages, "reply with quotes" to make following discussions easier, and the "task calendar" for managing tasks. Also, the messages were organized into folders, so it was easy for her to navigate to the desired messages.

Teammates

Linda hoped that her teammates would be as well-organized as her, would be punctual, and would get their work done on time. Also, she expected to have constructive feedback from her team members. She observed that instructors, especially in graduate classes, are always busy. Therefore, getting feedback from peers would be helpful to her, since she would not have to merely wait for feedback from the instructor. Furthermore, since she and her teammates were in the same situations, she felt that they could be honest and give her feedback to improve her work.

Teamwork

At the beginning of the semester, Linda was anxious about working in a group. She was excited to know that this course was offered online, but she was very anxious about teamwork because she did not have much collaborative experience.

> I was a little fearful, though, when I signed up for it. Not … that I was scared of the communication or technology, [but] I think it was more like the team, the team aspect of it.

As a kindergarten teacher dealing with young children, she was familiar with authoritative rather than collaborative relationships. Also, she did not think of herself as a "business kind of person" who had to collaborate and interact with colleagues all the time.

Before taking this class, she had been willing to work on smaller group projects, but this course features group work as a main component. She hoped she would be able to make her teammates happy. To keep up group accountability, she planned to send reminders about deadlines to her teammates and offer help whenever she could.

> I sent email reminders to [my teammates]. I'm not the leader of our group but I just help with [my teammates], keeping [in] writing contact with everyone. And so I email responses to every team member …. I find … that keeping contact with the team members who might be a little slower to contribute, it keeps them accountable, and they like it too because it reminds them, because everybody's lives are so busy. Especially being a graduate student, you have a full time job. Most people do [have busy lives].

Perceptions at the End of the Class

Course Structure

Course Format

Linda thought that the online format of the course was useful to her because it helped to free up her time:

> I didn't have to sit in classes. And so therefore it did free up my time so I can work in the evenings, at night, at home, and that helped.

Also, she liked this kind of learning environment. She thought a collaborative online format would be good for anybody who was not a "people person," because there was no face-to-face interaction and no "hanging out" after class. Therefore, everybody only worked together online to share ideas and input. There was no "recreational-type or hanging-out-type atmosphere."

Course Activities

At the beginning of the course, students were given activities so they could get to know each other. At that time, Linda did not quite realize the importance of doing so. However, at the end of the course, she thought these activities were really helpful for team building.

Workload / Time Spent

Linda found the course very challenging, due to the workload and lack of face-to-face communication. The workload was intensive. Toward the end of the course, Linda estimated she spent about 50 hours per week to finish her tasks, but she thought it was worth it. She suggested that anybody who wanted to take this course should expect to spend 25 hours per week for the course. Even though she prepared to work a lot, she was still surprised by the workload, especially the constant deadlines. She wished the deadlines were spaced out more.

Instructor Accessibility

Since this class was Web-based, she did not get a chance to meet the instructor the way she wanted. Although there was a Webcast once a month where the instructor and on-campus students such as Linda could meet face-to-face as a group, Linda did not feel it was the same as meeting with the instructor in a classroom context, every week. Linda compared the Webcast to a classroom learning environment:

> [The Webcasts] are so timed and they are just scheduled and you know you're being filmed. So it takes away that kind of … comfort factor [where you're] just in a classroom, no recording, no films, no cameras, and then you're just talking about things. [In a traditional classroom] you can be more free with your opinions, and you can be more free with your questions, but [during the Webcast some people] are too embarrassed to ask [questions] for the sake of looking stupid on camera.

As a result, it took more initiative for students to seek out information from the instructor. The confident students would not have a problem asking questions, but the shy students would just sit there and listen. Luckily, she was able to attend all the Webcast sessions on campus, but she believed that those who lived too far from campus would not get a chance to get to know the instructor very well. This was very unfortunate, because Linda felt that with the instructor's experience and knowledge, the instructor had much to offer the students.

Learning Outcomes

Linda felt that she learned a lot from this class. At the end of the class, she was confident in her ability to create a technology plan. She learned a lot from the course's guest speakers as well as from her teammates' different perspectives.

Online Collaboration

Challenges of Online Communication

Linda felt that the amount of communication required by a collaborative course is excessive. Even though online communication is convenient and time-saving since there is no need to commute, there is a lot of "wait time" in online asynchronous communication. Also, in synchronous online communication, Linda felt there needs to be a specific time when team members can meet together. This caused a scheduling problem, especially when everybody's schedule was tight. Hence, to make good use of chat time, each team member in Linda's group came to the online chat well-prepared. Everybody did their part individually prior to the chat, and then prepared to share what each person found during the chat. Linda explained the chat routine for her group:

> You need to come prepared. You need to come with something to say and also not just prepare on your end, but had you read everybody else's input, and are you listening or reading everybody's input and evaluating it because … [you have] to validate what they have done too.

In addition, Linda observed that online communication lacks physical responses and expressions, which can facilitate close relationships.

> So when you take that personal perspective out of it, you're not acting face-to-face with them, you'd rather just [say], "What do we have to do, what are we going to talk about?", boom, "Let's get it over with and get done, so we can get on with other things."

Teamwork

After her experience with group work this semester, Linda felt that effective communication and accountability are very important factors for successful teamwork. Regarding effective communication, if any team members cannot communicate effectively or are not considerate of others' input, then problems will occur, or at least the group interaction will not be positive. Linda gave an example of a communication problem in her group, when a team member did not try to communicate her ideas with the team and did not want to compromise:

> She was very [terse]. With feedback, she [would say], "No that's not good; you need to go this route." And we'd [say], "OK, how and why?" And she was very succinct and she was very kind of black and white….

Linda also stressed the importance of accountability, giving the example of a team member who, for personal reasons, dropped out of the course in the middle of the semester when deadlines and workloads were increasing. Linda was disappointed and upset by this because it was very sudden and the group was not prepared for the situation.

> And she never emailed us and apologized to us. I mean, she gave like a sentence …: "I apologize for the inconvenience that may have on you." … that's not enough.

Before this happened, Linda felt that her group worked well together and everything was going fine. Accountability had been established within the group, and everybody knew that the team's success depended on each member's contribution. However, when that team member dropped out, the system derailed.

> Accountability was there and we knew we could depend on her, but all of that that had been built up and established, that ground work … from day one was just completely train wrecked…with her just pulling out and just [saying], "I can't do it." And so that left us having to backtrack.

With the loss of a team member, everybody had to work harder to compensate for that person's part. Worse, the team member left suddenly and did not inform the rest of the team the details of what she had been responsible for. Therefore, when she left, the team had to redo all her work.

> She didn't give us any of her information so we had basically started from ground zero and built up, along with finishing our parts as well. So it just made us have a double portion of work.

Leadership Role. Linda was the team leader for two modules. As a team leader, she felt she really had to lead the group to beat the deadlines, especially when there was a sudden loss of a team member. Everybody had to finish the new tasks in addition to their current tasks. Linda stepped up to be the team leader and set an hour-based timeline for the group so that they could stay on track and keep up with the deadlines.

> I used my calendar and just had the things that I had to get done on time, and it wasn't … just a [day-by-day] timeline, it was an [hour-by-hour] timeline: "OK, by 3 o'clock have this done, by 8 o'clock have this done." So that [was] the way we kept the ball rolling.

Linda learned a lot from being a team leader. She learned how to communicate and collaborate with people online to get things done. She learned that she had to be firm and confident in what she was saying. For example, the group deadlines she set as a team leader were fixed; they were not flexible because she wanted to get the tasks

done on time. She learned to write messages clearly to ensure that everybody in the team understood what she was trying to say.

> It teaches you how to phrase and how to write your words when you're emailing back and forth or when you're in a chat room because they can't see your expression. You have to make sure your point is getting across through what you're saying. And so you have to be very clear and sometimes you have to be very firm in what you're trying get across …. For the sake of the course, for the sake of our success, we had to do it.

Team Relationships. For Linda, friendship requires effort from all parties. She did not mind taking an initiator role since she wanted to create a bond and be nice to her teammates. However, if she did not get a response or feedback after trying for a while, she would give up. Linda gave an example of the relationship between her and a team member to whom she tried to be nice.

> I … took the initiative, but then after a while I [wondered] what [I was] getting out of this; this [was] kind of a wasted effort. So I stopped emailing her with sweet friendly email. And I was just strictly about the course.

Changes of Perceptions

Linda considered herself an "open book" for new things. At the beginning, she did not feel she had any preconceptions about the course. She did not even know the course would be offered online. However, from the instructor's reputation and from meeting with him, she expected that the course would be good. Also, once she found out it was an online course, she thought the class should be easy and convenient for her schedule. Like the study participants discussed earlier, Linda also based her

expectations on her previous online course experience. She expected this course would be the same: individualistic and mainly email correspondence between student and instructor. Nonetheless, after a few weeks in the class, Linda realized it was not what she expected. There would be a lot of student-student collaboration in this class.

In the end, Linda still thought that an online course would be convenient for her because she could study and do assignments anywhere and anytime. However, she felt sorry that she did not get a chance to interact with the instructor as she wanted. Linda observed that meeting the instructor during the Webcast sessions about once a month was not the same as in a traditional classroom setting. She felt that the instructor had more to offer and wished she could have more contact with the instructor.

As for the course workload, near the beginning of the semester, Linda said there was more work than she originally expected, but she still enjoyed it. At the end of the semester, she thought that the course was very challenging due to the workload as well as the lack of face-to-face interaction. In fact, she was surprised by the amount of the work and the constant deadlines. She said she spent 50 hours per week toward the end of the semester. As with Jack, Linda wished the deadlines could have been spaced out.

Like the other study participants, Linda expected to learn how to work in a team and how to apply what she learned to real-world situations. At the end of the course, Linda had the same assessment as other participants: she learned a lot from the course content and from her teammates. She also learned how to communicate and collaborate online with a group, as she was hoping; she learned the most when she was a team

leader and had to be firm and clear in order to convey her messages and avoid any misunderstanding.

Even though Linda indicated she preferred face-to-face communication, she was open to enjoying online communication because it was new to her. Later in the class, she enjoyed the first online chat because of its efficiency and immediacy, and there was no need to commute. She learned that everybody should come to chat well-prepared to make the chat effective. Unfortunately, Linda ended up finding online collaboration very challenging, due to the lack of context cues, scheduling conflicts in synchronous online communication, and wait-time in asynchronous online communication. Moreover, she felt that the lack of physical responses and expressions in online communication prevented close relationships among team members.

Regarding teamwork, Linda was anxious about working in a group because she did not have much collaborative experience, but was instead more familiar with authoritative relationships at work. Despite this, she was very positive in hopes that she could make her teammates happy and help keep the group accountable. In return, she expected her teammates to be honest, well-organized, punctual, and willing to give her constructive feedback.

At the end of the course, Linda thought that the introduction activities at the beginning were very helpful for group work because they provided opportunities for the team to get to know each other. Also, she expressed disappointment with one of her teammates who dropped the class in the middle of the semester, without advance notice.

To Linda, effective communication and accountability are very important for group work. The teammate's disappearance derailed the group accountability her team once had. Finally, she felt that for good teamwork, teammates should be considerate of each other's input and be willing to communicate and compromise.

Case Study Six: Robert

Profile

Background

This semester, Robert was a full time Master's student in the Instructional Technology program. He was taking two other courses in addition to this course, and had never taken any online course before. He had three reasons for taking this class. First, he needed this class to fulfill his course requirements. Second, he was interested in the course content. Since he had had experience in business management, he wanted to see how it compared to instructional technology management. Last but not least, the course time fit his schedule.

Even though he had never taken an online course before, Robert had taken a distance learning course. He emphatically did not enjoy that course: "I found that it was the most painful learning experience of my entire life." He found that the course was not well-structured. Students received poor-quality course materials: textbook, workbook, CD, and cassette tape. They were then expected to study on their own

individually and then take a test at the end. As a result of this experience, he gave up and later retook the same course on campus.

Robert does not consider himself to be very technically savvy. He understands the social context of computers, such as their development and history, and how to operate them, but does not have advanced software skills.

Learning Styles

Robert prefers face-to-face over online communication because the former is verbal, live, and immediate. He is worried about text-only communication because he does not know what the others are thinking of him when they read his messages, due to lack of eye contact and physical cues. Also, since feedback is not as direct and immediate, he feels he cannot react or adapt his behavior.

> When I type and I set forth an idea, it's just hanging out there in space until I get their reply, which might mean immediately, might be 12 hours later. And then I get to worry about my idea, which is, if everyone's gonna think I'm an idiot …. When I can talk to somebody, if I see they don't like my idea, well I can jump on that and change it.

Robert says he has ADD (Attention Deficit Disorder), so he learns best when he receives multiple sources of input, such as visuals and sounds.

> If I hear a voice and then I'm reading, where I hear a voice and I see a picture, it just sticks with me a lot better.

Before this course, Robert had had no experience in either collaborative learning or collaboration at work. Most of his previous work experience was in a hierarchical organization, which he feels was not real collaboration. As a result, he thinks he works

better alone. However, he loves to share information with others even though he has experienced in the past that a more knowledgeable person can become impatient working with him.

In a learning environment, he prefers to have constant access to materials and resources. For example, in an online course, he would not want to be away from his computer for long periods. And despite his previous experience with the distance learning course, he feels that he prefers self-learning.

Expectations at the Beginning of the Class

Course Structure

Course Format

Before registering, Robert did not know that the class was offered online. From the course catalog description, he thought it would be a face-to-face course with a three-hour lecture every Monday. Once he knew the course was online, he thought this course would be convenient, since it did not require meeting at a specific place and time every week.

For Robert, an ideal online course would be a combination of face-to-face and online aspects. He wants the class to meet in-person once a week, but he also wants to be able to control the flow of information and retrieve all information presented in the class at his leisure. For instance, in this class, lectures were recorded and posted to the

course Web site, so he could replay a lecture as often as he wanted, instead of sitting in the lecture and having only one opportunity to understand it.

Workload

After being in the course for a few weeks, Robert found that the course was not as easy as he first thought, especially in terms of the amount of work. There were due dates which were not strictly on a weekly schedule; there could be multiple deadlines per week.

Technical Challenges

At the very beginning of the course, Robert found it awkward to get used to the course communication tools: Teachnet and Blackboard. Unlike in a traditional course where he could just open a textbook, look at the table of contents, and read the introduction, he had to first get familiar with the tools used in the course. He had to spend more time to figure out how these tools worked. Robert expressed his feelings about setting up the tools and getting familiar with them:

> I'm not accustomed to everything that's necessary to set myself up in the class and to find what I'm working for, which I'm finding … awkward. I'm not finding the smooth flow there. It took me quite a few days just to figure out the difference between the login on the Telecampus and the login on the FirstClass client, to figure out what the difference was between them and how they fit together.

Because of these difficulties, he wished there would be a quick start guide with clearer instructions on how to set things up and how the software tools work together.

Online Collaboration

Challenges of Online Communication

When asked about online communication, Robert foresaw difficulties. He felt this kind of communication has only text, with no sensual or contextual cues; this text would have to be as self-explanatory and direct as possible, or it could cause confusion and misunderstanding. He thinks that people communicate differently when they talk face-to-face and when they type online:

> I think as soon as people go to touch the keyboard, they don't write like when they normally speak to another person. They go into a different mindset, which is their writing mindset. And as a result, I don't know if you're getting a clear communication or a less clear communication, but I'm fairly certain that you're getting a different communication than [you would] get if you were to exchange ideas verbally with each other.

Teamwork

Lack of Collaborative Learning Experience. Robert was concerned with the fact that the class emphasizes collaboration. He was afraid he might not be a good team player, since he had had very limited experience working in a group. In fact, his education was in learning environments where competition was fostered, rather than collaboration.

> I grew up in a world where people didn't learn in teams, that wasn't part of my education …. Everybody was competing against everybody …. There were almost no group projects when I went to school.

For Robert, working in a team was challenging. Besides having limited experience in group work, his work experience featured a hierarchical setup: he was accustomed to being the boss and giving orders, and not listening to what other people

would think or want. Therefore, he was apprehensive about dealing with teammates when disagreements occur, about how to compromise and not hurt anybody's feelings.

> I think one of the challenges is for me to change my expectation. Having been a leader in businesses that I worked in, I expect everybody to think my way. And, now I have to do things the way everybody agrees to, which is fine, but as an example if I think something is important and no one else does, I'm not sure whether to press the point, … if I should just let it drop or I should try to push it some more and explain my point of view. So, I'm really not quite sure what would be the appropriate way to handle those situations.

Negative Collaborative Learning Experience. Besides the lack of collaborative learning experience, most of Robert's previous teamwork experience was unpleasant. He felt unwanted because of his age and appearance. Robert recounted his experience as an undergraduate:

> When I went to the university, we had some group projects in the last couple of years in undergraduate school, but that was completely new to me. You know, I've never done that before. And, I'm trying to think of the team I worked with, when I had teams in the classroom that never worked very well. Mostly, because I'm an old guy, I'm an old fat guy, people would stay away from me and [not] want to be on my team.

Lack of Online Collaboration Skills. Robert believes that people who are good at working in groups online have to have certain skills and personalities, which he feared might not match him well. However, he hoped to learn how to collaborate from this team experience.

> It's just a particular set of personality characteristics that allow them to excel in certain areas. Some people are good at talking one-on-one to people. Some people are good at talking to a room full of people, but they're terrible talking one-on-one to people. And, I think the same thing is true with online collaboration. I think some people are very good, I think some people must be

> very good at doing that. And I guess I will … learn from them and take my cue from them and see if that's the way it works.

Perceptions at the End of the Class

Course Structure

Course Content

Robert thought that the course content was detail-oriented and covered a much wider area of knowledge than he expected. Actually, it provided a great deal of information, so much so that he felt overwhelmed. Robert felt that, in a real world situation, he would go see experts who could give him direction and help narrow his choices, to target the resources to his needs, instead of being overloaded with copious information.

> There was too much input coming in. I think in a real world situation, you'd be meeting with some people who are experts [at] doing this. You would seek them out. They would tell you what they had learned, the best places to go to, you know, the two or three or five or ten, but not 40 different places to go to. And then you'll be able to go back to them and they would kind of guide you through. I think here we were more left to our own devices.

In addition, Robert thought that the information provided by the course should be accessible from the very beginning, rather than be doled out throughout the semester. In the real world, Robert feels the information will be available at all times, instead of coming in incrementally or in sequential order. He wished he could access the information and resources any time he wanted, which he feels would be more helpful and authentic to him.

Instructor Accessibility

Robert admired the instructor and felt he was the expert in this field. However, he wished he had more direct contact with the instructor, which would make the course more enjoyable. He thought this type of course was more convenient for the instructor than for the students.

> I think the course in some ways serves [the instructor] more than serves the students, because once [the instructor] got it up and running, [the instructor] can do the same thing [year after year], and this course is kind of on automatic.

Workload / Time Spent

In terms of workload, he found that the course was very demanding. It was harder than he expected. There were many assignments and frequent due dates. Robert stated that in the real world, there would not be deadlines as often. He wished there were fewer assignments. Due to the heavy course workload, Robert felt that he could not fully appreciate the course.

Moreover, Robert thought the course was time-consuming. Since the work was collaborative, where everybody in the team was interdependent, Robert could not put off his work. He felt that he had responsibility toward the team. Therefore, he had to allocate a lot of time for this course. He estimated he spent about 20-30 hours per week for this course, so he did not have enough time and energy left over for his other two courses.

> I had three classes; I would say that [this] class probably took 60 or 70 percent of my available intellectual and time resources. It sucked up most of my

> resources. So I didn't give as much time as I should to my independent study course. [ITPM] wouldn't allow me as much time as I need to fill my Constructivism course …. And because I had teammates, that [demands] that you be responsible not only to the course [and] to yourself, but to your teammates. So you can't put your responsibilities off as easily as you can as if [it were] just you doing the course.

Learning Outcomes

Robert learned a lot from this course, more than he expected. This was one of the reasons he liked this course. He learned about the real process of technology implementation in schools and about grant proposal writing.

> I learned a lot about working with people in teams. I worked with a lot of people before but it's been a very hierarchical structure, traditional business structure. So I learned a lot that way. And I learned a lot from the course work. I learned a lot about the events that take place if you're going to introduce technology into schools, how to plan for it, the stages that are necessary.

In addition to course content, Robert also learned how to work in a team. Robert felt that learning how to work with other people was invaluable to him, since he did not have much experience working in a group before. He learned interpersonal skills from working in an online team, where there were no visual cues.

> I would rate overall on the scale of 1-5 and I had to say it's a 5 in terms of a positive experience because I learned a lot. I learned how to do something I've never done before. I learned how to work with people online. I learned how to be more polite. I learned how to stay back and listen to a conversation that was going on. I learned when we can't see body language, when you can't see people's faces, it's hard. So you learned to use other senses.

Online Collaboration

Course Communication Tools

Robert reflected on the beginning of the semester when he had a hard time with the course's communication tools, Teachnet and Blackboard. He wished the instructions introducing the tools would be clearer and mention how they work together. Robert felt there should be some "comfort time" to let the students get familiar with the tools before they move on to the assignments.

Online vs. Face-to-Face Communication

Robert prefers to communicate and interact with people face-to-face rather than online. He has always felt that online communication is not a complete communication experience due to the lack of gestures, appearance, etc. For him, online communication is just "words on a blank screen." Therefore, Robert believed that it would have been easier to communicate with his teammates in person. He mentioned that he had a good, positive relationship with those teammates he had a chance to meet on campus, more so than those whom he never met face-to-face.

> It's not a complete communication to me because you're not getting everything. You're not seeing if somebody's bored or whatever.

Comparing synchronous and asynchronous online communication, Robert prefers asynchronous because he is a slow typist. He thinks that some people are good at chatting, but he is not; he does not have the skills. Also, in asynchronous

communication, he feels that he has more time to think before responding, and there is no pressure.

Teammates

Robert felt that he had problems communicating with his teammates. He wished his teammates would be more honest. To him, being honest is more important than being nice. When there is a conflict, he believes that niceness should be put aside and everybody should honestly speak out, rather than remain nice and polite. He would rather hear "brutal honesty" than polite yet insincere feedback.

> My feelings might be hurt but I can take it. I would rather have that than somebody kind of handling me and stroking me and making nice and I'm never hearing anything … of what they're really thinking or feeling.

Teamwork

Since from his past experiences he was more familiar with working alone, Robert preferred that to collaborating with other people online. On the other hand, he thought it possible he might enjoy collaborating with others face-to-face, although he would have to experience that to know for sure.

Group Accountability. In his experience, group work in an educational setting is not the same as in a professional setting. In a real world setting, everybody takes the work seriously because they are doing it for a living. In an educational setting, group work is voluntary. It becomes very challenging when there is a team member who is not so responsible, because the burden will shift to other team members.

> If I'm in a company, and we're all earning our living by working together as a team, that's fine. You want to keep your job, you show [results] because we got to get this project done. But when it was a voluntary team and people didn't take it as seriously as if they were in a job, which is what I did [took the work seriously], then the ones who were more responsible get stuck from the ones are less responsible.

For example, at the final presentation, when he was the team leader, three of his teammates were missing. This situation made him worried and anxious. What made him really anxious was when one team member backed out at the last minute. This team member had told Robert she would take part in the final presentation, but later called and cancelled a few hours before the presentation. He would have felt better if teammates let the group know in advance when they could not be available and did their parts ahead of time.

Furthermore, when he was the team leader, he was disappointed when he did not receive the support he expected from some team members. In this class, the role of team leader rotated among the members from module to module. When he was a team member following a team leader, he felt obligated to be very supportive of the leader in order to make the team successful. Hence, when he was the team leader, he expected to get support from his teammates as well.

> That's why when [one particular team member] was team leader and we had to work to that one section…where [the leader] and I were online for like six or seven hours one night, I felt responsible to support her in the team by [staying up with her], to help make her successful. She didn't feel that same responsibility towards me [when I was team leader]. I just find that it's a very, very awkward situation.

Peer Evaluation

At the end of each module, all team members had to fill in a Web-based form to evaluate their peers. Robert got low ratings from this peer evaluation, even though he worked hard and thought he was nice and respected his teammates. He didn't think he deserved the low ratings, but his teammates evidently did not agree.

> I didn't think I deserved that because I worked real hard. I was always there and I did my best. I might not be smart, but I worked hard.

Changes of Perceptions

As with Linda, Robert came to the class not knowing this was an online course. Once he found out, he thought it would be convenient, because there was no meeting every week at a specified time and place. On the other hand, he preferred to have a combination of face-to-face and online interaction. After the first few weeks, Robert found the course was not as easy as he thought, and he noted that there were many more assignments than he initially expected.

At the end of the semester, Robert confirmed his primary thoughts about the course workload. He agreed with Linda and Jack, but to a stronger degree. To Robert, the course was more time-intensive and demanding than he expected due to the collaborative aspect. Also, there were so many deadlines that he felt it prevented him from fully appreciating the course.

In addition, in the end Robert felt overwhelmed with the information provided in the course. He thought that in the real world he could receive directions and help to

narrow down his choices. Also, he wanted to have information accessible at all times, rather than having it doled out a bit at a time. Moreover, Robert concurred with Linda in wishing he had more direct contact with the instructor. He thought this type of course was more convenient for the instructor than for the students.

Like the other study participants, Robert expected to learn about technology planning and management. Robert also expected to learn how to work in a group. In the end, he was satisfied with his learning outcomes; he learned more than he expected from this course. Not only did he learn the course content and technology plan proposal writing, but he also learned interpersonal skills and how to work in a team.

From the beginning, Robert had problems with the communication tools used in this class, Teachnet and Blackboard. Hence, he wished he had quick-start instructions on how to set them up and how these tools work together. At the end of the semester, he still felt he had a hard time with the communication tools. He suggested the tools needed clearer instructions, and the course needed to provide "comfort time" for students to get familiar with the tools.

Unlike Jill, Paul, and Teresa, who preferred online communication to face-to-face meeting, Robert felt worried about communicating online. He believes that communicating well online requires skills and personality characteristics which he does not have. Since it was text-only communication, he felt online communication was difficult.

At the end of the course, he reported that he still preferred face-to-face communication to online communication. To Robert, it was easier to communicate in person. He felt he did not have the skills for online communication, and he missed having gestures and other visual cues. In fact, he found that he had closer relationships with on-campus teammates than with off-campus ones. This is in line with the other study participants' observations as well.

In terms of working in a group, Robert agreed with Jack that he preferred to work alone because he was not familiar with working collaboratively with others. In fact, his limited experience working in groups before this class was not pleasant. As a result, he was concerned about working with others and was afraid he might not be a good team player. Moreover, he was apprehensive about dealing with teammates, especially when there were disagreements. Hence, he felt working with others was challenging.

At the end of the course, Robert still preferred to work alone rather than through online collaboration. His experience in the group was not ideal for him. He found his teammates tried to be polite, whereas he would have preferred them to be honest and sincere. Finally, one team member backed out at the last minute without advance notice. This hurt his feelings, and was one example of his not getting enough support from teammates when he was group leader.

Case Study Seven: Mickey

Profile

Background

Mickey is an international student. This semester was her second semester as a Master's student in the Instructional Technology program. She was a full-time student, and was taking two other classes in addition to ITPM. This was her first online course in the United States, although she had taken one online course before in her native country.

Mickey had a number of reasons to take this class. First, the material would be useful to her even after she graduates and returns to her native country. Second, she wanted to take a class with every professor in the IT program. Third, she wanted to have an online learning experience in the United States.

Regarding her previous online experience, Mickey described that course as "convenient, time-saving, and self-orienting." It was a Special Education class for college students. The entire class, about 50 students, met just once at the beginning of class to get the self-study materials. Students were expected to study on their own, then post their comments or questions to an online bulletin board. They then took a test at the end of the course.

The course was very individualistic. There were no collaborative activities, and students never even got the chance to be introduced to one another. There were no

opportunities for classmates to help each other. Since the students were supposed to study individually, and they didn't know each other well, the messages exchanged online seemed superficial and lacked relevance for Mickey. The course was self-paced, with no timeline or schedule, and Mickey found herself cramming everything at the end. She then took the final test and got credit for the class. She felt she didn't learn much from the course. Since students were graded not only on the final test but also on how many hours were spent online, many students simply logged on, went away from the computer to do something else, and then came back just to log off.

Learning Styles

Since she was accustomed to a "teacher-centered" learning environment, Mickey felt that she preferred a lecture-based class. She felt that a teacher-oriented class would be more organized. When she came to the United States, some classes included discussions among the students, which she found difficult to learn from. She also found it difficult to get the gist of class discussions. In a discussion-based class, Mickey found that sometimes students would talk just for the sake of talking; she found it hard to follow and get the gist of the conversation. However, she did realize that discussion was useful for advanced learning. All in all, Mickey prefers to study by herself first, and then ask questions if she has any problems.

Regarding her group collaboration experience, Mickey had had uncooperative teammates before, which ruined the teamwork. She felt that if she had good teammates,

she would enjoy working in a team, because then she would not have to do so much alone. Also, good teammates would offer different perspectives and supply more motivation.

Expectations at the Beginning of the Class

Course Structure

Course Format

Mickey derived her early expectations from the course syllabus and from talking with friends who had taken ITPM before. From the course syllabus, she learned that she would be in a virtual community and would work with teammates to design an instructional program for a school. Her friends also told her that the class would be tiring, demanding, and collaborative. She could expect to do a lot of reading, check and post messages constantly, and work collaboratively online with teammates. Therefore, she prepared herself to be in such a learning environment. In addition, she expected this course to be more organized than her previous online course.

Course Activities

Mickey liked the "introduction activity" at the very beginning of ITPM. It helped her to get to know her classmates and their personalities, and to feel less isolated.

> We know who we are going [to] study with, discuss [the class] with. So, I know I'm talking to a real guy. I'm not talking to a computer or a virtual guy.

Time Spent

Mickey thought she would have to spend more time in this class than native speakers because of her language deficiency. However, she had no idea exactly how much time she would spend; she guessed 5-6 hours per week.

Learning Outcomes

Mickey expected to learn how technology can be applied in schooling to enhance a traditional learning classroom, to promote student motivation, and to increase student performance.

Online Collaboration

Benefits of Online Communication

Based on the first few weeks, Mickey felt she preferred online communication, especially online chat, to face-to-face communication. She said that in online communication, she doesn't have to waste time with idle chit-chat, people get down to business more quickly, and her not having to commute is convenient and saves time.

> I think it saves me a lot of time. For example, I [chatted] with Kate and Becky yesterday at 3 pm. … I only spend maybe one hour on this and I'll be very concentrated on the chat because it's the only time I have to [work]. If I do this well at this time, I finish my work …. And, in online discussion, there will not be a lot of chatting, unmeaningful [talk] or "Oh, you look great. Your dress is very beautiful. You [don't] look very well. [Did] you sleep well yesterday?"

Challenges of Online Collaboration

Even though Mickey likes to communicate online, she realizes some drawbacks to online collaboration. First, it requires Internet access. Second, it is round-the-clock communication; team members must keep up with what is going on and check messages very often. According to a friend who had taken this class before, Mickey expected to have to check Teachnet every day to communicate with her teammates. Third, it is difficult to physically keep track of teammates that do not show up for chat, so members must rely on their partners to be responsible. As a result, Mickey wanted to have some face-to-face interaction, so the team members could get to know each other, place faces with names, and not feel isolated.

Perceptions at the End of the Class

Course Satisfaction

Overall, Mickey was satisfied with this course. Even though this class was very time-consuming and she had to spend more time on the course than she expected, she felt it was worthwhile. She decided she would like to take another collaborative online learning class. Compared with her previous individualistic online class, she felt less alone and was motivated to work more diligently.

> So for [an individualistic] class … because you're responsible for your own learning, … you only have to be responsible for your task. So we just postpone everything. But [in] collaborative learning you have to do things with others, so you cannot postpone everything because you'll affect others. So you'll do things more [diligently]. You'll work [harder] … Because it's collaborative learning I have to do things even [if] I'm in a bad mood. Sometimes it makes

> me do more things … because you can learn things from others, you do not feel alone when you are learning. Like in [an individualistic] course, you don't know what you're doing now. Sometimes you have no idea what to do, "What should I do?", but [in] collaborative learning someone must know what should [be done], and you can ask them.

However, Mickey did have a concern about this learning environment. Since collaboration requires teammates to be so accountable and responsible, Mickey was worried about having uncooperative teammates in future courses, which she had heard was a problem in other groups.

Learning Outcomes

In the first few modules, Mickey learned mainly from the course reading, because most of the tasks did not require substantial collaboration; she just did the reading, wrote her reflections, discussed with the group, and submitted the work. By the last few modules a lot of group collaboration was required, and therefore Mickey learned a lot from her teammates, unlike in a traditional class where she mainly learned from the teacher. In one of her end-of-module reflections, Mickey said that she learned more than she expected because of group collaboration and interaction.

> I learn a lot from my teammates, because usually most of the time in [traditional classes] we learn a lot from teachers …. I learn a lot from [teammates] because whenever I ask questions, somebody must know it.

Online Collaboration

Online vs. Face-to-Face Communication

Mickey felt more comfortable communicating and speaking up online than she would have face-to-face. In a face-to-face class, she wouldn't speak up or ask questions for fear of interrupting other classmates and because her English is not good. On the other hand, in online communication, and in particular online chat, she could ask questions in the middle of a conversation without disrupting the flow of the conversation. She found it easier to follow a text-based conversation.

> In [a] traditional classroom, everyone takes turns, and for international students usually you don't have time to [interrupt a conversation] because we're a little slow in English. But in online chat I can type my questions [and] problems, and someone will notice, and someone will reply [to] me, while their talking … still continues. So I think it makes me feel more comfortable to ask questions.

Course Communication Tool

Sometimes Mickey had problems communicating with her teammates, because she did not know how to express her thoughts in written words, especially in real-time communication. She suggested that there should be a better communication tool than the one provided in Teachnet. For example, when the group is chatting and somebody posts a file in the conference area, everybody has to go to the conference area to open that file, which is inconvenient. On the other hand, in MSN Messenger or other chat tools, the user can click on the file and open it while still in the chat environment. Also, Mickey suggested for the tool to support web cams so users could see each other while chatting.

Teamwork

Mickey's team consisted of members with various specialties and backgrounds. Since she interacted a lot with her teammates, she did not feel that she was learning alone, and she felt that she learned a lot from her teammates. Because of this, and because she felt she was doing something meaningful with her group, she preferred to work collaboratively rather than individually.

Mickey felt that her team worked well together. However, as mentioned in Linda's case study, there was a situation that brought the whole team even closer to one another: in the middle of the semester, one team member dropped the course. This meant the rest of the team had to put in more time and effort to compensate for the lost team member and complete the work, which everybody was willing to do. They communicated and collaborated more frequently. As a result, the team members felt even closer to each other.

Based on this experience in online collaboration, Mickey had a tip for working in groups: team members who have to submit an assignment late or will not be available for a while should let the group know in advance. She had more advice for making good use of online chat time: each team member should finish the assigned task before the chat and be prepared for a discussion.

Team Relationship. Mickey felt that everybody in her group was supportive and encouraging. Everybody shared personal stories or made good-natured fun of each

other when they met online. Mickey thought that this helped to build friendships and bond the group together.

> Although we had much [less] face-to-face contact in this class than [in an] on-campus class, I feel that we care even [more] through online [communication].

Furthermore, because of the nature of a collaborative online learning class, there was communication and collaboration going on almost every day. Everybody felt close to each other and looked after each other. For example, when one team member seemed to disappear for a few days, the rest of the team took notice. Another teammate decided to call this member to see if she was doing all right. Mickey compared this collaborative online relationship with a relationship in a traditional classroom:

> I think because [this class is] online, sometimes we will check [in every] one or two days. So if anyone [disappears] you will notice: "Oh, she [disappeared], what's wrong?" Sometimes you'll worry about her. But in [a] traditional [class], you see your classmates once a week, so sometimes there's not [a] very close relationship, but I think [in this type of] course, we have [a closer] relationship with each other.

Changes of Perceptions

Mickey's expectations toward the course were based on the course syllabus and talking to friends who had previously taken the course. Based on these two sources, Mickey expected to work collaboratively with teammates in a virtual community designing an instructional program for a school. She also expected to do a lot of reading. She also expected the course to be well-organized, though demanding. Due to

her language deficiency, she expected to spend more time in the class than native speakers.

At the end of the semester, Mickey reported that the course was really demanding, but it was worthwhile and meaningful. Like every other participant except Jack, Mickey felt that she learned more than she expected from the group collaboration. She learned from both the course reading and the various backgrounds and expertise of her teammates. As expected, she interacted with her teammates a lot. Compared to her previous online learning experience, which was individualistic, she was more motivated and felt less isolated.

Mickey prefers to work collaboratively rather than individually on the condition that she has good team members. Fortunately, her teammates in this class were supportive and encouraging. She felt her team worked very well together. Even though one of her team members dropped out in the middle of the class, Mickey felt differently about it from Linda, who was also on the same team. Linda felt it "derailed" the team, but Mickey thought that the incident drew the rest of the team closer and made them communicate more to handle the leftover work. Of course, like both Linda and Robert, she would still prefer to have advance notice about any team absences. All in all, Mickey ended up having good relationships with her teammates. However, she was still concerned that future collaborative online learning courses could have uncooperative teammates.

From the beginning of the course, Mickey stated she preferred online communication since she felt more comfortable communicating and speaking up online. Nonetheless, she realized both the benefits and the drawbacks of this mode of communication. At the end of the course, she still preferred online communication, but like other participants she said she would like to have some face-to-face interaction so she could get to know her teammates better. Also, she would prefer to have better communication tools than the ones offered in this class, such as a tool that supports Web cams.

Case Study Eight: Janet

Profile

Background

Like Mickey, Janet is an international student. She is working on her Master's degree in Curriculum and Instruction. She had never taken any online course before ITPM. However, she feels she has adequate computer and Internet skills. While taking this class, she also took two face-to-face classes and worked part time as well.

The desire to learn more about instructional technology drew Janet to this class. She was interested in the course content because she witnessed the benefits of integrating technology into the classroom. Thus, she wanted to be able to take advantage of technology in her teaching.

Learning Styles

When learning a subject, Janet prefers to initially work alone because she needs time to digest and reflect on what she has learned before discussing it with other people. With the anywhere/anytime access of the Internet, she found that working in an online group sometimes limited her thoughts and opinions. To illustrate, when other people posted their opinions before she gave her own, those opinions sometimes limited or influenced her ideas. Also she felt that working in a group, she had to adjust her working style to suit the other team members. However, she realized that she could always learn from them. As a result, she preferred to have a combination of working alone and working in a group: first she would have time to study by herself, and later she would come to class or to group meetings.

In addition, Janet prefers to have a learning environment combining both lecture-based and discussion-based learning. This is because lecture-based learning is sometimes too boring for her, whereas discussion-based learning is sometimes too overwhelming for her. According to Janet, discussions can stray off-topic and be hard to follow. Moreover, sometimes, too much information is presented and shared at one time.

Janet had had little experience with online collaboration before taking the class. A few weeks into the class, she indicated that she still preferred face-to-face collaboration. She felt that in collaborating online, she missed the body language and

eye contact she would have in face-to-face settings. The loss of physical cues made it harder for her to understand or follow her teammates' ideas.

Expectations at the Beginning of the Class

Course Structure

Course Format

Before the class began, Janet thought this class would be offered in a traditional setting where all the students regularly meet at a specific time and place. She did not even realize this course would be offered online and using such an innovative technology.

> I thought [it was traditional and] that every student [would sit] in a class. I never imagined that [it was the] kind of course that we [wouldn't] have to show up every time and we [would] have computers in front of everyone in the class and have this kind of Webcast."

After she realized ITPM was an online course, Janet still would have preferred a classroom face-to-face meeting once a week. Also, she wanted printed materials and handouts, like in a traditional classroom, instead of having everything online. She felt more familiar with paper and pencil, especially when there were so many tasks to keep track of and deadlines to remember.

Instructor's Role

Being familiar with the traditional classroom setting, Janet wanted the instructor to be an authority figure. She believes that an instructor has more experience in guiding

students in the right direction, so that in online collaboration where teamwork is very important, the instructor should set specific rules for group work and assign who should take responsibility for which tasks.

Time Spent

Initially Janet planned to spend about 5-8 hours each week on this course. However, a few weeks into the course, Janet said she had already spent more time than expected. Mostly she spent the time to read, reflect, and respond to her teammates' contributions. She felt it took so much time for her because she had to take time to understand both the reading assignments and her teammates' messages before she could share her ideas with her teammates.

Learning outcomes

When finished with this course, Janet expected to have a general understanding and overview of the planning and implementation of technology in learning and teaching situations. She expected to learn from the course reading and examples provided in the class.

Online Collaboration

Course Communication Tool: Teachnet

To communicate with other people, Janet used Teachnet, the main communication tool for this course. Her initial impression of Teachnet, based on her

first few weeks, was that the tool was inconvenient since it had to first be installed. There is a Web-based version available, but she found it very slow. Therefore, she had to install the software on the computer she wanted to use.

> Yesterday I studied in [the library]. They didn't have FirstClass and I [had] to log on to Teachnet [Web-based version]…it's really, really slow [and] takes a lot of time for me.

Also, since there were so many messages posted on Teachnet, and Teachnet does not provide a way to arrange and organize the messages, Janet sometimes found herself lost among all the windows and messages.

> The emails in the folder, maybe … if it can be arranged in a more organized way it may help. …There are so many responses so … if everybody … doesn't specifically indicate what's inside their file, … it takes a lot of time. It just mixes up, you just reply to this, reply to this …. It just easily got lost …. Sometimes I just copied all of [the emails] down to another file and then read it through …; it's more organized.

Benefits of Asynchronous Online Communication

As a non-native speaker, Janet thought that asynchronous online communication was helpful and reduced the pressure on her. She had more time to think before giving any responses. Also, as a shy person, she felt less pressure because she didn't have to speak in front of people.

> … it will give less pressure on me because I'm not a native speaker …. Sometimes [I] cannot give [an] instant response, but if it's [an] online course I think I can have more time to think [it] over and [make] my response.

Challenges of Synchronous Online Communication

Janet also saw some drawbacks of online communication, especially synchronous communication such as online chat. Although online chat is fast and convenient, Janet felt that it was easy for her to get lost. Since she is a slow typist and the dialogue went so fast, sometimes while she was typing to respond to a discussion topic, the topic would change. As result, she thought she needed time to get used to online chat. Also, she thought it would be useful if there were rules for online chat.

> Maybe you're just still typing to respond to one answer and [another comes]. And then they raise another topic and they will shift to [it], and then the answer you're [typing is not] in time, and it seems like you're left behind but you still think about [the previous topic].

Teamwork

After discovering that she had to collaborate with her teammates online, she felt excited about dealing with team members she had never seen before. For Janet, this was an impressive new experience. However, Janet did not really have any specific expectations toward her teammates or group work.

Janet did have expectations related to the online collaborative aspect of the course, based on what she heard and from what she experienced during the very first weeks of the class. Janet was most excited about its convenience and having others to turn to for help. Janet felt that it was easier to arrange a meeting online than face-to-face, because an online meeting only needs Internet access and a specific time, whereas a face-to-face meeting requires the members to commute to a certain place at a certain

time. Even though she prefers working individually, Janet realized the benefits of online collaboration: she knows that she will always have someone whom she can turn to for help.

Perceptions at the End of the Class

Course Structure

Time Spent

At the end of the course, Janet reported that she spent more than ten hours per week on reading assignments, writing reflections from the reading, group chat, and responding to messages. She normally logged into Teachnet to check on the group at least twice a day, once in the morning and once in the evening. She found that she spent much more time on this course than she expected, but she said "actually I pretty much enjoyed it."

Course Satisfaction

Overall, Janet was satisfied with the learning environment. She enjoyed the learning process in this class, in which she really learned something and came up with a tangible product. Since the team came up with an authentic product that could be adapted for use in the real world, Janet felt that she accomplished something important and usable.

> I just like this kind of experience. Really, you have to work on a project or something, you go through everything. I think it's good; it offers me a kind of

> good feeling that you going through a whole process of something and you learn things. But from [other traditional courses], you always read something and write some paper and something like that, and you don't really know what you're learning.

Another reason she liked this course was the prompt and meaningful feedback she got from the teaching assistant. She also liked that the feedback was meaningful and constructive. As a result, Janet would recommend this kind of learning environment to her friends.

Learning Outcomes

Janet felt that she learned a lot from this class, more than she expected, especially about writing a grant proposal.

> I used to feel funding proposal writing [was] intimidating, since I have no such experience. Now I feel the confidence in me to deal with it after developing our funding proposal with my team members.

Two major sources of learning for her were the course reading and her teammates. The course reading provided her with content information as well as various resources for further information. At the same time, she learned about real-world experience from her teammates.

> I think I [learned] a lot from the syllabus reading. I [learned] a lot from the syllabus reading because they [provided] a lot of sources so you can find information, all sorts of information from this aspect, from that aspect. Then you can have different views from different [people]. And actually from my teammates, I also [learned] things from real life because they are real-life [experiences].

Online Collaboration

Online vs. Face-to-Face Communication

In a previous course, Janet and her team tried to arrange a face-to-face meeting for days and failed. Conversely, in ITPM her team successfully scheduled an online chat once a week. She felt that meeting online was convenient because she did not need to "be there." As a result of this experience, Janet now prefers online chat to a face-to-face meeting. However, chatting online and other online communication can consume a lot of time when team members do not prepare before the chat. She recommended that teammates plan ahead, read instructions carefully, and have an overall understanding of the instructions beforehand.

As with the other participants, Janet also realized that meeting teammates in person once in a while can improve relationships. Janet said that she felt closer to the on-campus teammates whom she had the opportunity to meet in person from time to time. Face-to-face meetings enabled her to get to know her teammates' personalities and characteristics, whereas she had only the names and her mental picture of the teammates she had never met.

> I think [I had a] more intimate relation with Nina and JR because we met on campus. This kind of face-to-face [meeting] also provides you more, because it's so concrete. You met a person, how she looks and then you know the way she behaves and the way she talks and then you feel intimate and feel closer. For the other two, you know I just know their names, Sara and Moon. I just imagine. It's all imagination.

As a result, to improve her chat experience, Janet wished she could see and hear her teammates while doing the chat. Adding a Web camera and recordable audio features would probably make the online chat more realistic to her.

Benefits of Online Collaboration

Janet reported that she enjoyed active collaboration, when everybody tried to contribute something to the group and help each other out, and when everybody consulted their resources to find out the answer to their questions.

> When we're doing part four, Technical Plan, part of Hardware Budget: as you know, it's really hard and I think we collaborated pretty [well] for that module. You know that JR helped me [in] dealing with the software part. We tried to find out things about those [computer] servers. Everybody goes to different sources for different information. I think that's more like collaboration. I really enjoyed that module, you know, that everybody would [be] actively involved in that.

Janet added that she would not have accomplished this much if she worked without her teammates' contributions.

> If it's individual…how can I come up with all those things? It's really out of [my] mind. That's too much. You can't think of all the things [you need to do].

Teammates

Janet would have preferred for her teammates to be more sincere and direct in giving comments or feedback. From her point of view, team members should carefully read each other's work before giving comments so that they can provide constructive comments. To Janet, the comments do not always have to be positive or nice. Sincere and constructive comments are more useful to her

Janet said she got positive responses from her teammates, so she assumed that she was doing all right in the group. Therefore, she found it interesting that her peer-evaluation scores were lower than she expected.

> I can see all the scores that the team made for me, and I just found that sometimes you feel ridiculous that they gave you [a] very positive response but their scores on you [are] pretty low. So, I don't know what's wrong.

It was hard for her when her teammates were too nice or too polite. She guessed everybody acted nicely due to the way the peer evaluation was structured: her teammates may have been trying to avoid being rated low in the category about communicating in a friendly tone. However, for Janet a friendly tone does not mean agreeing with other people all the time. Another possible reason for being too nice is that her teammates were afraid of offending the others. Since everybody in the group acted very nicely and politely, if anyone in the team acted differently, their peers might have felt offended.

Teamwork

Lack of Diversified Team Members. Janet felt that her team was not as diverse as other groups seemed to be, so they did not quite experience the full advantage of having diversified team members with various experiences in different fields. Therefore, when her group encountered a problem, they lacked a wide variety of inputs and perspectives in solving the problem.

> For other groups, I think maybe some of then have funding proposal writing experience, they have this, they have that. But for us, sometimes we met problems and none of us [could] solve.

Group Accountability. Even though her group collaborated well, Janet was disappointed when one of her teammates backed out at the last minute, missing the final class presentation. This was also discussed earlier in Robert's case study. To Janet, it would be understandable if a teammate had a good reason for not contributing or participating in a certain task, but this teammate should let the group know in advance so the rest of the group would have time to prepare for and handle the situation. It is very undesirable when a teammate commits to a project and withdraws at the last minute. Since the team's success depends on everybody's efforts and contributions, Janet suggested there should be rules or norms for online collaboration to ensure team members' accountability.

> Everybody actually depends on people's working styles. I think you have to set some settled norms [for people to follow]. And also I think we have to have a kind of rule that if you fail to do this or if you fail to do that, what are the responsibilities you have to take.

Changes of Perceptions

Before the class started, as with Robert, Janet expected this class would be the same as other traditional classes, in which she would meet her classmates at a specific time and place. Later on, she realized it was offered online. She also did not expect being required to collaborate with her team members. Even with the surprise in the beginning, Janet ended up enjoyed the class. She supported collaboration because it meant she always had someone to turn to.

Being familiar with a traditional learning environment, Janet expected the instructor to be an authoritative figure who sets rules and provides guidance to the class. At the end of the course, Janet was satisfied with the feedback and comments she received from the teaching assistant, although she still wished the instructor would set rules for group collaboration to ensure group accountability.

Janet took this class because she wanted to learn about technology planning and implementation. After taking this class, she agreed with the other participants in that she learned a lot more than she expected. Like the others, Janet indicated that she learned from both the course reading and her teammates. In addition, Janet was pleased with the group's final product, which was tangible and useful to her.

Unlike Teresa, Jill, and Paul, who had previous collaborative online experience and were prepared for a time-consuming and demanding class, Janet did not expect this class would be as time-intensive as it was. She planned to spend 5-8 hours each week, but ended up spending about ten hours per week. As with Mickey, who was also a non-native speaker, Janet felt she spent more time on the course due to her lack of language proficiency. As a result, in the end, she thought the workload was excessive and beyond her expectations.

At the beginning of the class, Janet realized that online communication is good for non-native speakers, although she indicated that she would prefer to collaborate face-to-face because she missed body language. Also, she felt that her thoughts were limited by others' ideas when they post messages faster than her. In addition, she

agreed with Paul and Linda that people need skills and time to get used to communicating online.

At the end of the course, even though she would still have liked to meet her teammates once in a while, Janet changed her mind and admitted that she preferred online chat to meeting in person because of its convenience. As others also mentioned, she suggested that everybody come to online chat well-prepared in order to save time. In addition, like the other participants, Janet said she felt closer to those teammates she got a chance to meet face-to-face. She believed that meeting face-to-face improved relationships with her teammates.

In terms of the communication tools, Janet felt the same as Jack toward Teachnet: the tool is non-intuitive and unmanageable. As with Paul and Mickey, Janet would have preferred that the chat tool include voice and images as well.

Once she found out she had to collaborate a lot, Janet agreed with Robert, who also had little previous online experience. They were both excited about the prospect of dealing with teammates. Other than that, Janet said she did not have any expectations about her teammates. At the end of the course, as with Robert, Janet said she wished her teammates would be more sincere and honest rather than just being nice and polite.

Case Study Nine: Peter

Profile

Background

Peter is a first-year Ph.D. student in the Instructional Technology program. This semester he worked full time while taking two other on-campus courses at the same time. He had never taken any kind of online course before.

There are two reasons he decided to take this class. First, the class time fit his schedule. Before enrolling in the class, he did not know that it was offered online. He figured this out by the time the class started, and it turned to be even more convenient for him not to have to come to class at a regular time. Second, he was interested in the issues involved in implementing and managing technology on a large scale.

Learning Styles

Peter is a goal-oriented person. Therefore, he feels that he learns better by having a goal set out and doing or producing something to reach that goal. He does not think that he learns very much just being in school; instead, he learns a lot from having different experiences.

In terms of working style, Peter prefers working alone to working in a group. If he has to work in a team, he would like to do it face-to-face, even though he is familiar with the Internet and can work with computers efficiently. There are several reasons

Peter thinks that face-to-face collaboration is more efficient than online collaboration. First, it takes less time. In a face-to-face meeting, everybody can sit down and talk to the point and get things done quickly. Second, there is no need to worry about slow typists or waiting for responses in asynchronous online communication. Third, if the conversation is getting off track, it is easier to draw everybody back to the point.

Expectations at the Beginning of the Class

Course Structure

Course Format

Before enrolling in the class, Peter did not know that it was online. Once he realized it was offered online, he felt that it would fit him better. In fact, because of the convenience and flexibility of online courses, he wanted to be able to take online courses every semester.

Originally, Peter came to the class expecting that it would be similar to a traditional online course where students read articles and engage in online discussion. He did not realize that a major component of the class required student collaboration to develop a large project. Once he was in the class and read the course materials, he found out that it was more collaborative than he expected.

> I didn't realize it was going to be as collaborative as it was. I thought it would be more along the lines of a traditional course where we're reading articles and [learning] information and maybe having some discussions online and stuff like that. I didn't realize there was such a large project element to it.

For Peter, an ideal collaborative online course features an authentic learning situation and good teammates. The learning context for ITPM is that everybody works for a hypothetical school to develop a technology plan. Peter did not feel motivated by this learning scenario because he always remembered that he was working for a fictional school, not a real one. However, he was motivated because he wanted to do well with his team.

After being in class for a few weeks, Peter found he liked how the information and tasks were presented because they were already prepared and accessible: he could look at the tasks in advance and be aware of what he had to do at the end of the module. Hence, when he would go back and read the presented information, he always had a goal in his mind and would look for how he could apply the information to the task.

Instructor's Role

From the very beginning of the course, Peter knew that the instructor did a lot of work up front, since this type of course requires a lot of development. All of the information and tasks had already been prepared for the students. Therefore, Peter expected that the instructor's main role during the course was to facilitate student learning and make sure the students stayed on task. He did not expect the instructor's role to be that of a traditional classroom lecturer whose main tasks include preparing each week's lectures.

> I really thought he would be more of someone who facilitates and keeps things moving along, and someone who sort of keeps you accountable for getting work done and staying on task. It's obvious that the instructor for this course did a lot

> of work on the front end and there's a heck of [a lot of] preparation on this course. I mean, it's just amazing how much, how well prepared it is. So I really didn't expect him to everyday give us information, having a long lecture, anything like that.

Workload / Time Spent

Peter expected the workload for this course to be the same as for a normal course. However, from what he observed from the course syllabus, the amount of work seemed to be spread out across the course, unlike other courses where a majority of the work or a big project would be assigned at the end of the course, requiring long hours in the last few weeks. Overall, he was not concerned that there would be a lot of work relative to the other courses he was taking this semester.

Even though this course did not meet for three hours each week like other traditional courses, he was prepared to spend that much time reading and working on the class activities. In fact, Peter felt that he could get the reading for the course done quickly because he was so familiar with reading information on the computer rather than in textbooks. Unlike other courses, he thought that this course would focus more on participation than on the reading. On average, he planned to spend 6-7 hours a week on this class.

Online Collaboration

Course Communication Tools

Like the other students in this class, Peter used Teachnet as the main method of communicating with his teammates and the rest of the class. Teachnet was a new tool

to him. However, after using it for a few weeks, he found that it was user-friendly and easy to navigate. On the other hand, he thought that Blackboard, where the class reading and other information resided, required too many steps before getting to the information. He also found it slow. Despite this, Peter perceived that Blackboard was also a good tool for class organization and setup.

Benefits of Online Collaboration

Even though Peter prefers working alone, he saw the advantages of working together online. First, if this were not an online course, he would not have teammates from different places and backgrounds who brought with them various experiences and viewpoints. Peter could learn from them through working together and by sharing experiences. Second, working in a group would push him to work harder since the group's success relies on each team member's contribution. Third, if he worked alone, he might skip or go through some important things quickly, instead of diligently going step-by-step through the tasks as he would when working with teammates.

Challenges of Online Collaboration

Nonetheless, Peter also realized the challenges of working with other people. Since the team's success depends on all team members, if one team member cannot get along with the others, it may impede the team's progress. Also, he was concerned about the lack of flexibility. If he works alone, he can do the work on his own time and can get it done whenever he is ready. On the other hand, with collaborative group work, he

has to rely on other people's schedule. Moreover, collaboration can be time consuming because everybody in the group has to reach an agreement before doing something.

Teammates

At the beginning of the course, Peter was nervous about his teammates because he had no idea about them except for their names on the class roster. Since he had to collaborate a lot with them, he was worried about his teammates' personalities and working styles. After a few weeks, Peter found that he was lucky to have hard-working, cooperative, and respectful teammates. He really enjoyed working with them. He stated that he would very much dislike the course and would not learn as much if he were not on a good team.

> Everyone always has positive ideas. Everyone is eager to contribute. And, everyone seems to stay pretty much on task. We have online chats and everyone is very respectful to each other and not in a fault kind of way, but everyone seems to really and genuinely be interested in what everyone else has to say.

Moreover, Peter was thankful for two of his teammates with previous collaborative online course experience. He felt they really got the group started, and since they knew what the course would be like, they kept the rest of the group on track. Peter believed that his group could easily fall behind if not for these two experienced teammates. In addition, they were also role models for the rest of the group.

> They really stepped up early and got us on track and got us going … I've taken a leadership role in one of the modules or in one of the chats or something like that. And it was because these people sort of showed us how to do it that … the rest of us have [been] allowed to move into a leadership role.

Teamwork

In terms of teamwork, Peter started the semester without a lot of expectations about how the team would collaborate. He perceived online collaborative work as more of a cooperative style of learning, with members working on their parts individually and then sharing with the team using a Web-based discussion board or online chats. Peter described how his team worked together for the first assignment.

> We would all write our version of the vision statement and then we would make comments on each other's work. And then together we would produce one sort of assignment, which is kind of what we did, but we've done more synchronous communication with chats and stuff like that.

Perceptions at the End of the Class

Course Structure

Workload

Peter felt that the workload for this course exceeded his expectations. He was fine with the amount of work, but he complained about the constant deadlines. Peter observed that the workload was spread throughout the course. There was not much work in the beginning, but it increased toward the end with a large final project.

Course Satisfaction

Even though Peter reported frustration working with some of his teammates, he liked the format of the course: there was no specific class time and he could work on his own time. Also, he learned a lot from the course. However, since the course

content focused on K-12 and Peter teaches ESL at the graduate level, he found the content was not directly useful to him. In addition, he felt that the course was focused on group work rather than content. In his opinion, an ideal collaborative online course would be more content-oriented.

He would hesitate to take this kind of course again or recommend it to anybody, mainly due to the constant deadlines. If he were to recommend this course to anybody, he would warn the person to prepare to spend a lot of time on the course. Nonetheless, Peter thought that this course was successful in motivating and engaging the students. He was surprised to see how seriously everybody took the project. Since the final project was to create a technology plan for a fictional school, not a real one, he had a hard time getting into it. On the other hand his teammates, as well as other groups, took this project as seriously as if they were developing a technology plan for a real school.

All in all, after the course was finished Peter felt that it was a really rewarding experience for him. If he were to design an online course, he would do many things similar to this class, such as the way the information and tasks were presented.

Learning Outcomes

Due to the nature of the course, which was time-intensive and demanding, Peter felt that he did not have time to learn as much. He further stated that he had to spend significant time simply figuring out how to accomplish his tasks and keeping up with his group, deadlines, and assignments. As a result, he found himself just focusing on

getting the work done on time, and paying less attention to the course reading. Even though he learned from doing the work, sometimes he felt that he just did the work for the sake of getting it done, rather than spending time and trying to get something out of it. He assumed some of his teammates were doing the same thing.

> I think in a lot of cases, just by doing work, we learn a lot. But sometimes I felt like I was really just trying to do what I had to do to get the work done, and focusing less on the reading, which was probably my fault more than it was the course, but I think I felt that happened a lot. And I felt like my group was doing the same thing. I can really tell that they were just doing the work as quickly as they could and getting it in, as opposed to really putting a lot of time on it. I think not everyone in my group, but certain [ones], felt the same way.

Online Collaboration

Synchronous Online Communication

Peter found that he preferred to communicate with his teammates through online chat, for several reasons. First, it was convenient. All team members, no matter where they were, could chat together without commuting to a meeting place. Second, he was good at typing and had no problem understanding a chat involving several people, so he felt comfortable with chat. Third, he felt that he could get things done faster in online chat because of its immediacy. On the other hand, it was easy to get off-track during chat; therefore he believes online chat is helpful for brainstorming, but not for something that needs a lot of focus and attention.

Peter's group did not have a regularly scheduled chat, because doing an online chat requires certain skills and may not be suitable for all personalities. One of his teammates said from the beginning, "I want this to be as asynchronous as possible."

Also, some of Peter's teammates were not comfortable communicating through chat. Most important, it was very difficult to schedule a time when everybody in the group could chat together. Even though there was no scheduled chat for the whole group, Peter had a lot of unscheduled chats with some teammates. Whenever he was online and had any questions, he would check to see if any of his teammates were online at the same time. Then, he would invite them for a quick chat.

As compared to face-to-face communication, Peter felt that the online relationships within the group were superficial. He thought that people would be more honest if they met face-to-face because everybody would get to know each other better.

> I think we probably would have been a bit more honest with each other if it was face-to-face. And I know that goes against what people think about online collaboration, where people all know you, so you're more honest. But I never felt like we got past this really kind of initial surface friendliness, "Oh great job and everything." Whereas when you're face-to-face…you get to know each other a little more. You can be a little more honest and say, "I don't like this. I don't think this is going to work"

Benefits of Online Collaboration

At the end of the course, Peter still preferred to work alone or in a smaller group than six team members. Yet, he realized that working collaboratively with other people helped him put more time into the work, because he knew that the other team members were depending on his contributions and he wanted the team to succeed. As a result, he felt he preferred a collaborative online course, rather than a traditional online course where students simply alternate between doing the reading and completing the assignments throughout the whole semester. Even though he had never taken a

traditional online course before, that kind of learning environment seemed boring to him. He felt that a collaborative course would make him more motivated and provide him deeper understanding of the material through working with other people.

> It seems where we were trying just to work, work, work and get the work done, at least because it was collaboration, you're really trying to put effort and thoughts into it. Whereas I think in that sense, in a more traditional sense, you're just reading and doing the work just to finish the course. And, it would take a lot of motivation to really try to get our deeper understanding, whereas I think probably the work that we did, we're sort of gaining the deeper understanding just because we put so much effort into it.

Teamwork

Unequal Group Contributions. At the end of the semester, Peter was proud of the group's final product. Nonetheless, he was not happy with his teammates, unlike at the beginning of the semester. There were six people in his team, though he felt that only three team members, including himself, did the work. The other three members did participate in group discussions, but they did not contribute to the group project as they were supposed to.

> I really felt like there were three of us that did the bulk of the work …. If I were to go to the document, I could point what the three of us did, and I really hate to say this, but I think it was probably about 85% of what was done. The other members were there and they were contributing to the discussions, but when it came time to really producing things from [the] document, I think we [three] really did [the whole group's work].

Of the hard-working team members, Peter was grateful to one whose experiences and contributions were very useful to the group. However, no matter how

he was feeling toward the teammates who did not contribute as much, Peter said that he had to be nice to them.

> You had to be so nice to the other members of the group and say, "Hey, can you get your stuff in?" And when you really want to just kind of beat them on the head and say, "Look, you're not contributing, and I wish you would."

Instead of bullying those teammates, Peter tried to encourage them to do more work by giving them feedback and suggestions, for example, "OK, thanks for doing this, but now could you add this? Or, could you include something else?" Most of the time, Peter would wait for someone such as the team leader to take action. However, if no one else stepped in, he would do so.

Peer Evaluation

Peter was disappointed with some of the peer evaluation results because he did not think that he deserved the low scores. What was worse, he figured out he was being given low scores by one of the team members who contributed little. He was upset about that because he thought it was unfair. Unfortunately, this situation happened in the middle of the semester, and it made him not want to work with that person.

> I would notice that someone was really giving me low scores. And it kind of [affects you] when you're doing work in a group, because [when] someone's posting, [you are wondering,] "Is that the person who gave me the bad scores? I don't want to work with them."

Nonetheless, Peter claimed he never used the peer evaluation as a tool to get back at the teammates who gave him low scores. Instead, he used it as a tool to reflect

the person's contribution to the group. He tried to be objective and reasonable: he gave low scores to those teammates that did not contribute as much to the group.

> I really wish I could have said to someone, "I don't feel like you're doing your part. We've put in a lot of work … for turning in [this] 8-10 page document, and you're turning in a paragraph." But instead we would never say that. You would sort of back off on the evaluation. And I've never made negative comments. If I had comments, I always tried to make comments and evaluations, and I always tried to make positive comments because I didn't feel like it would be helpful to really say something bad about [my teammates].

Changes of Perceptions

Before enrolling in the class, Peter had the same perception as Linda, Janet, and Robert: he did not know the class would be offered online. He was happy to find out because he expected it would be convenient for him. Even though he had never taken an online course before, he expected this course to be similar to other traditional online courses where he would not have to go to class and could work individually on his own time. Based on his perceptions of general online courses, he did not think that there would be a lot of work in this course. Furthermore, after reading the course materials and seeing the course structure, he expected the instructor to be a learning facilitator, not an authority figure.

At the end of the course, Peter said he still liked the online aspect of the course because of its convenience and flexibility. However, as with Robert, Jack, Janet, and Linda, Peter found that the course was very time-consuming and demanding, much more than he expected. The amount of the work was manageable, but there were too

many deadlines, which made him just concentrate on getting the work done on time instead of focusing on what he was learning. As a result, in contrast to all the other participants except Jack, Peter felt that he did not learn as much as he should have, for several reasons. First, the course emphasized group work rather than course content. Second, while Jack enjoyed learning some content outside his field, Peter said he was not really interested in the K-12 content of this course.

In terms of group collaboration, at the beginning of the semester Peter, like some other study participants, was very nervous about meeting new teammates. He revealed that he personally preferred working alone. If he had to work in a group, he preferred face-to-face collaboration to online collaboration. However, after collaborating with his teammates for a few weeks, he found that his teammates were very cooperative, respectful, and hard working. Plus, those teammates who had previous online collaboration experience served as role models for the rest of the group to learn how to work effectively in an online group. He felt motivated and was happy with his team.

When the semester ended, Peter still preferred working alone or in a small group if he could choose. Also, he still preferred face-to-face collaboration to online collaboration, since he feels that people can get beyond superficial friendliness and be more sincere and honest when they work together in person. Yet, he realized the benefits of collaborative learning: it motivates him and makes him work harder and gain more understanding. In fact, he found that preferred a collaborative online course

over an individualistic online one. As with Mickey, Peter felt this was a rewarding experience even though it was very time consuming. Unfortunately, by the end of the semester, Peter's attitudes toward his teammates changed, when he perceived that half the team did not contribute as much as they should have. Moreover, he thought it was unfair that he was rated low on the peer evaluation by these same teammates who did not do their fair share of the work.

Unlike Jack and Janet, who complained about the Teachnet interface, Peter stated from the beginning that he liked Teachnet. To Peter, Teachnet was user-friendly and easy to navigate. However, he did not like another course communication tool, Blackboard. He thought it was slow and required many steps to get to the page he wanted.

Chapter Five: Discussion

Introduction

The main purpose of this study is to examine the ways in which student expectations and perceptions of a collaborative online course change as a function of their experiences in the course. This chapter explores two central themes. First, student expectations affect their perceived experiences. Second, student experiences and their perceptions of online collaboration affect each other. This chapter concludes with implications for future research, implications for educational practice, and limitations of this study.

How Student Expectations Affect Their Perceived Experiences

Students derive their expectations of the course from two types of sources: external and internal. External sources include online information about the course and friends and rumors. Internal sources include students' own preconceptions, previous online learning experiences, and students' preferences and personalities. This section discusses how these sources affect student expectations and their experience in the class.

External Sources

Course information

When registering for classes, students can look in the course catalog and course schedules to find brief descriptions of courses to take. However, for some courses such as this one, *EDC 385G: Instructional Technology Planning and Management*, no description is available, and students must rely only on the title, instructor name, and meeting time to make their selection.

This course appeared in the course schedule in two different versions with different unique numbers, but with the same instructor. The first version was restricted to University of Texas Telecampus students:

> Not open to UT Austin students. Restricted to students registered through UT Telecampus. Student must be familiar with and have access to the internet. Taught as a Web-based course.

There was no class time and place specified. The second version did not appear to differ at all from a traditional classroom course; it specified the building, room, and weekly meeting time.

UT Telecampus students like Jack would choose the first version, and be aware that this was an online class. On the other hand, students like Robert, Linda, Peter, and Janet, who were not Telecampus students and who registered for the second version, expected this class would be similar to other face-to-face classes where they had to meet at a specific time and place once a week. Nevertheless, they were glad to find out later that this course was actually offered online, because they associated online courses with

convenience and flexibility. These findings are not surprising because studies (e.g. Daugherty, 1998; Hislop, 1999; Pedone, 2003) have often mentioned that online learning provides less restrictive environments and thus greater convenience. At the end of the course, they still agreed with their initial perceptions: they could work anywhere there was Internet access, they did not have to come to class every week, and they could work on their own time as long as they kept up with their group deadlines.

As to content, from the course title students expected to learn about technology planning and management. After taking the course, all study participants, except for Jack, reported they learned more than expected. This is consistent with prior studies by Hiltz et al. (2000) and Wu and Hiltz (2004) which indicated that using asynchronous online communication to work in groups increases student learning perceptions.

However, not everybody learned exactly what they expected either. For instance, Peter indicated that the course content focused on K-12 learning contexts, which was not of primary interest to him because he was an instructor in higher education. The course catalog did not provide information about the scope and content of the course. Misunderstanding or faulty expectations about the scope and focus of the course content may lead to student disappointment and unfulfilled expectations.

This also explains why most students, except for those who had previous collaborative online learning experiences, had no idea about the structure of this course, even after the first week or two. They expected it to be like a traditional online course, where they would work individually on their own and the interactions would occur

mainly between the instructor and students. They did not expect to work in groups, to work hard, or to put a lot of time into the class. This therefore surprised students who expected the class to resemble a correspondence course, in which students work on individually and at their own pace rather than working in groups, as noted in Howland and Moore's (2002) study. For instance, Linda took this course to ease and balance her course workload. It turned out she put much more time in this course than she initially expected. Fortunately, she enjoyed it and did not complain because she thought it was worthwhile.

One way for students to prepare themselves and have realistic expectations is to read any preparatory materials (Lawless and Allan, 2004). In fact, at pre-registration time, students could find all important information about the course from its Web site. The site contained detailed information about the course characteristics, assignments, and requirements. Yet, students were not aware of the Web site until the instructor sent out the first welcoming message shortly before the class began. Even if students were aware of the Web site during the registration period, it is questionable whether they would make a detailed study of the Web site and properly adjust their expectations before the semester began.

Friends/ Rumors

Students used another source of information to learn about the course: friends who had previously taken the same course. For instance, Mickey based her

expectations of the class from what her friends told her. Even though she had only taken an online class focusing on individual and self-learning, and never had experience in a collaborative online course before, Mickey was prepared to put in a lot of time being online and working in groups. She knew this class would be demanding, be time-consuming, and require a lot of student-student interactions. Yet, she was ready for it. This is consistent with Lawless and Allan's (2004) study. They suggested that students talk to other students who had already gone through the same experience in order to set proper expectations and thus reduce stress.

Along the same lines, based on their experiences in this class, students had suggestions to give to future students. Linda, for example, would recommend this class to any student who is "not a people person" since there was no "hanging out" after class. It is interesting to note that, whereas Linda thought this class was not appropriate for socialized people, Jack felt the opposite: that this class was not for him because he was not a socialized person.

Besides friends, sometimes rumors made students anxious about working in groups, even after they had positive experiences in group work in this class. Jill and Mickey showed concerns about having uncooperative teammates if they had to take another collaborative online course in the future. Even though they worked well with their teams, they heard rumors about other groups' unsuccessful group work due to uncooperative team members.

Internal Sources

Individual Differences/ Background

Students' previous experiences in online learning played a significant role in their expectations and perceptions of the course. Wu and Hiltz (2004), in their Online Discussion Research Model, included the number of prior online courses taken as one of the contextual variables that may eventually influence student perceptions. Arbaugh's (2001) study also showed that a student's prior experience with an online course is a strong predictor of student satisfaction with the delivery medium.

According to student demographic findings in this study, student online learning experience can be categorized into three groups: students with online collaborative learning experience, students with (individual) online learning experience, and students with no online learning experience.

The three students who previously took a collaborative online learning course, Teresa, Jill, and Paul, had positive experiences in the previous course. Therefore, they decided to take this class. They also brought with them the understanding of the characteristics and structure of a collaborative online course. These students understood that an online learning which emphasized collaboration would require more time and effort than a traditional online course which focused on individual and self-paced learning. Furthermore, they realized that they were expected to interact a lot with their team members using online communication tools. They set their expectations accordingly. Consequently, these students were not surprised with the course workload

and the amount of time they had to spend in this class. In fact, they reported that the workload during the beginning of the class was laid back and less than their expectations.

Students compared their experience in this class with their previous one. For example, Jill indicated this class was not as time-intensive as her previous one, especially during the beginning of the class when there could have been more "official collaborative activities." Jill related the amount of effort she put to the class with her learning outcomes. She felt she learned more than expected in this class. However, since she did not work as hard as she did in her previous class, she did not learn as much as she did previously either.

Besides having realistic expectations about the course structure and characteristics, students with online collaborative learning experience also understood and admitted that in this learning environment, the instructor role was not that of a lecturer who mainly dispenses information to students. Instead, the instructor role in a constructivism learning environment is more like a facilitator whose roles are keeping the students on track and monitoring their learning (Ally, 2004). Therefore, even though Jill would like the instructor to be an authority figure in class, based on her experience, she knew and accepted that this was not realistic.

As veterans in a collaborative online learning environment, these students had experience in online group work. They realized the value of positive interdependency and individual accountability. Since the beginning, they were hoping members of their

groups would bond and work well together. To accomplish this, each of these students volunteered to serve as group leader for the initial modules. They wanted to be a role model for the rest of the team and to establish communication and working rules based on their successful previous experiences, so that the group could be on track and work as efficiently as possible. Their leadership roles did equip the group for a quick start and set a good example for their groups. As Peter stated, his group might have easily fallen behind if not for his experienced teammates.

The other two groups, students with individual online learning experience and students with no online learning experience, had some similarities in their expectations. In general, these students perceived this course would be the same as other online courses they have had experienced or heard of. Their expectations toward the course, therefore, were based on their previous online experience. In his study, Wanko (2000) also mentioned that student expectations seemed to equate the online course with their online experience, such as surfing the Web and sending email. Therefore, they assumed the online class would not require high attention.

Students who had previously taken an online course where the major component of the course was individual learning expected few deadlines throughout the semester and a large group project in the end. Along the same lines, students whose previous online experience was simply an electronic version of traditional classroom learning expected this class to be the same. There was one exception, with Mickey: her friends' recommendations directed her expectations to be more realistic.

Most online courses nowadays still do not utilize the full potential of new technology to facilitate student learning. Although putting courses online can make them convenient, flexible, and more accessible, by itself this does not enhance student learning. Online courses might attract more working students who have limited amount of time, but these students will be sorely disappointed if they end up spending more time than expected due to faulty expectations about the nature of the course. Brochures about online courses sometimes advertise their self-paced learning and convenience. Hence, it is not surprising that students who have had no experience in an online course would expect this course to be the same as other online courses they have heard of. Consequently, when they were required to spend more time and effort in this class, they felt the class was challenging and sometimes frustrating. This finding complies with previous studies (Wanko, 2000; Howland & Moore, 2002; Kirtley, 2002; Lawless & Allen, 2004) which found that students expected to spend the same amount of time in an online course as in a traditional course. When their expectations were not met, their satisfaction level decreased. In addition, students in Bozarth, Chapman, and LaMonica (2004) indicated that time management is the most difficult aspect of online learning.

Students' own personal backgrounds may contribute to their expectations. For example, Peter, who had never taken an online course before, expected this course to be the same as other online courses. Yet, as an instructor in higher education, he had a greater understanding of the instructor's role. He did not expect the instructor to give lectures and pamper students throughout the course. Instead, once he saw the course

organization, he understood that the instructor had already put in time and effort preparing the course at the front end. Therefore, during the course, the instructor would be a facilitator who monitors student learning to accomplish the goals.

Preferences and Personalities

Students largely based their expectations of this course on their previous online learning experience. Yet, their personal preferences and personalities influenced their experience and perceptions of the class, and vice versa. Student learning preferences and personalities can be categorized into two groups: those who prefer to work alone and those who prefer to work in groups. In terms of learning environments, some students preferred to work online, whereas the others were comfortable when they meet with their partners in person.

Those students who strongly preferred to work alone felt collaboration was time-consuming and featured too many compromises. For instance, Jack declared himself a solitary person. He did not like working in groups at all. Jack felt that collaboration took up a lot of time, and he also felt he could not be totally responsible or proud of work resulting from collaboration since it was not exclusively his ideas. Furthermore, based on his previous online learning experience, he did not expect to work in groups as much as he did in this course. Thus, he felt disappointed when he found out this class emphasized collaboration. He insisted at the end of the course that online courses emphasizing collaborative learning were not for him. He would never

take this kind of course again. Nonetheless, Jack admitted his teammates were ideal. They worked well together. He was very pleased and satisfied with working with them. Additionally, he learned a lot from them. Jack's case is not surprising. It is consistent with McMurray and Dunlop's (2000) study, which found that even those students who thought collaboration worthwhile still sometimes preferred to work alone.

In contrast to Jack, Peter also preferred working alone, yet did not mind working in a small group. Similarly to Jack, Peter complained about the constant due dates in the class. As for group collaboration, Peter was very pleased with his teammates during the beginning of the class. He praised his teammates as being very cooperative and ideal. However, toward the end of the course his group working experience went downhill. He was very frustrated with some of the teammates who did not contribute as much as they should have. Nonetheless, in the end, Peter indicated he would again take a collaborative online class in the future. It seems that student personalities and preferences can predict student satisfaction better than their experience in teamwork. However, further investigation in this aspect is needed before any conclusions can be made.

It is interesting to note that all students with previous collaborative online learning preferred collaborating online over collaborating face-to-face. In other words, they preferred to work in groups and to collaborate with their peers using online communication tools. Unfortunately, the findings cannot pinpoint whether their positive experience in previous collaborative online classes made them enjoy and then prefer

online collaboration, or whether their preference for online collaboration caused them to enjoy this type of class. It might be a little of both: Paul expressed that his experience in a previous collaborative online class allowed him to discover that he preferred and felt more comfortable in communicating with teammates online.

In addition, student preferences and personalities may or may not change due to their experiences in collaborative online courses. Students who preferred to collaborate face-to-face might change their mind after they have experienced the convenience and immediacy of online collaboration. Janet, for instance, revealed that she preferred to work in groups face-to-face. After collaborating online with her teammates in this course and comparing this experience with her face-to-face group work in a traditional class, Janet changed her mind and stated that she now preferred online collaboration.

This does not apply to everybody. Robert, for example, did not feel comfortable interacting and communicating with his teammates online from the beginning to the end of the class. Since the beginning, he stated his difficulties with online communication. Without physical and contextual cues, Robert felt uneasy because he did not know what his partners were thinking and how he should react. Additionally, he did not have the necessary skills for synchronous online collaboration: he was a slow typist and could not process things quickly.

Students who feel they are open-minded and receptive, like Linda, could enjoy this class regardless of their preferred working styles. Linda revealed that she preferred working alone. Moreover, based on her previous individual online learning, she did not

expect to have to collaborate a lot in this class. Yet, she considered herself an "open book" and ready to participate in any class activities. Once she knew a major component of this course was collaboration, she did not mind and looked forward to working with her team members in the class. Her positive and enthusiastic personality could be seen from her use of colored text and various font sizes to communicate with her team. This might explain why she enjoyed the class even though when the class did not match her workload and teamwork expectations. Along the same lines, Howland and Moore (2002) suggested in their study that students coming to class with positive attitudes for learning may experience better outcomes.

How Student Experiences and their Perceptions Affect Each Other

This course, Instructional Technology Planning and Management (ITPM), was both online and focused on group collaboration. Students were required to interact and communicate with team members using provided online communication tools. As a result, student experiences in this course both influenced and were influenced by their perceptions of online collaboration. This section discusses how each aspect of the course, online communication and group collaboration, played a role in student experiences in the course and their perceptions of the online collaboration.

Online Communication

All students who participated in this study had a good understanding about communicating online, even during the first interview. Their understanding and initial perceptions of online communication resulted from both their prior knowledge and their experience in using the online communication tools in this class during the first few weeks. In particular, students perceived both the benefits and the challenges of online communication (Daugherty & Funke, 1998).

Students perceived a number of benefits to online communication. It is convenient. There is no need to commute. Students can communicate with their team members wherever Internet access is available. Furthermore, due to an absence of physical and contextual cues, online communication can provide a more comfortable environment in which to speak up, especially for shy and international students (Ghaleb, 1993; Warshauer, 1996; Kim, 1998). Mickey and Janet, both of whom were international students and unfamiliar with speaking up in front of people, found that they felt less pressure because they did not have to show up and talk in front of people. Instead, they could take more time to think before replying. Also, they did not feel that they were interrupting a conversation if they raised any questions or issues, because several threads of conversation could continue at the same time.

Students also perceived a number of challenges to online communication as well. With the any-place-and-any-time accessibility of the Internet, some students felt obligated to constantly keep up with "round the clock communication." Moreover, the

absence of physical cues and appearances made it hard for some students to understand or follow their teammates' ideas. Additionally, for the same reason, students sometimes felt the lack of immediate physical reaction and feedback from their peers, such as frowning, nodding, or smiling. This made them uncertain of how to proceed with their communication. Previous studies have also reported the lack of nonverbal and physical cues as one of the challenges in online communication that results in student frustration (Hoppenbrouwers, 1995; Murphy & Coleman, 2004).

Moreover, students who were novices to the new technology could face technical problems, especially in the beginning. For example, Robert had a difficult time installing the communication tools on his computer. Also, one of his teammates always had problems with the chat tool. Her connection was very slow and delayed. She could not read what other team members wrote instantly, so her responses were sometimes out of sync because the team already moved on to another topic. Furthermore, her online connection would frequently be dropped in the middle of chat. Her problems certainly affected the entire team's communication. Technical problems in online communication are not a new issue. Prior research has shown that problems with computer-mediated communication, such as slow or malfunctioning servers, bandwidth limitations, and lack of student technical skills, detracted from students' ability to communicate with their peers (Daugherty & Funke, 1998; Warf, et al., 1999; Lawless & Alan, 2004).

In addition, students gained more understanding about synchronous online communication after they participated in online chat with their team. Linda, for instance, was initially very excited after her first online chat with one of her teammates. She was fascinated by its real time aspect and convenience, and she found it fast and fun. However, by the end of the course, Linda found it challenging to get the whole group to be online at the same time due to schedule conflicts. As a result, her group had to come up with strategies to use the chat time as efficiently as possible. In fact, each group set goal(s) for each chat and had everyone come well prepared. In some cases, when everybody could not be online at the same time, they would have a smaller group chat with just the available members. Then, a team member would post a transcript of the chat for the absent team members. This way everybody could still provide feedback and keep up with the group. Both Paul and Peter found that the smaller group chat was efficient. When they had problems while working on something, they could see if any team members were online and invite them for a quick chat. Then, they could ask questions and get answers right away. This agrees with Bennett's (2004) study, which found that students adapted their patterns of communication and strategies throughout the project to the needs of their team.

In terms of relationships with peers, many students found that the friendly environment in online communication enabled them to be more open than in face-to-face communication environments. They shared personal stories such as marriage, family loss and illness, and daily happenings. Paul, for example, said he learned more

about his online teammates' personal lives than those of his traditional classmates. On the other hand, Peter and Jill felt that without meeting face-to-face, online relationships stayed at the professional level. Moreover, Peter believed that people would be honest if they met face-to-face. Additionally, Robert and Jill felt that people display different personalities when they communicate online. These feelings may be attributed to the lack of a physical presence online. There are no gestures, expressions, and other physical contextual cues to facilitate the communication.

Despite understanding the benefits of online communication, all students requested more face-to-face meetings. Even though on-campus students could attend an hour-long Webcast session at the end of each module, they wanted more. Students wanted to meet their teammates in person. They felt it helped improve their team relationships and reduce feelings of isolation (Poole, 2002; Bennett, 2004). Several students reported that they felt closer to those teammates they had a chance to meet face-to-face.

Teamwork

Knowing that they were required to work in groups, students expected their teammates to be cooperative, honest, responsible, open, willing to share, and willing to provide constructive feedback. Additionally, they wanted to learn from their teammates' diverse experience and background. The results showed that for groups whose team members had these qualities, the members were satisfied with their group and thought

the group worked well together. Bennett (2004) investigated students' experiences in a collaborative online project and concluded that open communication was a critical factor for team success. Jack is a good example of this case. He disliked collaboration, yet he could enjoy working with his teammates since he felt they were ideal team members.

On the other hand, for groups where team members did not contribute as they should have, did not communicate effectively, and did not recognized individuals' hard work, the members were disappointed and not satisfied with their group (Vonderwell, 2003; Lawless & Allan, 2004). Janet, for example, was disappointed and surprised when she found that her peer evaluation scores were low. She constantly received positive feedback from her teammates, such as "good job" and "nice work." Everybody was very nice to her. She never expected low ratings and did not understand them. She wished her teammates would be honest with her, rather than be nice and polite at the beginning and then disappoint her like this.

Janet had a theory about why there was a discrepancy between her teammates' public feedback and their private rating. She felt that everybody had to be nice in order to get a good score on the peer evaluation, such as the friendly communication item (see Peer Evaluation Rubric in Appendix F). If it seems everybody else is very nice and polite, then that makes the individual follow along to avoid offending anybody else. In other words, Janet felt that her teammates all gave positive feedback in public because they did not want to be rated low, and not because they were being honest with her.

Janet would have preferred constructive and sincere feedback, which need not be positive.

Along the same lines, Robert also preferred honesty rather than politeness in team work. He said he could put up with "brutal honesty" rather than insincere politeness. Robert was also upset with his peer evaluation scores. He did not think he deserved them: "I did my best. I might not be smart, but I worked hard." He was disappointed because he thought he worked really hard and put a lot of effort but his team members did not recognize it. Peter, from another group, also shared the same frustration. He worked hard and tried to be nice to everybody in the team. Thus, he did not think he deserved the low score on the friendly communication item. He felt the team members who rated him low did not have the right to do so since they did not contribute to the group as much as he did.

Peter believed that he was able to figure out who rated him low, even though the rating was supposedly anonymous. Robert also mentioned he could guess which team members gave him low scores. This knowledge made Peter and Robert lose trust in those team members they guessed gave them low scores. They could not help having negative attitudes toward those team members and did not want to work with them.

In spite of this, Peter asserted that he did not use the peer evaluation to get back at the teammates who gave him low scores. Instead, he still felt the need to be polite to his teammates even when he wanted to "beat them on the head." Janet's theory might apply to Peter's case as well. Even though Peter was upset with his team members, he

had to be nice and polite to them because he did not want to continue to get low scores on the friendly communication item.

As these examples show, frustration and disappointment can result when there is a discrepancy between self-evaluation and peer evaluation, or between peer evaluation and feedback from the discussion board. When this happens, students lose trust in their teammates. Trust is one of the essential elements in developing sense of learning community (Cadieux, 2002; Rovai, 2002). If students do not think their team members are sincere and trustworthy, it can destroy their sense of community. Although peer evaluation can encourage students to communicate and interact with their team in a nice and polite manner, it cannot guarantee team members will communicate honestly and sincerely with each other. This may warrant further research: how a collaborative online learning course can be designed to encourage students to be honest and yet polite.

Besides honest communication and recognition of hard work, students also expected their teammates to be responsible and contribute to the group. They realized that a team cannot easily accomplish its goals without the effort and contribution of all its members. Individual accountability is very crucial for successful teamwork (Johnson & Johnson, 1996). Linda was very upset with one of her teammates who dropped out of the class in the middle of the semester, without any advance notice. Linda claimed that her group worked well together until the team member dropped out of the class. Everything was suddenly "derailed." Had that team member informed the

rest of the team beforehand so everybody could be prepared, Linda would still be disappointed but not upset.

Robert and Janet also reported a similar experience. One of their team members had committed to be responsible for a certain task. Then, she backed off at the last minute when everybody was depending on her. Both Robert and Janet felt that same as Linda: they would have felt better if they were told in advance and had more time to finish up the delinquent team member's work.

While the students expect their team members to contribute and be there for the group, they understand that everybody sometimes has personal business or emergencies to take care of. They only asked for advance notice so they can be prepared to handle the situation. Therefore, it would be helpful if norms or rules for group collaboration are set up to encourage students to inform their team members ahead of time or as soon as possible whenever they find they cannot complete their assigned tasks.

Students could still be dissatisfied even if all team members were always available, if these team members did not contribute as much as expected. However, it is very interesting to note that students from the same group may have different perceptions of their teammates' contributions. For example, Peter and Teresa were on the same team. At the beginning of the semester, both of them agreed that their group worked very well together. Everybody was cooperating and sharing. Nonetheless, at the end of the semester, Peter felt that only half the team members, including him, did most of the work. The others participated in group discussions but they did not contribute to

the group as much as they should have. Johnson, Suriya, Yoon, Berrett, & La Fleur (2002) also reported such incongruence of members' perceptions in their study.

Conversely, at the end of the course Teresa still thought that her group worked well together, though not as well as in the beginning. She attributed this to the characteristics of the tasks and the level of team members' experience with the tasks. During the early modules, all team members were at the same level. Everybody could contribute something to the group. Also, some activities such as role-playing required the whole team to participate and contribute. Toward the end of the course, however, the group divided the tasks according to each individual's expertise and then just put the work together at the end of the module. Team members who did not have grant writing experience felt they did not have anything to share. So they held back and took their lead from the experienced team members.

A question may arise as to how the instructor should group the students. Should students with different or similar levels of expertise be grouped together? According to Vygotsky's (1978) zone of proximal development theory, students can learn and accomplish what they may not do alone when they work with others' assistance, especially from those who have greater proficiency or expertise. Thus, putting students with various expertise and experience together could contribute to positive student learning outcomes (Dillenbourg & Schneider, 1995). Students in this study indicated that they learned a lot from their teammates. Nonetheless, the instructor should be

aware that some students may feel they do most of the work, and some may feel they have nothing to contribute, and plan accordingly.

Synthesis

Students' expectations and their perceptions of their learning experience in the course were influenced by a number of operative factors. This study identified and focused on the following factors: external sources, previous educational experience, individual preferences and personalities, and online communication and collaboration skills. Although these factors were discussed separately, they are interrelated and in combination encouraged and/or challenged each student. All students in online learning do not learn uniformly (Lee, 2001), and this study found that different combinations of factors affected students differently. For example, some students might be frustrated if their experiences do not match their expectations. But a student who is open to new learning experiences might enjoy the new style of learning. Understanding how these factors combine to influence students' learning experience can help instructors facilitate this learning.

ITPM, the course covered in this study, was developed using a constructivist approach and thus emphasizes collaborative learning. The design of the course reflects a theoretical shift from a behaviorist to a constructivist theory of instruction, as well as a shift from a traditional classroom context to an online learning environment. Koschmann (1996) states that collaborative learning has a number of facets, including

"a commitment to learning through doing, the engagement of learners in the cooperative (as opposed to competitive) pursuit of knowledge, the transitioning of the instructor's role from authority and chief source of information to facilitator and resource guide" (p.13). In particular, the collaborative learning pedagogy shifts the focus from a one-way knowledge transmission model to a constructivist approach where learning is viewed as a social process (Hiltz, et al., 2000). Students tend to be less familiar with collaboration and lack collaborative skills; according to Ames (1984), a salient feature of the traditional classroom learning environment is a focus on competition. Dirkx and Smith (2004) found that many students felt profound ambivalence toward collaborative learning. While learners often express a desire to be more engaged and active in their learning, they are often less than enthusiastic about learning through group work. Dirkx and Smith also showed that students realized the advantages of collaboration: that they learned a lot from their peers and from working in groups. However, they also found the process of reaching consensus to be time-consuming.

Students gravitate toward learning modes with which they are more familiar. For instance, Blocher, Sujo de Montes, Willis, and Tucker (2002) studied students' use of cognitive/metacognitive learning strategies and found that students would seek help from the instructor when they needed it, rather than from peers. The researchers attributed this to the familiarity of teacher-centered education, in which the instructor is the holder of knowledge. This may explain why, in the current study, some students asked for more contact and guidance from the instructor. Also, Dirkx and Smith (2004)

found that even when a two-week orientation to collaborative learning was provided, including guidelines and ground rules for working in groups, some students still showed dissatisfaction with their collaborative learning experience. The researchers attributed these experiences to "psychological resistance" to identifying with the students' teammates.

The current study found that students who are familiar with different theoretical paradigms (teacher-centered and competitive) and are not ready for the shift to collaborative learning might feel dissatisfied when the course is different from what they expected. Whether the students feel frustrated depends on whether the new paradigm complies with their preferences and personalities. Students with experience with the constructivist approach and who were self-motivated found the course satisfying and enjoyable. Even those who were not familiar could adjust themselves and enjoy the class if they were open-minded about the teaching approach.

Limitations of the Study

Several limitations to this study should be kept in mind by future researchers and those planning to apply its conclusions to course design.

First, the generalizability of this study is limited. The findings of this study reflect the views and perspectives of a small group of graduate students taking a specific one-semester online course emphasizing collaborative learning. Due to the unique characteristics of the course and participants, the results of this study may not be

appropriate to generalize to other online learning contexts, unless they share adequate similarities.

Second, the participants in this study were volunteers, rather than being systematically recruited. An invitation email was sent to every student taking this class during the first week of the course. Out of a total of 20 students, ten students volunteered to participate in the study, and nine students remained throughout the entire study, including at least two students from each of the four teams. Even though almost half the class participated in this study, these voluntary participants may not necessarily be representative of the entire class in terms of values or attitudes.

Third, the status of the researcher may have influenced the participants' responses. To build relationships and rapport with the participants, the researcher also attended the course as a fully participating student. Therefore, the participants were familiar with the researcher from the beginning of the course, and should have felt comfortable in sharing their perspectives. Furthermore, it was promised that all interviews would be kept confidential: only the researcher could access the recorded data. However, the researcher was also known as an advisee of the instructor of the class. As a result, it is possible the participants were careful about giving any negative responses about the class or the instructor.

Last but not least, student expectations may be affected by their initial experience in the class. The interviews for student expectations took place during the first few weeks of the class rather than before the class started, so the students had

already participated in the class to some extent. Even though students were asked about their expectations before taking the class, these expectations may have been colored by their current experiences in the class.

Implications for Future Research

Results from this study can be used by instructors in designing collaborative online courses. This study focused on student expectations as well as the discrepancy between these expectations and the perception of their course experience. The setting of this study is an online course emphasizing collaboration [ITPM], which is different from individualistic online courses. Also, the participants of this study are graduate students, who as a group may have more self-regulation skills and self-motivation than undergraduates. Since the characteristics of this course and the students taking it are unique, the results of this study may not be applicable to other online courses and levels of students. Therefore, future research needs to be conducted in other online course contexts that use collaboration and with different sample groups, and the results compared.

Furthermore, as shown in this study, online learning background and individual differences affect both the expectations students bring to a collaborative online class as well as their perceptions of their experiences in the class. Future research can continue to examine in-depth how previous online learning experiences and student personalities play a role in their learning experiences and perceptions. Additional factors influencing

student expectations and perceptions, besides the ones indicated in this study, may emerge from further research.

This study provides an initial picture of student expectations and perceptions of collaborative online learning, resulting from their experience in the ITPM course. The findings suggest there can be discrepancies between student expectations and actual experiences in a class, which can result in student frustration and disappointment if students have difficulty adjusting. These findings should therefore be used as a guide to designing a research instrument to explore how to adjust student expectations and help them accurately understand a course's characteristics before entering the course. For example, a questionnaire of student expectations of a collaborative online learning environment can be administered at the very beginning of the class or before the class starts. Then, based on the questionnaire results, the instructor can provide customized feedback to each student. An experimental study can examine how this process affects student perceptions of their experience in the class.

The instructor can not necessarily assume that students entering a class have the skills that they need to begin a collaborative process (Bosworth, 1994). Dirkx and Smith (2004) found that even though students received a two-week orientation on collaborative learning, including guidelines and rules for group work, the students still revealed problems and dissatisfaction in online collaboration. Therefore, it is interesting for future research to examine what skills are needed for online collaboration and how these skills can be taught most effectively. In addition, follow-up research is

needed to investigate how effective an orientation program provided at the beginning of the course is towards student expectations and perceptions of their experience in the course.

Besides student expectations of a collaborative online course, this study yields information about student experience and perceptions of such a course. Several students indicated that they preferred to have face-to-face meetings once in a while. They believed that meeting in person could improve the relationships among team members and thus make them feel less isolated, even for those team members who prefer online communication. Johnson (2001) reviewed studies to compare differences between virtual and face-to-face communication. He concluded that face-to-face contact is essential, especially to build rapport and to serve as initial contact between members. Thus, further research can explore whether face-to-face meetings really enhance student relationships in online teamwork. If face-to-face meetings are not feasible, how can a collaborative online learning environment be designed to compensate for the absence of face-to-face contact?

In addition, some students in this study reported frustration due to the lack of online collaborative skills. Problems also occurred when other team members did not acquire these skills. Students indicated that online collaboration, especially the use of synchronous communication tools, required gaining familiarity and experience with the tools and modes of communication before they could fully participate in real time online discussions.

This study suggests that although students expected to learn from the diverse background and expertise of their team members, excessive differences in level of expertise can result in dissatisfaction. For example, in Peter and Teresa's group, those members with a high level of expertise contributed much, while the other members felt that they had limited knowledge and were hesitant to participate. Future research should explore what kinds of strategies can reduce the frustration that the high-level students may feel. For example, will assigning them as mentors to the other students reduce their frustration?

Last but not least, future research should investigate how group harmony influences student performance and satisfaction in a collaborative online learning environment. Miller, Trimbur, and Wikes (1994) described a face-to-face course emphasizing collaboration. The researchers concluded that cognitive diversity increases group conflict and thus decreases satisfaction, but it also improves student performance. Yet, Johnson, Johnson, and Smith (2000) stated that academic controversy increases student learning motivation and energizes students to reach for new information. Constructive controversy succeeds when cooperative learning, positive trusting attitudes toward other students, and mutual goals are established (Johnson and Johnson, 1994). Further research to explore this issue in a collaborative online learning context could prove useful to make the best use of a team's diversity in experience.

Implications for Educational Practice

The findings of this study yield some suggestions for instructors who desire to successfully design and implement collaboration in an online course so as to make use of the full potential of the new technology to improve student learning and class experience. As the results indicate, some students came to class without knowing that this class would be offered online. Some students expected this course to be similar to other traditional online courses or correspondence courses, which they found to be easy, convenient and flexible. In fact, one of the participants took this class to ease her workload. These findings support the observation that students who are not well-informed set unrealistic expectations and bring faulty preconceptions to the course. Lawless and Allen (2004) asserted that "student expectations" is one of the factors that can cause student frustration.

As a result, to prevent frustration caused by students' unmet expectations, information about the course, such as the course format, content, and philosophy, should be provided up front. For example, the students should be told ahead of time that collaboration is a major component of this class, so that students who prefer working alone will not be surprised and disappointed afterwards. This information can be provided in the course catalog, course description, or the course Web site since these are the first resources students use to get information about the course. It is also important to ensure that students are well informed and aware of the following: the learning environment, the instructor's role, the time and effort they should allocate for course

activities, how often they should expect to be online, the level of work, and the preferred behaviors they are expected to perform while taking the course. Students should also understand that flexibility in online learning involves how they choose to interact with the course, not how much time they spend on the course (Howland & Moore, 2002). However, even though all necessary information about the course is provided upfront, it does not guarantee that students will pay attention to and take it seriously.

One way to make sure students are prepared for the course is to require them to complete a questionnaire or pre-course screening test. Then, the instructor can use the test or survey results to adjust student expectations and understanding about the course by providing customized feedback to each student. Students should then be able to determine whether the course is for them. If they decide to take the course, they will come to the class with appropriate understanding and expectations. At the very beginning of the course, a thorough orientation will reaffirm the course expectations and help prepare students to get started. The instructor should also provide continual feedback and adjustment of expectations throughout the semester. For example, the instructor might send a message to all students reminding them of the goals and nature of the course, especially when student frustration or misunderstanding is observed.

The research findings also revealed that some students, especially those who were new to online learning, had technical problems with the software installations during the beginning of the course. Therefore, it would be helpful to have a quick-start

guide of how to set up all the software and how to use the provided tools effectively. The quick-start guide should include concise yet clear instructions. Furthermore, the instructor should allow some time for students to get familiar with the tools and know how to handle them. The instructor should also make sure that students' initial technical problems, such as login difficulties and software installation, are taken care of before proceeding to the next step. It is also beneficial to provide students with technical support throughout the course.

In addition, some students in this study indicated that they would love to have better communication tools, such as chat tools that incorporate audio and visual enhancements. Therefore, students could be allowed to choose the tools they prefer to communicate with their group, as long as the tools interface properly and provide features that allow the instructor to keep track of the students' interactions for reference and assessment. To reduce the instructor's workload, students may be required to save their chats and post them in a designated area, which the instructor can check without having to log into every online chat tool that the students use.

In fact, the findings of this study indicated that not all students come to class equipped with online communication skills, especially knowing how to effectively chat online. Online communication is a skill students need to learn in order to collaborate with their team efficiently. Besides allowing time for students to get familiar and be comfortable with the communication tools, the instructor may need to provide guidelines or examples for effective online chat. Letting students share their tips and

experiences about successful online chat would also be beneficial. These tips can also be useful for future semesters as well.

Findings from student experience in the class also showed that providing getting-acquainted activities at the beginning of the course, such as posting student profiles and exchanging introductory messages, help students get to know each other and learn what expertise their teammates bring to contribute to group work Therefore, the instructor should allocate some time at the very beginning of the course for such activities to ensure a good start for later group work.

Results of the study reveal that some students are not familiar with collaboration, especially when it is online, and some students prefer working alone and deem online collaboration too time-consuming. The initial learning modules should, therefore, include activities that promote team building, team collaboration, and establish norms and group process guidelines. Some techniques to get resistant students to embrace collaboration are letting students share their positive collaboration experiences, creating a small team project with high probability of positive outcomes, and making sure team members recognize each other's individual contributions (Hughes et al., 2002). All in all, the instructor may have to accept that online courses emphasizing collaborative learning may not be appropriate for students with strong preferences for individual learning. As the findings in this study showed, at the end of the semester Jack still did not enjoy collaboration, even though he praised his teammates as ideal and said they worked well together.

Lack of group and individual accountability is another challenge for online collaboration. Part of student negative experiences in this class was caused by uncooperative and irresponsible teammates. The team building activities mentioned above can facilitate successful group work. Students also need to believe that the group's success results from every single team member's contributions. Each member is required to contribute and work together to achieve the group's goals. Therefore, the instructor needs to promote positive interdependence and team synergy. For example, the instructor should avoid assigning tasks that do not leave any opportunity for interaction and mutual regulation (Dillenbourg & Schneider, 1995). Instead, the instructor should create authentic and challenging tasks that demand teamwork and promote positive interdependency (Curry, 2001). The tasks that promote teamwork should require different types of expertise and negotiation among team members to be able to reach the goal.

Additionally, the course design should facilitate team flow. The instructor must ensure that students have positive attitudes towards the work, their teammates, and their roles within the team. This study found that students feel positive about their work if they are producing a tangible and authentic final product. Furthermore, each task should be designed to build up in stages to a final product. There needs to be a balance between the level of challenge and the level of student knowledge and skills for the tasks. Tasks that are too difficult can lead to student anxiety and frustration. On the other hand, tasks that are too easy may not be engaging and may contribute little to student growth and

learning. All in all, tasks should be challenging yet accomplishable when students put in sufficient effort and work together well.

As for promoting positive attitudes towards teammates, the instructor should encourage open communication among team members. This can be done through ice-breaking activities at the beginning of the semester, easy-to-use online communication tools, a friendly learning environment where constructive feedback is very welcome, the promotion of positive interdependency, and meeting face-to-face if feasible. It is important to note here that to encourage open communication, the instructor needs to be a role model. For example, in this class, the instructor promoted open communication by disclosing his personal information during the self-introduction activity. The instructor needs to initiate and set a sample for the students before assigning the students to do so; otherwise students might feel reluctant to be open and share their personal information.

In terms of positive attitudes towards their roles in the team, students should be able to choose their role according to their expertise or working style. When moving from one learning module to another, roles may be rotated among the team members. Based on the results of this study, turn-taking in roles can help students learn more and empathize with team members in the roles they used to perform. Having specific roles is also effective because it helps the student take an active part in assigning their contributions, and be clearer about what is expected of them.

According to student experiences in the class, students prefer to meet their on-campus teammates and classmates face-to-face every so often. Findings from student perceptions suggest that face-to-face supplements improve student relationships and reduce feelings of isolation. Such supplements can include Webcast sessions, where students can meet with each other and the instructor either on-campus or via teleconference. However, in some students' opinions, a one-hour Webcast once a month is not enough. More frequent or longer face-to-face meetings, if possible, are sometimes necessary.

Students also requested more direct contact with the instructor. Again, the instructor should make it clear from the beginning what the instructor roles in the class are, and what students can expect from the instructor. In addition, to provide more access, the instructor may designate virtual office hours during which students can contact the instructor by email or chat.

In fact, online learning environment can be challenging for the instructor as well as the students. Since there are no physical cues from the students, the instructor can only monitor student learning and performance through their work and their teammates' feedback. It can therefore be difficult for the instructor to determine if students are struggling or if they have concerns.

In terms of assignments and tasks, the findings of the study reveal that several students complained about the number and frequency of deadlines. Even though setting deadlines periodically throughout the semester is important for keeping students on

track, students still thought there were too many deadlines. This may result from the anticipation that they could set their own schedules, work individually, and turn in the assignments at the end of the semester.

In addition to adjusting student expectations from the beginning of the course, the instructor needs to choose tasks of appropriate complexity for the length of the course, and provided appropriate deadlines based on this complexity. To add more flexibility and student control to the deadlines for each module, the instructor may use the following technique. First, a deadline is set for the entire module, which all teams must adhere to. Second, the instructor designates a set of specific subgoals for the module along with recommended dates of completion, spaced throughout that module's timeframe. Third, the instructor allows or even encourages each team to move any or all internal deadlines forward, by agreeing on specific dates and submitting them to the instructor. This will encourage students to negotiate within the team and to make plans according to their schedules and preferences. Finally, Howland & Moore (2002) suggested that the instructor provide detailed feedback on the students' work, otherwise students may perceive assignments as having little intrinsic value.

Some of the aforementioned implications can also be applied to designing online learning courses that do not contain a major collaborative component. First of all, course information should be provided up front so that students understand that the class is online, what they are expected to do, how they will be evaluated, what they will learn from the course, and what they can expect from the course. An online class has

fewer time and space boundaries than a traditional class, since there is no weekly face-to-face meeting. Therefore, being a successful online student requires self-management and self-regulation, which students should be told ahead of time.

Also, to exploit the full potential of new technologies to improve student learning, online courses should not simply put the materials on the Internet. Instead, these courses should be designed to promote student interaction and communication. Therefore, students still need to learn online communication skills and be familiar with online communication tools.

Furthermore, since there may be no physical cues or physical interaction in online communication, students may feel isolated. An online learning community should therefore be created to reduce this sense of isolation. Providing getting-acquainted activities at the beginning of the course allows students to get to know each other and develop a sense of community.

Conclusion

This study examined students' expectations toward an online collaborative course, how these expectations affected the students' perceived experiences in the course, and how instructors might improve students' learning environment by understanding and adjusting these expectations and experiences. By understanding student expectations and accommodating student needs, instructors may improve the design and teaching of collaborative online courses.

Students bring with them preconceptions and expectations towards their courses. They may enter a collaborative online course with unrealistic expectations if they do not have prior experience with courses that are both collaborative and online, and if information about the course is not readily accessible to them. They may also become frustrated if the characteristics of the course do not comply with their preferences and personalities, unless they are open to new experiences.

This study considered several operative factors that influence student expectations and perceptions of their experience in the class. These factors include external sources, previous educational experience, personal preferences and personalities, and online communication and collaboration skills. The way these factors combined in individual students determined whether they challenged or benefited the students' learning experience. This agrees with Lee (2001), who observed that students have different ways of adapting to new learning contexts.

In order for online learning to be as effective as traditional face-to-face classroom, collaborative learning strategies are necessary (Hiltz, 1998). To take the full advantage of new technology, this course was therefore designed based on a constructivist approach promoting learner-centered, authentic, and collaborative learning. Students who were familiar with the traditional paradigm (teacher-centered, individual learning and competition-oriented learning) and who were not ready for a paradigm shift had the potential to be dissatisfied when they discovered the course was different from their expectations. Without previous collaborative online learning

experience, students may expect the required effort in such a class to be equal to their previous experience: traditional courses (Wanko, 2000; Howland and Moore, 2002), individual online learning experience (Arbaugh, 2001), or online experience (Wanko, 2000). The current study also revealed all three types of comparisons.

In addition, students are familiar with and adept at the learning process in traditional face-to-face environments. With the text-based communication and anytime / any place learning in online learning environments, not all students possess the necessary qualities or technical skills to perform well online. Moving to online learning environments, therefore, requires some transition (Hislop, 1999). Thus, students who prefer face-to-face meetings and lack skills for effective online communication may feel less satisfied with the online group interaction process than in a face-to-face group (Ocker & Yaverbaum, 1999).

When designing a collaborative online learning environment, this study makes several suggestions for reducing student frustration. Before the semester starts, students should be informed about the characteristics of the class and its online collaborative nature, the instructor's role, the amount of work, and the preferred behaviors while taking the class. Wanko (2000) suggests helping students get started using a detailed pre-course screening process followed by a thorough orientation. In addition, since not all students possess online communication and teamwork skills, the class should be designed to promote online group skills, team building activities, interdependency, and individual accountability. Students' positive attitudes towards the work, team members,

and roles within the team should also be encouraged. Additionally, online communication should be supplemented by face-to-face interaction if possible. Studies showed that meeting in person helped improve team relationships and reduce feelings of isolation (Poole, 2002; Bennett, 2004), which was also borne out in the current study.

Although this study revealed useful operative factors that influence student expectations and perceptions of their experience in a collaborative online class, future research may be conducted to look for additional factors and confirm the effects of the existing factors. Furthermore, the findings of this study can be used as a guide to design a research instrument to further determine concrete and research-based strategies in adjusting student expectations and help students accurately understand the course characteristics before entering in the class.

Appendixes

Appendix A: Email Invitation

Hi (Participant's name),

It's me…Bee.

As Dr. Resta introduced me last night during the Webcast session, I am conducting a study of student perceptions of collaborative online learning, as a part of my dissertation.
Since you are taking ITPM, which is an online course that emphasizes collaborative learning, I would like to invite you to participate in interviews. The interviews will take place once at the beginning of the course and once at the end of the course. Each interview should take about 30 minutes. All the interview records will be kept confidential. And, your identity will not be disclosed when I present the results.

Your participation will be valuable and much appreciated!

If you are willing to participate, simply type your name in end of the attached consent from and send it back to me. After that I will contact you to set up time for the interview.
If you have any questions about the study, please feel free to contact me by sending me an email or by calling me at 512-419-9874.

Thank you very much for your time.

Sincerely,
Bee

Appendix B: Consent Form

Informed Consent to Participate in Research

The University of Texas at Austin

You are being asked to participate in a research study. This form provides you with information about the study. The Principal Investigator (the person in charge of this research) or his/her representative will also describe this study to you and answer all of your questions. Please read the information below and ask questions about anything you don't understand before deciding whether or not to take part. Your participation is entirely voluntary and you can refuse to participate without penalty or loss of benefits to which you are otherwise entitled.

Title of Research Study:

A Study of Student Perceptions of a Collaborative Online Learning Environment

Principal Investigator(s) (include faculty sponsor), UT affiliation, and Telephone Number(s):

Jantrathip Sae-Chin, Curriculum and Instruction Department, College of Education, The University of Texas at Austin
Telephone number: 512-419-9874

Funding source: None

What is the purpose of this study?

The study is conducted as a part of a dissertation research. The goals of this study are to determine student preconceptions of an online collaborative learning environment, to explore how these perceptions affect their learning experience, and to examine how students adjust their initial perceptions at the end of the course.

You are being asked to participate in the study because you are taking EDC 385G Instructional Technology Planning and Management, which is a Web-based course that

emphasizes collaborative learning. If you participate, you will be one of approximately 15 people in the study.

What will be done if you take part in this research study?

You will receive an invitation by e-mail to participate in the interviews. The interviews will take place twice: once at the beginning of the semester and once at the end of the semester. The interview at the beginning of the course will ask about your demographic information and your expectations and perceptions of a collaborative online course. The interview at the end of the course will ask you to reflect on your perceptions related to a collaborative online learning after you have experienced the course. The interview will be recorded and transcribed by the researcher. Participating in each interview should take approximately 30 minutes. Participation in this study will be strictly voluntary. You may also withdraw from the study at anytime.

To enhance the research quality, besides the interviews, your messages posted on TeachNet, where you and your team members communicate and collaborate, will be analyzed. Also, you will be observed during the web cast sessions, which will take place four times throughout the semester.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. Your responses will not be linked to your name in any written or oral report of this research project.

What are the possible discomforts and risks?

Minimal risks of participating in this study is the possible loss of your confidentiality since your responses are tape recorded and the tape can be linked to you because your name is on the tape. However, this risk is minimized by storing the tapes in the researcher's locked file cabinet. Only the researcher can have access to the data.

If you have any concerns or questions, you may ask questions now or call the Principal Investigator listed on the front page of this form.

What are the possible benefits to you or to others?

The information will be used to help educators understand online learner perceptions, which in turn may be useful for designing an effective collaborative online learning environment to meet learner expectations and needs.

If you choose to take part in this study, will it cost you anything?

There is no cost for you to participate in this study.

Will you receive compensation for your participation in this study?
What if you are injured because of the study?

You will not receive compensation for your participation in this study. If injuries occur as a result of study activity, eligible University students may be treated at the usual level of care with the usual cost for services at the Student Health Center, but no payment can be provided in the event of a medical problem.

If you do not want to take part in this study, what other options are available to you?

Participation in this study is entirely voluntary. You are free to refuse to be in the study, and your refusal will not influence current or future relationships with The University of Texas at Austin.

How can you withdraw from this research study and who should I call if I have questions?

If you wish to stop your participation in this research study for any reason, you should contact: Jantrathip Sae-Chin at (512) 419-9874 or jantrathip@mail.utexas.edu. You are free to withdraw your consent and stop participation in this research study at any time without penalty or loss of benefits for which you may be entitled. Throughout the study, the researchers will notify you of new information that may become available and that might affect your decision to remain in the study.

In addition, if you have questions about your rights as a research participant, please contact Clarke A. Burnham, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects, 512/232-4383.

How will your privacy and the confidentiality of your research records be protected?

Authorized persons from The University of Texas at Austin and the Institutional Review Board have the legal right to review your research records and will protect the confidentiality of those records to the extent permitted by law. If the research project is sponsored then the sponsor also has the legal right to review your research records. Otherwise, your research records will not be released without your consent unless required by law or a court order.

If the results of this research are published or presented at scientific meetings, your identity will not be disclosed.

The interviews will be tape-recorded and the cassettes will be coded so that no personally identifying information is visible on them. The cassettes will be kept in the investigator's locked file cabinet. They will be heard only for research purposes by the investigator and they will be destroyed after the information on them are coded and analyzed.

Will the researchers benefit from your participation in this *study?*

The researcher will not benefit anything from your participation beyond publishing or presenting the results.

Signatures:

As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:

Jantrathip Sae-Chin	01/27/2004
Signature and printed name of person obtaining consent	Date

You have been informed about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this Form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time. You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights.

Printed Name of Subject	Date
Signature of Subject	Date
Jantrathip Sae-Chin	01/27/2004
Signature of Principal Investigator	Date

Appendix C: Interview Questionnaire

Please answer the following questions.

1. What is your gender? _____ Male _____ Female
2. How old are you? _____ years
3. Have you ever taken an online course before taking this course?
   ____ Yes ____ No
4. If you answered "Yes" to Question 3, please use three adjectives to describe your experience in that course.

---

5. Have you ever taken a collaborative online course, that is, a course that emphasizes working as a member of a collaborative learning team in completing learning tasks or projects? ____ Yes ____ No
6. If you answered "Yes" to Question 5, please use three adjectives to describe your experience in that course.

---

7. Are you currently employed? ____ Yes ____ No
   If yes, how long have you been employed? _____ year(s)
8. Are you a full time student? ____ Yes ____ No
9. What is your major? _____
10. What degree are you currently pursuing? _____ Ph.D. _____ Master's
11. How many courses are you taking this semester? _____ course(s)
12. How do you access the Internet for this course?
    ____ At home
    ____ At work
    ____ At school
    ____ Others

Appendix D: Interview Questions

Questions for the interview at the beginning of the course

- Why did you choose this course?
- When do you learn best?
- What do you think is an ideal online collaborative course?
- What do you think this online course will be like?
- What do you think about your previous online course(s)?
- How can online learning facilitate collaboration?
- What role would you like to play in online collaborative learning?
- What makes you prefer this role?

Questions for the interview at the end of the course

- Please describe and evaluate the collaborative aspects of your coursework.
- What experience(s) in the course surprised you?
- How would your experience be different if the course were individualistic rather than collaborative?
- What do you think would help promote online collaboration?
- What benefits or challenges do you feel resulted from collaborative learning?
- Do you think online learning enhances or impedes collaborative learning? Please describe.
- What aspects of online collaborative learning do you like? What aspects do you not like?
- What are the positive and negative aspects of online collaborative learning as opposed to conventional face-to-face learning?
- Would you take another online course that emphasizes collaborative learning? If so, how would you want it to be the same or different?

Appendix E: Topics and Course Schedule

The following is a complete schedule of topics and assignments for the entire course. As you will note, the planning activities are very compressed in time in order to develop all the necessary components of the technology plan within the semester. Please carefully review the assignments for the course and consider the implications for your own personal schedule and commitments.

You will be expected to do all the readings listed in the schedule as well as to do the specified individual assignments. **Similar to real world planning teams, however, there will be many times when your team will need to work in parallel to accomplish required tasks (e.g., in modules 5 and 6). When confronted with multiple team tasks, your team should decide together how you will address the assignments and identify the team member who will assume responsibility or a project coordination role for each specific task and develop your own timelines to assure that you meet the course deadlines.**

Remember that, even though certain tasks may be distributed among members of the team, it is expected that all team members will review and provide feedback on the work done by their fellow team members.

By working as a virtual learning team you will realize the power of distributed cognition and collective intelligence in accomplishing large and complex tasks, similar to teams in scientific research, engineering, or business. By working together as a high performance planning team, your team will more easily accomplish the array of planning tasks. Equally important, the ongoing discourse and dialogue, in working collaboratively with other team members, will deepen your own knowledge of the different issues, strategies, and perspectives related to technology planning.

For more detailed instructions and the context and

resources for the assignment, you need to look at the lesson page that the assignment belongs to. For example, 'Assignment 6.3.a' is embedded in the page of Lesson 6.3 in Module 6.

*** The time zone for due dates in the schedule is Central Standard Time.**

Topics	Due Date
Module 1. Organizing the Planning Efforts (Jan. 20 - Jan. 26)	
1.1 Introduction	
1.2 Forming the Planning Team	
1.3 Virtual Workspace for Your Planning Team	
<**Assignment 1.3.a**> Install TeachNet on your own computer.	8 am, Jan. 22 (Thu)
<**Assignment 1.3.b**> Provide your first and second choice of school.	8 am, Jan. 22 (Thu)
1.4 Getting to Know Each Other	
<**Assignment 1.4.a**> Provide information for the staff directory and your picture.	8 am, Jan. 22 (Thu)
<**Assignment 1.4.b**> Introduce yourself.	8 am, Jan. 22 (Thu)
<**Assignment 1.4.c**> Read and respond to other members' introductions.	8 am, Jan. 26 (Mon)
1.5 Working Together Online	
<**Assignment 1.5**> Post your ideas on norms or rules for our effective online collaboration.	8 am, Jan. 26 (Mon)

1.6 Organizing the Planning Activity	
Webcast: Refer to the newsletter for details.	Jan. 26 (Mon)
Module 2. Assessment Phase (Jan. 26 - Feb. 9)	
2.1 Introduction	
2.2 Trends and Issues	
2.3 Role of Educational Technology in Schools	
<**Assignment 2.3**> Readings	8 am, Jan. 29 (Thu)
2.4 Learning and Technology	
<**Assignment 2.4.a**> Readings	8 am, Feb. 3 (Tue)
<**Assignment 2.4.b**> Identify considerations for the technology plan.	8 am, Feb. 6 (Fri)
<**Assignment 2.4.c**> Reflections	
- Post some of your thoughts and reflections.	8 am, Feb. 7 (Sat)
- Read and comment on at least one other reflection.	8 am, Feb. 9 (Mon)
<**Assignment 2.4.d**> Peer Evaluation & Portfolio	8 am, Feb. 9 (Mon)
Webcast: Refer to the newsletter for details.	Feb. 9 (Mon)
Module 3. Developing Vision (Feb. 9 - Mar. 5)	
3.1 Introduction	
3.2 What Is Vision?	
<**Assignment 3.2**> Take a	8 am, Feb. 9 (Mon)

self-analysis on visioning	
3.3 Begin with the End in Mind	
3.4 Identifying the Stakeholders	
<**Assignment 3.4**> Identify the stakeholders on your school technology planning team	8 am, Feb. 13 (Fri)
3.5 Communicating with Stakeholders	
<**Assignment 3.5**> Role-play a meeting to develop a shared vision	
- Submit the list of the roles for role-playing.	8 am, Feb. 14 (Sat)
- Submit the role-playing summary.	8 am, Feb. 18 (Wed)
3.6 Technology and Systemic Change	
<**Assignment 3.6**> Hear the voices	8 am, Feb. 23 (Mon)
3.7 Creating Mustang's Vision	
<**Assignment 3.7.a**> Create your school vision statement	8 am, Feb. 26 (Thu)
<**Assignment 3.7.b**> Create the MISD vision statement	8 am, Mar. 2 (Tue)
3.8 Doing a Force Field Analysis	
<**Assignment 3.8.a**> Do a Force Field Analysis	8 am, Mar. 2 (Tue)
<**Assignment 3.8.b**> Reflections	
- Post some of your thoughts and reflections.	8 am, Mar. 3 (Wed)

- Read and comment on at least one other reflection.	8 am, Mar. 5 (Fri)
<**Assignment 3.8.c**> Peer Evaluation and Portfolio	8 am, Mar. 5 (Fri)
Webcast: Refer to the newsletter for details.	Mar. 8 (Mon)
Module 4. Needs Assessment and Data Analysis (Mar. 5 - Apr. 7)	
4.1 Introduction	
4.2 Determining Mustang ISD's Current Situation	
4.3 Essential Conditions for Effective Use of Technology	
4.4 Reviewing Student Results	
<**Assignment 4.4**> Identify student performance areas requiring improvement.	8 am, Mar. 12 (Fri)
4.5 Reviewing Student and Teacher Technology Standards	
<**Assignment 4.5.a**> Review student and teacher technology standards.	8 am, Mar. 12 (Fri)
<**Assignment 4.5.b**> Assess your own core technology competencies.	8 am, Mar. 12 (Fri)
Spring Break !!!	**Mar. 15 - 19**
4.6 Resources: What Do We Have?	
<**Assignment 4.6**> Readings	8 am, Mar. 26 (Fri)
4.7 Determining the School's Technology Resources	
<**Assignment 4.7.a**>	8 am, Mar. 26 (Fri)

Complete a hardware inventory for your school.	
<**Assignment 4.7.b**> Review the software inventory for your school.	8 am, Mar. 26 (Fri)
<**Assignment 4.7.c**> Staff technology needs assessment survey	8 am, Mar. 26 (Fri)
4.8 Identifying, Sampling, and Communicating with the Stakeholders	
<**Assignment 4.8**> Identify your communication strategy.	8 am, Mar. 27 (Sat)
4.9 Analyzing and Reporting the Results	
<**Assignment 4.9**> Analyze and report the results.	8 am, Apr. 1 (Thu)
4.10 Developing Goals and Objectives	
<**Assignment 4.10.a**> Create your goals and objectives	8 am, Apr. 5 (Mon)
<**Assignment 4.10.b**> Reflections	
- Post some of your thoughts and reflections.	8 am, Apr. 6 (Tue)
- Read and comment on at least one other reflection.	8 am, Apr. 7 (Wed)
<**Assignment 4.10.c**> Peer Evaluation and Portfolio	8 am, Apr. 7 (Wed)
Webcast: Refer to the newsletter for details.	Apr. 5 (Mon)
Module 5. Developing Technology Use Projects, Budget, and Evaluation Components (Apr. 01 - Apr. 27)	

5.1 Introduction	
5.2 Purpose	
5.3 Brainstorming Projects to Achieve the Vision of Learning and Technology	
<**Assignment 5.3**> Brainstorming ideas for the technology plan issues and projects: Write the General Issues Section.	8 am, Apr. 10 (Sat)
5.4 Organizing the Development of the Technology Use Projects	
<**Assignment 5.4**> Organize the development of the Technology Use Projects.	8 am, Apr. 10 (Sat)
5.5 Development of Technology Use Projects	
5.6 Curriculum Component	
<**Assignment 5.6**> Develop your Curriculum Component Technology Use Project.	8 am, Apr. 21 (Wed)
5.7 Development of Software Component	
<**Assignment 5.7**> Identify the software needed to achieve the plan's goals and objectives.	8 am, Apr. 21 (Wed)
5.8 Develop Hardware and Infrastructure Component	
<**Assignment 5.8.a**> Identify the hardware needed to achieve Plan's goals and objectives.	8 am, Apr. 21 (Wed)
<**Assignment 5.8.b**> Develop your iInfrastructure requirements.	8 am, Apr. 21 (Wed)

5.9 Planning for Technology Support Services	
<**Assignment 5.9**> Identify your technology support services requirements.	8 am, Apr. 21 (Wed)
5.10 Developing Professional Development Component	
<**Assignment 5.10**> Develop your professional development plan.	8 am, Apr. 21 (Wed)
5.11 Executive Summary	
<**Assignment 5.11.a**> Prepare executive summary.	8 am, Apr. 23 (Fri)
- Submit the technology plan.	8 am, Apr. 24 (Sat)
<**Assignment 5.11.b**> Reflections	
- Post some of your thoughts and reflections.	8 am, Apr. 24 (Sat)
- Read and comment on at least one other reflection.	8 am, Apr. 27 (Tue)
<**Assignment 5.11.c**> Review your and other schools' technology plans.	8 am, Apr. 27 (Tue)
<**Assignment 5.11.d**> Peer Evaluation and Portfolio	8 am, Apr. 27 (Tue)
Webcast: Refer to the newsletter for details.	Apr. 26 (Mon)
Module 6. Developing Funding Resources (Apr. 27 - May 17)	
6.1 Introduction	
6.2 Importance of Diversifying Funding Resources	

6.3 Identifying a Need or Problem	
<**Assignment 6.3.a**> Readings	8 am, May 3 (Mon)
<**Assignment 6.3.b**> Identify the priority need or problem.	8 am, May 3 (Mon)
6.4 Selecting a Funding Source	
<**Assignment 6.4**> Identify potential funding sources	8 am, May 3 (Mon)
6.5 Preparing the Statement of Need or Problem	
<**Assignment 6.5**> Write a targeted statement of need.	8 am, May 3 (Mon)
6.6 Components and Strategies of a High Quality Proposal	
<**Assignment 6.6**> Write your proposal.	8 am, May 11 (Tue)
6.7 Reviewing and Refining Proposal	
<**Assignment 6.7.a**> Reflections	
- Post some of your thoughts and reflections.	8 am, May 11 (Tue)
- Read and comment on at least one other reflection.	8 am, May 12 (Wed)
<**Assignment 6.7.b**> Evaluate your and other schools' proposal.	8 am, May 12 (Wed)
<**Assignment 6.7.c**> Peer Evaluation and Portfolio	8 am, May 12 (Wed)
Webcast: Refer to the newsletter for details.	May 10 (Mon)

Appendix F: Peer Evaluation Rubric

Evaluate yourself and your team members based on a 5-point scale on the following items.

Evaluator:

Evaluatee:

For each item, select the score you believe best reflects that person's efforts and contributions.

If the person:

- Always demonstrates the quality, you would give a score of 5.
- Frequently demonstrates the quality, you would give a score of 4.
- Sometimes demonstrates the quality, you would give a score of 3.
- Seldom demonstrates the quality, you would give a score of 2.
- Never demonstrates the quality, you would give a score of 1.

1. Is willing to frequently share ideas and resources.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**
2. Accepts responsibilities for tasks determined by the group.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**

3. Respects differences of opinions and backgrounds.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**
4. Is willing to negotiate and make compromises.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**
5. Provides leadership and support by taking an active role in initiating ideas and actions.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**
6. Respects decisions of others.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**
7. Provides positive feedback of team members' accomplishments.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**
8. Is willing to work with others for the purpose of group success.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**
9. Online communication is friendly in tone.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**

10. Keeps in close contact with team members for the purpose of maintaining team cohesion and collaboration.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**
11. Produces high quality work.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**
12. Meets team deadlines.	○ **5**	○ **4**	○ **3**	○ **2**	○ **1**

Comments (**Please provide your teammate with positive and constructive feedback.**):

References

Aggarwal, A., & Bento, R. (2000). Web-based education. In A. Aggarwal. (Ed.), *Web-based learning and teaching technologies: Opportunities and challenges* (pp. 2-16). Hershey, PA: Idea Group Publishing.

Ainslie, E. (2001). Student-centered collaborative learning via face-to-face and asynchronous online communication: What's the difference? *Proceedings of the Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education, Australia, 18,* 169-177.

Alexander, J. O. (1999, October). Collaborative design, constructivist learning, information technology immersion, & electronic communities: A case study. *Interpersonal Computing and Technology: An Electronic Journal for the 21st Century, 7(6).* Retrieved February 23, 2000, from http://www.emoderators.com/ipct-j/1999/n1-2/alexander.html

Alexander, S., & Boud, D. (2001). Learners still learn from experience when online. In J. Stephenson (Ed.), *Teaching & learning online: Pedagogies for new technologies* (pp. 1-15). London: Kagan Page.

Ally, M. (2004). Foundations of educational theory for online learning. In *Theory and Practice of online learning* (chap. 1). Retrieved April 22, 2005, from http://cde.athabascau.ca/online_book/pdf/TPOL_chp01.pdf

Ames, C. (1984). Competitive, cooperative, and individualistic goal structure: A cognitive-motivational analysis. In R. Ames & C. Ames (Eds.), *Research on motivation in education: Vol. 1. Student motivation*. Orlando: Academic Press.

Anderson, T. & Kanuka, H. (1997). On-line forums: New platforms for professional development and group collaboration. *Journal of Computer Mediated Communication, 3(3).* Retrieved October 1, 2003, from http://www.ascusc.org/jcmc/vol3/issue3/anderson.html

Angulo, A. J., & Bruce, M. (1999). Student perceptions of supplemental Web-based instruction. *Innovation Higher Education, 24(2),* 105-125.

Arbaugh, J. B. (2001). How instructor immediacy behaviors affect student satisfaction and learning in Web-based courses. *Business Communication Quarterly, 64(4),* 42-54.

Beauvois, M. (1992). *Computer- assisted classroom discussion in French using networked computers*. Unpublished doctoral dissertation, University of Texas, Austin.

Bennett, S. (2004). Supporting collaborative project teams using computer-based technologies. In T. S. Roberts (Ed.), *Online collaborative learning: Theory and practice* (pp. 1-27). Hershey, PA: Information Science Publishing.

Bigelow, J. D. (1999, November). *Quality assurance for online courses*. Retrieved September 23, 2001, from http://mg.boisestate.edu/jbigelow/jbigelow/qaonline.htm

Blocher, M., Sujo de Montes, L., Willis, E. M., & Tucker, G. (2002, Fall). Online learning: Examining the successful student profile [Electronic version]. *The Journal of Interactive Online Learning, 1(2),* 1-12.

Bosworth, K. (1994). Developing collaborative skills in college students. In K. Bosworth & S. J. Hamilton (Eds.), *New directions for teaching and learning: Vol. 59. Collaborative learning underlying processes and effective techniques* (pp. 25-31). San Francisco: Jossey-Bass Publishers.

Bozarth, J., Chapman, D. D., & LaMonica, L. (2004). Preparing for Distance Learning: Designing An Online Student Orientation Course [Electronic Version]. *Educational Technology & Society, 7 (1),* 87-106.

Buchanan, E., Brown, M., Casanova, J., Wolfram, D., & Xie, H. (2000, September 15). Wed-based and traditional instruction: A systematic study of student and instructor perceptions from a graduate MLIS program. *Teaching with Technology Today, 7(1).* Retrieved February 1, 2001, from http://www.uwsa.edu/olit/ttt/buchanan.htm

Cadieux, C. P. (2002). *Variables associated with a sense of classroom community and academic persistence in an urban community college online setting.* Doctoral dissertation, Old Dominion University, Virginia. (ERIC Document Reproduction Service No. ED474545)

Cates, C. L. & McIntosh, W. V. (2000, December). Law on-line:A collaborative, Web-based journey in the law and social sciences. *Educational Technology & Society, 3(3).* Retrieved October 11, 2003, from http://ifets.ieee.org/periodical/vol_3_2000/c03.html

Chun, D. (1994). Using computer networking to facilitate the acquisition of the interactive competence. *System, 22(1),* 17-31.

Cornelius, S. & Higgison, C. A. (2000, May). Online tutoring e-book. In *OTiS international e-workshop: Developing online tutors* (chap. 2). Retrieved October 20, 2001, from http://otis.scotcit.ac.uk/onlinebook/otisT206.htm

Cummins, S., & Sayers, D. (1990). Education 2001: Learning networks and educational reform. *Computers in Schools, 7(1/2),* 1-29.

Curry, D. B. (2001). Collaborative, connected, and experiential learning: reflections of an online learner. *Proceedings of the Annual Mid-South Instructional Technology Conference, Murfreesboro, TN, 6*. (ERIC Document Reproduction Service No. ED463721)

Curtis, D. D., & Lawson, M. J. (2001). Exploring collaborative online learning. *Journal of Asynchronous Learning Networks, 5(1),* 21-34.

Daugherty, M., & Funke, B. (1998). University faculty and student perceptions of Web-based instruction. *Journal of Distance Education*. Retrieved January 31, 2001, from http://cade.athabascau.ca/vol13.1/daugherty.html

Dempsey, J. V., & Van Eck, R. N. (2002). Instructional design online: Evolving expectations. In R. A. Reiser & J. V. Dempsey (Eds.), *Trends and issues in instructional design and technology* (pp. 281-294). Upper Saddle River, NJ: Merrill Prentice Hall.

Dillenbourg, P. (1999). What do you mean by collaborative learning? In P. Dillenbourg (Ed.), *Collaborative learning, cognitive and computational approaches* (pp.1-19). Oxford: Elsevier.

Dillenbourg, P., & Schneider, D. (1995, February). *Collaborative learning and the Internet*. Retrieved October 5, 2003, from http://tecfa.unige.ch/tecfa/research/CMC/colla/iccai95_1.html

Dirkx, J. M., & Smith, R. O. (2004). Thinking out of a bowl of spaghetti: Learning to learn in online collaborative groups. In T. S. Roberts (Ed.), *Online collaborative learning: Theory and practice* (pp. 132-159). Hershey, PA: Information Science Publishing.

Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. D. (1993). *Doing naturalistic inquiry: A guide to methods*. California: Sage Publications.

Ewing-Taylor, J. (1999, December 6). *Student attitudes toward Web-based courses*. Retrieved February 1, 2001, from http://unr.edu/homepage/jacque/research/student_attitudes.html

Fåhræus, E. F. (2001). Collaborative learning through forum systems - Problems and opportunities. *Proceedings of the Computer Support for Collaborative Learning Conference (CSCL), Maastricht University, Holland.* Retrieved October 5, 2003, from http://www.mmi.unimaas.nl/euro-cscl/Papers/45.doc

Fisher, K., Phelps, R. & Ellis, A. (2000). Group processes online: Teaching collaboration through collaborative processes. *Educational Technology & Society*, *3(3)*. Retrieved October 11, 2003, from http://ifets.ieee.org/periodical/vol_3_2000/f06.html

Fisher, M. & Coleman, B. (2001-2002). Collaborative online learning in virtual discussions [Electronic version]. *Journal of Educational Technology Systems, 30(1),* 3-17.

Frankola, K. (2000, June 3). *Why online learner drop out*. Retrieved September 18, 2001, from http://www.workforce.com/feature/00/07/29/

Ghaleb, M. (1993). Computer networking in a university freshman ESL writing class: a descriptive study of the quantity and equality of writing in networking and traditional writing classes. Unpublished doctoral dissertation, University of Texas, Austin.

Gokhale, A. (1995). Collaborative learning enhances critical thinking. *Journal of Technology Education*, *7(1)*. Retrieved October 05, 2003, from http://scholar.lib.vt.edu/ejournals/JTE/jte-v7n1/gokhale.jte-v7n1.html

Gousseva, J. (1998). Crossing cultural and spatial boundaries: A cybercomposition experience. *The Internet TESL Journal*, *4(11)*. Retrieved September 22, 2000, from *http://iteslj.org/Articles/Gousseva-CyberComp.html*

Gros, B. (2001). Instructional design for computer-supported collaborative learning in primary and secondary school. *Computers in Human Behavior, 17(5-6),* 439-451.

Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences [Electronic version]. *International Journal of Educational Telecommunications, 1(2/3),* 147-166.

Hara, N., & Kling, R. (1999, December). Students' frustration with a Web-based distance education course. *First Monday, 4(12)*. Retrieved September 9, 2001, from http://www.firstmonday/dk/issues/issue4_12/hara

Harasim, L. (1991). Design and tools to augment collaborative learning in computerized conference systems. *Proceedings of International Conference on System Sciences, Hawaii, 24*, 379-385.

Harasim, L., Calvert, T., & Groeneboer, C. (1997). Virtual U: A Web-based system to support collaborative learning. In B. H. Khan (Ed.), *Web-based Instruction* (3rd ed., pp. 149-158). Englewood Cliffs: Educational Technology Publications.

Hartley, J. R., (1999). Effective pedagogies for managing collaborative learning in on-line learning environments. *Educational Technology & Society, 2(2)*. Retrieved February 10, 2002, from http://ifets.gmd.de/periodical/vol_2_99/formal_discussion_0399.html

Hathorn, L. G., & Ingram, A. L. (2002). Online collaboration: Making it work. *Educational Technology, 42(1)*, 33-40.

Hiltz, S.R. (1998, November). Collaborative learning in asynchronous learning networks: building learning communities. *Invited address at "WEB98", Orlando Florida*. Retrieved May 1, 2002, from http://eies.njit.edu/~hiltz/collaborative_learning_asynch.htm

Hiltz, S. R. (1990). Evaluating the Virtual Classroom. In L. M. Harasim (Ed.), *Online Education: Perspectives on a New Environment* (pp. 133-183). New York: Praeger.

Hiltz, S. R. & Benbunan-Fich, R. (1997, April 28). Supporting collaborative learning in asynchronous learning networks. *Invited keynote address for the UNESCO/ Open University Symposium on virtual learning environments and the role of the teacher, Milton Keynes, England*. Retrieved October 5, 2002, from http://eies.njit.edu/~hiltz/CRProject/unesco.htm

Hiltz, S. R., Coppola, N., Rotter, N., & Turoff, M. (2000). Measuring the importance of collaborative learning for the effectiveness of ALN: A multi-measure, multi-method approach. *Journal of Asynchronous Learning Networks, 4(2)*. Retrieved March 30, 2002, from http://www.aln.org/alnweb/journal/Vol4_issue2/le/hiltz/le-hiltz.htm

Hislop, G. W. (1999). Anytime, Anyplace Learning in an Online Graduate Professional Degree Program [Electronic version]. *Group Decision and Negotiation, 8*, 385-390.

Hoppenbrouwers, J. (1995). *Effects of computer support on cooperative work*. Retrieved February 20, 2001, from http://infolab.kub.nl/pub/theses/w3thesis/Groupwork/cscw_effects.html

Howland, J. L. & Moore, J. L. (2002). Student Perceptions as Distance Learners in Internet-Based Courses. *Distance Education, 23(2),* 183-195.

Huang, H. (2002). Toward constructivism for adult learners in online learning environments. *British Journal of Educational Technology, 33(1),* 27-37.

Hughes, M., & Daykin, N. (2002). Towards constructivism: Investigating students' perceptions and learning as a result of using an online environment. *Innovations in Education and Teaching International, 39(3),* 217-224.

Hughes, S. C., Wickersham, L., Ryan-Jones, D. L. & Smith, A. (2002). Overcoming social and psychological barriers to effective on-line collaboration. *Educational Technology & Society, 5 (1)*. Retrieved October 11, 2003, from http://ifets.ieee.org/periodical/vol_1_2002/hughes.html

Johnson, C.M. (2001). A survey of current research on online communities of practice [Electronic version]. *Internet and Higher Education, 4*, 45-60.

Johnson, D. W., & Johnson, R. T. (1994). Constructive conflict in the schools [Electronic version]. *Journal of Social Issues, 50(1),* 117-137.

Johnson, D. W., & Johnson, R. T. (1996). Cooperation and the use of technology. In D. H. Jonassen (Ed.), Handbook of research for educational communications and technology: A project of the association for educational communications and technology (pp. 1017-1044). New York: Simon & Schuster Macmillan.

Johnson, D. W., Johnson, R. T., & Smith, K. A. (2000). Constructive controversy: The educative power of intellectual conflict [Electronic version]. *Change, 32(1),* 28-37.

Johnson, S. D., Suriya, C., Yoon, S. W., Berrett, J. V., & La Fleur, J. (2002). Team development and group processes of virtual learning teams. *Computers & Education, 39(4),* 379-393. Retrieved April 27, 2005, from http://w6.ed.uiuc.edu/hre/online/virtual_teams.pdf

Jonassen, D. H. (1999). Designing constructivist learning environments. In C. M. Reigeluth (Ed.), *Instructional design theories and models: A new paradigm of instructional theory. Vol. II.* (pp. 215-239). Hillsdale, NJ: Lawrence Erlbaum Associates.

Kearsley, G. (1997-1998). Distance education goes mainstream. *THE Journal, 25(10),* 22-26.

Khan, B. H. (1998). Web-based instruction (WBI): What is it and why is it? In B. H. Khan (Ed.), *Web-based Instruction* (3rd ed., pp. 5-18). Englewood Cliffs, NJ: Educational Technology Publications.

Kim, J.-B., Derry, S. J., Steinkuehler, C. A., Street, J. P., & Watson, J. (2000). Web-Based Online Collaborative Learning [Abstract]. *Proceedings of the American Educational Research Association Annual Meeting, New Orleans, Louisiana*. Retrieved February 5, 2003, from http://www.wcer.wisc.edu/step/documents/olc3/olc3abstract.html

Kim, Y.S. (1998). The effect of a networked computer-mediated discussion on subsequent oral discussion in the ESL classroom. Doctoral dissertation, University of Texas, Austin.

Kirtley, K. E. (2002). *A study of student characteristics and their effect on student satisfaction with online courses.* Unpublished doctoral dissertation, West Virginia University, West Virginia. Retrieved April 26, 2005, from http://kitkat.wvu.edu:8080/files/2538.1.Kirtley_Karen_Dissertation.pdf.

Koschmann, T. (1996). Paradigm shifts and instructional technology: An introduction. In T. Koschmann (Ed.), *CSCL: Theory and practice of an emerging paradigm* (pp. 1-23). Mahwah, NJ: Lawrence Erlbaum Associates.

Lavallee, N. N. (1998). An evaluation of computer supported collaborative learning in distance education courses offered by Eastern Pentecostal Bible College. Retrieved May 1, 2002, from http://www.epbc.edu/nnlavallee/Collaborative.htm

Lawless & Allen, (2004, February). Understanding and reducing stress in collaborative e-learning. *Electronic Journal on e-Learning, 2(1),* Retrieved April 27, 2005, from http://www.ejel.org/volume-2/vol2-issue1/issue1-art15-lawless-allen.pdf

Lea, M., Rogers, P. & Postmes, T. (2002). SIDE-VIEW: Evaluation of a system to develop team players and improve productivity in Internet collaborative learning Groups. *British Journal of Educational Technology, 33(1),* 53-63.

Leasure, A. R., Davis, L., & Thievon, S. L. (2000). Comparison of student outcomes and preferences in a traditional vs. World Wide Web-based baccalaureate nursing research course. *Journal of Nursing Education, 39(4),* 149-154.

Le Mon, R. (1988). Cultural differences affecting the international transfer of computerized language learning. *System, 16 (1),* 37-40.

Lee, M. (2001). Profiling students' adaptation styles in Web-based learning. *Computers & Education, 36,* 121-132.

Liaw, S. (2001). Designing the hypermedia-based learning environment. *International Journal of Instructional Media, 28(1),* 43-56.

Lowyck, J., & Poysa, J. (2001). Design of collaborative learning environments. *Computers in Human Behavior, 17,* 507-516.

March, T. (1998). *WebQuests for Learning.* Retrieved October 25, 1999, from http://www.ozline.com/webquests/intro.html

McIsaac, M. S., Blocher, J. M., Maher, V. & Vrasidas, C. (1999). Student and teacher perceptions of interaction in online computer-mediated communication. *Educational Media International, 36(2),* 121-131.

McMurray, D. W., & Dunlop, M. E. (2000). The collaborative aspects of online learning: A pilot study. *UltiBASE*. Retrieved March 30, 2002, from http//:ultibase.rmit.edu.au/Articles/online/mcmurry1.htm

Miller, J.E., Trimbur, J., & Wikes, J.M. (1994). Group dynamics: Understanding group success and failure in collaborative learning. In K. Bosworth & S. J. Hamilton (Eds.), *New directions for teaching and learning: Vol. 59. Collaborative learning underlying processes and effective techniques* (pp. 33-44). San Francisco: Jossey-Bass Publishers.

Mishra, S. (2002). A design framework for online learning environments. *British Journal of Educational Technology, 33(4),* 493-496.

Moran, C. (1991). We write, but do we read? *Computers and Composition, 8(3),* 51-61.

Murphy, E. & Coleman, E. (2004). Graduate students' experiences of challenges in online asynchronous discussions. *Canadian Journal of Learning and Technology*, 30(2), Retrieved April 27, 2005, from http://www.cjlt.ca/content/vol30.2/cjlt30-2_art-2.htm

National Center for Education Statistics (n.d.). *Distance education at degree-granting postsecondary institutions: 2000-2001*. Retrieved September 23, 2003, from http://nces.ed.gov/surveys/peqis/publications/2003017/

Newby, T. J., Stepich, D. A., Lehman, J. D. & Russell, J. D. (2000). *Instructional technology for teaching and earning: Designing instruction, integrating computers, and using media.* (2nd ed.). Upper Saddle River, NJ: Prentice-Hall.

Ocker, R. J., & Yaverbaum, G. J. (1999). Asynchronous computer-mediated communication versus face-to-face collaboration: Results on student learning, quality and satisfaction [Electronic version]. *Group Decision and Negotiation, 8*, 427-440.

Ormrod, J. E. (1999). *Human learning*. (3rd ed.). Upper Saddle River, NJ: Prentice-Hall.

Palloff, R. M., & Pratt, K. (1999). *Building learning communities in cyberspace*. San Francisco: Jossey-Bass Publishers.

Patton, M. Q. (2002). *Qualitative research & evaluation methods*. (3rd ed.).Thousand Oaks, CA: Sage.

Pedone, M. (2003). A qualitative analysis of student learning experience in online community college undergraduate education courses. Doctoral dissertation, University of Central Florida. (UMI No. 3110067)

Peterson, M. (1997). Language teaching and networking. *Systems, 25(1)*, 29-37.

Poole, D. (2002). Student participation in a discussion-oriented online course: a case study [Electronic version]. *Journal of Research on Computing in Education, 33(2)*, 162-177.

Ragoonaden, K., & Bordeleau, P. (2000). Collaborative learning via the Internet. *Educational Technology & Society, 3(3)*, 361-369.

Relan, A., & Gillani, B. B. (1998). Web-based instruction and the traditional classroom: similarities and differences. In B. H. Khan (Ed.), *Web-based Instruction* (3rd ed., pp. 41-46). Englewood Cliffs, NJ: Educational Technology Publications.

Ritchie, D. C., & Hoffman, B. (1997). Incorporating instructional design principles with the World Wide Web. In B. H. Khan (Ed.), *Web-based Instruction* (3rd ed., pp. 135-138). Englewood Cliffs, NJ: Educational Technology Publications.

Rodriguez Illera, J. L. (2001). Collaborative environments and task design in the university. *Computers in Human Behavior, 17*, 481-493.

Rovai, A. (2002, April). Building sense of community at a distance. *International Review of Research in Open and Distance Learning, 3 (1)*, 3-16. Retrieved April 27, 2005, from http://www.irrodl.org/content/v3.1/rovai.pdf

Salomon, G., & Globerson, T. (1989). When teams do not function the way they ought to. *International Journal of Educational Research*, 13(1), 89-100.

Sasikumar, M. (2002, January). Instructional design and e-learning. *Vidyakash News, 2(1)*. Retrieved October 04, 2003, from http://www.ncst.ernet.in/vidyakash/newsletter/2/1/welcome.shtml

Schwitzer, A. M., Ancis, J. R., & Brown, N. (2001). Promoting student learning and student development at a distance: Student affairs concepts and practices for televised instruction and other forms of distance learning. Lanham, MD: University Press of America.

Seidman, I. (1998). Interviewing as qualitative research: A guide for researchers in education and the social sciences (2nd ed.). New York: Teacher College Press.

Siragusa, L. (2000). Instructional design meets online learning in higher education. *WAIER Forum 2000*. Retrieved February 11, 2002, from http://education.curtin.edu.au/waier/forums/2000/siragusa.html

Smith, G. G., Ferguson, D., & Caris, M. (2001). *Teaching college courses online vs. face-to-face*. Retrieved April 25, 2001, from http://www.thejournal.com/magazine/vault/A3407.cfm

Smith, P. L., & Ragan, T. J. (1999). *Instructional design* (2nd ed.). New York: John Wiley & Sons.

Spooner, F., Jordan, L., Algozzine, B., & Spooner, M. (1999). Student ratings of instruction in distance learning and on-campus classes. *Journal of Educational Research. 92 (3),* p. 132-140.

Steeples, C., & Mayes, T. (1998). A special section on computer-supported collaborative learning. *Computers Education, 30(3/4),* 219-221.

Strauss, A., & Corbin, J. (1998). Basics of qualitative research: Techniques and procedures for developing grounded theory. (2nd ed.). Thousand Oaks, CA: Sage.

Swigger, K. M., Brazile, R., Byron, S., Livingston, A., Lopez, V., & Reynes, J. (1999, February 28-March 4). *Real-time collaboration over the Internet: What actually works?* Paper presented at the SITE 99: Society for Information Technology & Teacher Education International Conference, San Antonio, TX. (ERIC Document Reproduction Service No. ED432311)

Tam, M. (2000). Constructivism, instructional design, and technology: Implications for transforming distance learning. *Educational Technology & Society, 3(2),* 50-60.

Thorsen, C. (2003). TechTactics: Instructional models for educational computing. Boston: Allyn and Bacon.

Vonderwell, S. (2003). An examination of asynchronous communication experiences and perspectives of students in an online course: A case study. *The Internet and Higher Education, 6,* 77-90.

Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

Walker, S. L. (2001). *Online learning environments research*. Retrieved September 28, 2001, from http://education.ollusa.edu/tcc200…ng_environments_research_PAPER.htm

Wanko, C. (2000). *Managing student and faculty expectations in an asynchronous Learning Course*. Retrieved September 23, 2001, from http://as1.ipfw.edu/2000tohe/papers/wanko/wanko.htm

Warschauer, M. (1996). Comparing face-to-face and electronic discussion in the second language classroom. *Calico Journal, 13(2&3),* 7-26.

Warschauer, M. (1998). *Interaction, negotiation, and computer-mediated learning*. Retrieved February 18, 2000, from http://www.insa-lyon.fr/Departments/CDRL/interaction.html

Warf, B., Vincent, P., & Purcell, D. (1999). International collaborative learning on the World Wide Web. *Journal of Geography, 98(3),* 141-148.

Wegerif, R. (1998). The social dimension of asynchronous learning networks. *The Journal Asynchronous Learning Networks, 2(1),* 34-49. Retrieved April 27, 2003, from http://www.aln.org/publications/jaln/v2n1/pdf/v2n1_wegerif.pdf

Wegner, S. B., Holloway, K. C., & Garton, E. M. (1999). *The effects of Internet-based instruction on student learning*. Retrieved April 8, 2001, from http://www.aln.org/alnWeb/journal/Vol3_issue2/Wegner.htm

Weller, M. (2002). Delivering learning on the Net: The why, what, & how of online education. London: Kogan Page.

Westrom, M. & Pankratz, T. (n.d.). *Student expectations onsite and online*. Retrieved September 18, 2001, from http://www.curricstudies.educ.ubc.ca/wusers/WestromMarv/OVO/default.htm

Whitlock, Q. (2001). Course design for online learning – What's gone wrong? In J. Stephenson (Ed.), *Teaching & learning online: Pedagogies for new technologies* (pp.182-194). London: Kogan Page.

Wilson, B. G. (1998). Introduction: What is a constructivist learning environment? In B. G. Wilson (Ed.), *Constructivist learning environments: Case studies in instructional design* (pp. 3-8). Englewood Cliffs, NJ: Educational Technology Publications

Wilson, B., Teslow, J., & Osman-Jouchoux, R. (1995). The impact of constructivism (and post modernism) on ID fundamentals. In B. Seels (Ed.), *Design fundamentals: A reconsideration* (pp. 137-157). Englewood Cliffs, NJ: Educational Technology Publication.

Wilson, T., & Whitelock, D. (1998). Monitoring the online behavior of distance learning students [Electronic version]. *Journal of Computer Assisted Learning, 14,* 91-99.

Wu, D. & Hiltz, S. R. (2004, April). Predicting learning from asynchronous online discussions. *Journal of Asynchronous Learning Networks, 8(2)*, 139-152. Retrieved February, 28, 2005, from http://www.sloan-c.org/publications/jaln/v8n2/pdf/

Xiaoshi, B. (2000, October 30 – November 2000). Instructional design attributes of Web-based courses. *Proceedings of the WebNet 2000 World Conference*, San Antonio, TX.

Yakimovicz, A. D., & Murphy, K. L. (1995). Constructivism and collaboration on the Internet: Case study of a graduate class experience [Electronic version]. *Computers Education, 24(3)*, 203-209.

Zhang, K. & Carr-Chellman, A. (2001). Peer Online Discourse Analysis. Annual Proceedings of Selected Research and Development [and] Practice Papers presented at the National Convention of the Association for Educational Communications and Technology, 1-2, 152-160. (ERIC Document Reproduction Service No. ED470141)

Vita

Jantrathip Changwatchai was born in Hadyai, Songkhla, Thailand on July 9, 1973, the daughter of Suwimon Sae-Chin and Suefook Sae-Chin. After completing her work at Hadyaiwittayalai High School, Hadyai, Songkhla, in 1991, she entered Chulalongkorn University in Bangkok, Thailand. She received the degree of Bachelor of Arts from Chulalongkorn University in March 1995. In June 1995 she entered the Faculty of Education at the Graduate School of Kasetsart University, Bangkok, Thailand. She earned her degree of Master of Arts in Teaching English from Kasetsart University in February 1998. She was then employed as a lecturer at Walailak University in Nakornsritammarat, Thailand. In August 1999, she entered the doctoral program at The University of Texas at Austin, specializing in Instructional Technology.

Permanent Address: 16905 Brewer Blackbird Dr., Pflugerville, Texas 78660

This dissertation was typed by the author.